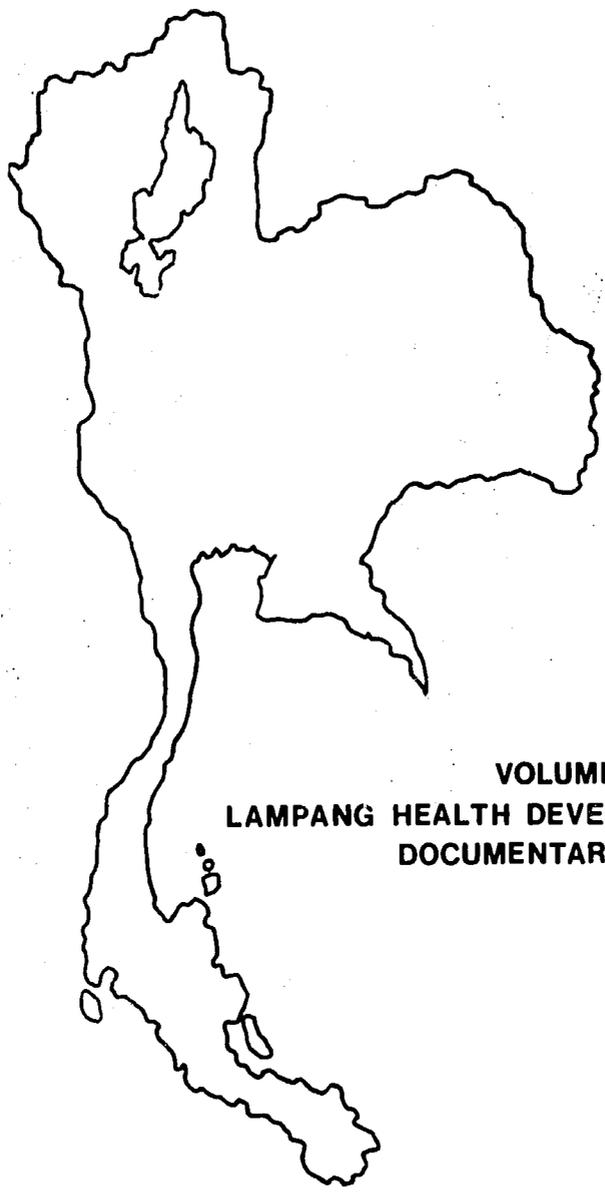


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SUMMARY FINAL REPORT OF THE LAMPANG HEALTH DEVELOPMENT PROJECT



VOLUME I
LAMPANG HEALTH DEVELOPMENT PROJECT
DOCUMENTARY SERIES



MINISTRY OF PUBLIC HEALTH THAILAND 1981



LAMPANG HEALTH DEVELOPMENT PROJECT
DOCUMENTARY SERIES

VOLUME I

SUMMARY FINAL REPORT
OF THE
LAMPANG HEALTH DEVELOPMENT PROJECT

Ministry of Public Health
Thailand
1981

DEDICATION
of the
LAMPANG HEALTH DEVELOPMENT PROJECT DOCUMENTARY SERIES
to
DR. SOMBOON VACHROTAI
Project Director
1974-1980

Dr. Somboon Vachrotai inspired and directed the Lampang Health Development Project for six years in a devoted effort to extend integrated health care services to underserved rural villagers. During this period, the basic concepts of primary health care were broadly accepted by the Ministry of Public Health and other agencies and institutions of the Royal Thai Government concerned with social development. Many of the key features of the Lampang Health Development Project are now being implemented nationwide as a high priority of the National Economic and Social Development policy and plan.

Serving over thirty-four years with the Thai Ministry of Public Health before his untimely death on 1 September 1980 at the age of 56, Dr. Somboon became a charismatic health leader and popular figure at home and abroad. Of his many achievements, he is most highly credited for championing the eradication of yaws in Thailand, directing and inspiring the laudable accomplishments of the National Family Planning Project, and conceptualizing and successfully implementing many innovative rural health care projects which have served as vanguards for progressive rural health development.

Dr. Somboon's concern for poor and underprivileged people, his humanitarian philosophy, his strong motivation and drive, his clear insight and perceptiveness, his tremendous sense of humor and jolly laughter, and his thoughtfulness for those around him are well known by all who knew and loved him. He had the gift of making fun out of work, of turning constraints and challenge to success, and of inculcating among his fellow workers a sense of belonging, a sense of participation, a sense of recognition, and a sense of responsibility. Practicing what he taught, he enjoyed giving encouragement to other health workers with one of his favorite expressions:

"Go and search for your people. Love them. Work with them.
Plan with them. Serve them. Begin with what they know.
And build on what they have."

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As an active and popular participant in many international health efforts, Dr. Somboon's leadership and experience in evolving primary health care has carried to many other countries in Asia, the Pacific, the Americas and Africa. Many health professionals believe that the innovative development and implementation of the Lampang Health Development Project, including the successful introduction of a primary health care system with the capacity to reach and serve the majority of rural villagers in need, is his greatest legacy.



CONTENT OF THE LAMPANG HEALTH DEVELOPMENT PROJECT DOCUMENTARY SERIES

The documentary series comprises six volumes. Volume I summarizes the development, evaluation, conclusions and recommendations of the Project. Volume II describes the development of the Project, focussing on its key features, and Volume III presents the Project evaluation, results, conclusions and recommendations. The remaining three volumes present translations of materials used in developing community health volunteers and paraprofessionals, key manpower of the Lampang rural health care system.

VOLUME I: SUMMARY FINAL REPORT OF THE LAMPANG HEALTH DEVELOPMENT PROJECT (Monograph #12)

VOLUME II: DEVELOPMENT OF AN INTEGRATED RURAL HEALTH SERVICES AND PRIMARY HEALTH CARE SYSTEM IN LAMPANG THAILAND

- Monograph #1 - The Lampang Health Development Project: A New Approach to Rural Health Care
- Monograph #2 - Developing Community Health Volunteers and Primary Health Care
- Monograph #3 - Developing Community Health Paraprofessionals (Wechakorn)
- Monograph #4 - Expanding the Community Health Role of the Provincial Hospital
- Monograph #5 - Strengthening Management, Supervision, and Support for Rural Health Care
- Monograph #6 - A System of Evaluation and Management Information for Rural Health Care

VOLUME III: EVALUATION OF THE LAMPANG INTEGRATED RURAL HEALTH SERVICES AND PRIMARY HEALTH CARE SYSTEM

- Monograph #7 - Evaluating and Monitoring Integrated Rural Health Services: Lessons from the Lampang Experience
- Monograph #8 - Accessibility and Acceptance of Rural Health Services in Lampang
- Monograph #9 - Health System and Personnel Performance and Costs
- Monograph #10 - Impact on the Population's Health
- Monograph #11 - Feasibility and Affordability of Implementing the Lampang System's Key Features Nationwide: Implications for the Future

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VOLUME IV: COMMUNITY HEALTH VOLUNTEERS NUTRITION AND HEALTH WORK MANUALS

- Section 1 - Village Health Post Volunteer Health Work Manual
- Section 2 - Village Health Post Volunteer Nutrition Manual
- Section 3 - Village Health Communicator Health Work Manual
- Section 4 - Village Health Communicator Nutrition Manual
- Section 5 - Traditional Birth Attendant Health Work Manual

VOLUME V: COMMUNITY HEALTH PARAPHYSICIANS (WECHAKORN) TRAINING IN CLINICAL CARE

- Module 1 - Introduction to Comprehensive Health Care
- Module 2 - Medical Terminology
- Module 3 - Anatomy and Physiology
- Module 4 - Medical History-Taking
- Module 5 - Physical Examination
- Module 6 - Laboratory Examination
- Module 7 - Formulary: Essential Drugs for Wechakorn
- Module 8 - Skin Problems
- Module 9 - Eye, Ear, Nose and Throat Problems
- Module 10 - Medical Problems
- Module 11 - Pediatric Problems
- Module 12 - Gynecological Problems
- Module 13 - Emergency Problems

VOLUME VI: COMMUNITY HEALTH PARAPHYSICIANS (WECHAKORN) TRAINING IN PUBLIC HEALTH

- Module 14 - Public Health Administration and Primary Health Care
- Module 15 - Community Health Services: Organization, Management, and Supervision
- Module 16 - Maternal and Child Health Care
- Module 17 - Family Planning
- Module 18 - Nutrition
- Module 19 - Dental Health
- Module 20 - Environmental Sanitation
- Module 21 - Statistics
- Module 22 - Epidemiology
- Module 23 - Communicable Diseases Control
- Module 24 - Health Education

FOREWORD

From 1974 to 1981 the Ministry of Public Health implemented the Lampang Health Development Project, a seven year effort to pioneer and research many approaches for integrating and expanding medical and health service coverage and for creating village-based primary health care services. During this period, I followed closely the reorganization of the provincial health administration, the integration of medical and health services, and the creation of the Department of Community Health in the Lampang Provincial Hospital with outreach programs in rural health and medical care delivery. The major thrust of the health manpower development effort involved the training of three types of government health workers to serve as wechakorn paraprofessionals in all subdistrict health centers and district hospitals, the training of thousands of villagers to serve as health volunteers and health communicators, and the training of hundreds of traditional birth attendants. The effort included the organization and orientation of village health committees, and the stimulation of contributions by the private sector and by the communities themselves. Beyond the increased demand for health services which resulted, I also noted with great interest evidence of village-based health activities supported by villagers in many localities: improvements in community water sources, installation and maintenance of handpumps for newly improved and covered wells, nutritional surveillance, family planning supply distribution, and so on. The focus of the Lampang Project was primarily on the district, subdistrict and village levels.

In 1977 and 1978 the Ministry of Public Health drew upon the personnel and experience of the Lampang Project to help plan and conduct two national primary health care seminars. In March, 1979, the Cabinet of the Royal Thai Government approved primary health care as a National Health Development Policy. The Ministry drew heavily from the Lampang Project again in 1979 as it planned with the World Health Organization and UNICEF a biregional primary health care workshop, participated in by nine countries of the South East Asia and Western Pacific regions. The first workshop was conducted in 1980, and we are currently planning with WHO and UNICEF for the next biregional workshop. The aim of these national and interregional activities is to rapidly feed back to planners and health leaders the field experience that is accumulating in Lampang and from similar efforts. One result, at the Thai national level, is the adoption of primary health care program implementation as a high priority in the National Social and Economic Development Plan.

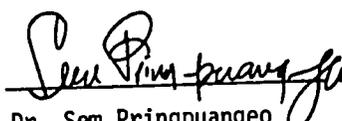
The lessons and experience coming from Lampang over the past seven years have been quite useful to the Ministry of Public Health in planning and implementing

similar approaches for nationwide coverage. In a similar manner, the Lampang experience may be useful to others, and achievement of this benefit is one of the major aims of the documentary series that is presented herewith.

I wish to take this opportunity to express my gratitude and thanks to all institutions and agencies in Thailand and abroad that have contributed to the Lampang effort. While all the organizations in Thailand that have made contributions are too numerous to list here, two deserve special recognition for their longstanding support: the Chiangmai University which provided two senior professionals to the Project who served as Chiefs of the Project's Division of Personnel Development and Division of Research and Evaluation, and the National Institute of Development Administration, which played a key role in the research and evaluation effort. Special acknowledgement and appreciation are expressed for the contributions of the University of Hawaii, which provided technical and managerial assistance throughout the seven-year period, the American Public Health Association for its five-year role in project management and liaison, and the U.S. Agency for International Development which was the major source of outside funding. We also appreciate and acknowledge the special purpose contributions of the U.S. Information Service Agency, the Asia Foundation, the World Health Organization, and the U.N. Children's Fund.

As Thailand enters the 1980's, the greatest aim of the Ministry of Public Health is to extend basic health services and to achieve good health for all Thai citizens, if possible, by the turn of the century. The success of this effort will depend on three major factors: the seriousness and commitment of the Royal Thai Government in implementing its new Health Development Policy, the seriousness of health workers at all levels in serving those in need, and the ability and willingness of health workers to teach and guide villagers in matters of health and development, helping them to help themselves. Through continued effort and collaboration like that demonstrated by the Lampang Health Development Project, we have good reason to be optimistic.

May, 1981



Dr. Sem Pringpuangeo
Minister of Public Health
Royal Thai Government

PREFACE

The Lampang Health Development Project, originally called the "DEIDS/Thailand Project" to signify the development and evaluation of an integrated health care delivery system, was conceptualized, planned, implemented and evaluated by the Ministry of Public Health of the Royal Thai Government, through shared commitment and collegial collaboration with the University of Hawaii and the American Public Health Association.

Health professionals and leaders from these institutions recognized that conventional approaches to health care delivery were not reaching those most in need -- underserved rural villagers who comprised the majority of the population. Further, new approaches had to be conceptualized and tested in the context of Thailand's health care system if basic health services were to become available to and utilized by rural villagers.

Project planners hypothesized that basic health services could be delivered more cost-effectively if integrated; that the demand for medical care services could be met, to a great extent, by upgrading existing health personnel to be clinically competent paraprofessionals; and that the need for health promotion and disease prevention services could be more broadly and effectively met through community participation. This participation could be achieved by training community health volunteers -- health post volunteers, traditional birth attendants and village health communicators -- as well as by involving the private sector. Some elements of these approaches had been implemented in Thailand on a small (district-level) scale in earlier projects, but they had not been adequately evaluated. The Ministry of Public Health, already committed to the concept of integration of health promotion, disease prevention and medical care services, was ready to embark on a major effort to test this approach, and to find ways to broadly extend integrated basic health services to all rural villagers in Thailand.

Lampang Province in northern Thailand (see Figures 1 and 2) was selected as the project area because it had a population of over half a million people, fair communications, moderate economic status, minimal security and insurgency problems, and the endorsement of provincial authorities. While the overall and long-term goal of the Project was to improve the health status of the rural population of Lampang, the specific objectives of the Project were:

- (1) To expand health care coverage to at least two-thirds of the rural population, particularly women in their child-bearing years and preschool age children, with an emphasis on family planning, nutrition and other maternal and child health services.
- (2) To establish an integrated provincial health care services delivery system with the capacity to extend integrated medical, health promotion and disease prevention services to every subdistrict health center, and to establish simple medical care, health promotion and disease prevention services in every village through community participation and private sector involvement.
- (3) To establish an integrated provincial health care services delivery system that is more cost-effective (meaning lower cost per service unit), the key features of which could be replicated nationwide within the limitations of resources available to the Royal Thai Government.

Given these objectives, Project planners and personnel developed a number of innovations and modifications of the existing health system which constituted the key features of the Project, as viewed in Figure 3 and as summarized below.

- (1) Reorganization and Strengthening of the Provincial Health Service Infrastructure by:
 - Integrating curative, disease prevention, and health promotion services by coordinating and administering them under a single Provincial Health administration;
 - Establishing a Department of Community Health within the Provincial Hospital; and
 - Improving management and supervisory practices, in part by developing a practical management information system.
- (2) Development of Community Health Paraphysicians (Wechakorn) from existing health service personnel, to be deployed to every district hospital and subdistrict health center.
- (3) Development of Community Health Volunteers in Every Village, including training of a village health volunteer (health post volunteer) in every village, training of traditional birth attendants in every village where qualified candidates could be identified, and training of village health communicators for every 10-15 households in every village.

- (4) Stimulating Other Community and Private Sector Involvement by establishing health committees in every village and at every administrative level, and by eliciting the interest and support of other private sector groups.

The Ministry of Public Health and other agencies of the Royal Thai Government began planning nationwide programs that would carry these approaches and key features, as modified, to the whole of the country during implementation of the 1977-1981 and 1982-1986 National Economic and Social Development Plans.

Several notable characteristics of Project development, planning and implementation had a bearing on the progress of the Project and on the acceptance of its approaches and key features:

- * The Lamphang Health Development Project was viewed from the beginning as a Thai project; Project planners, Project implementers, and Project leaders and decision-makers were predominantly Thai.
- * The Project was established and directed by the Thai Ministry of Public Health, the official RTG authority that would be responsible for nationwide implementation if the approaches and key features were found to be worthy of "replication".
- * Project and Ministry leaders developed and maintained a broad base of involvement of Ministry of Public Health personnel and other Royal Thai Government officials in all phases of Project development, planning, implementation, and evaluation.
- * The Project maintained a continuing dialogue on Project approaches and progress with both Thai and international health agencies by providing Project information through periodic progress reports, by organizing annual reviews, and by conducting special workshops and seminars for review and refinement of Project approaches and key features.
- * Project administrative, managerial, and technical assistance from the University of Hawaii and the American Public Health Association was characterized by a spirit of mutualism, a shared commitment, and a collegial collaboration. Technical assistance was not limited to one institution, but involved a number of international organizations, U.S. and Thai institutions and agencies. Project leaders recognized that the Project was dealing with a universal problem of how to achieve "health for all", and that this problem was best approached through broad collaboration and solid commitment, based on a spirit of mutualism and learning together.

This Lampang Health Development Project Documentary Series serves to comprehensively document the planning, implementation and evaluation processes, and to present the major findings and evaluation results of this seven-year effort. Volume I summarizes the Project's approaches and key features, evaluation and research findings, conclusions and recommendations. Volume II is comprised of six monographs which describe in detail the development and functioning of the Project's major approaches and components. Volume III contains six monographs on evaluation findings, and discusses the Project results, conclusions and recommendations, based on the broad array of survey data, service statistics and other operational data that have been collected and analyzed. Volume IV presents the English language translations of Thai language materials used in developing and supporting community health volunteers -- health post volunteers, health communicators, and traditional birth attendants. Finally, Volumes V and VI contain English language translations of the 24 Thai language training modules used in the development of wechakorn (community health paraprofessionals).

It is the sincere wish of the Ministry of Public Health and Lampang Project leaders, and of the authors, contributors, and editors of the Lampang Health Development Project Documentary Series, that readers of these materials will find the lessons learned and experience gained in Lampang useful in their own work.

Prakorb Tuchinda .

Dr. Prakorb Tuchinda
Under-Secretary of State
for Public Health
Ministry of Public Health

July 1981

P. Ningsanonda

Dr. Pirote Ningsanonda
Deputy Under-Secretary of
State for Public Health
and
Project Director
Lampang Health Development
Project

Figure 1 Location of Project Site in Thailand

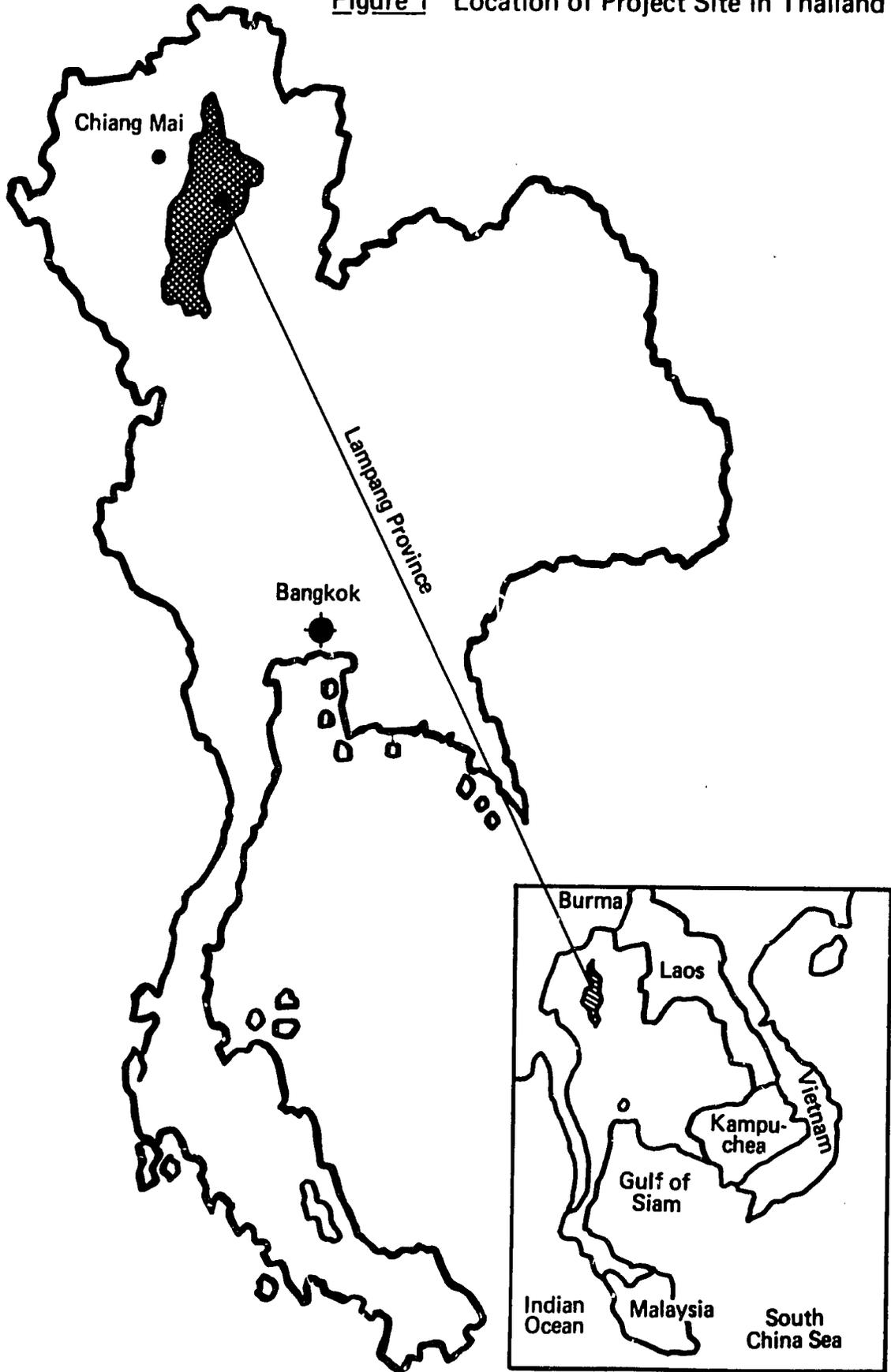


Figure 2 Map of Lampang Province with Project Intervention Areas, Control Area#1, and Control Area#2 in Adjacent Lamphoon Province

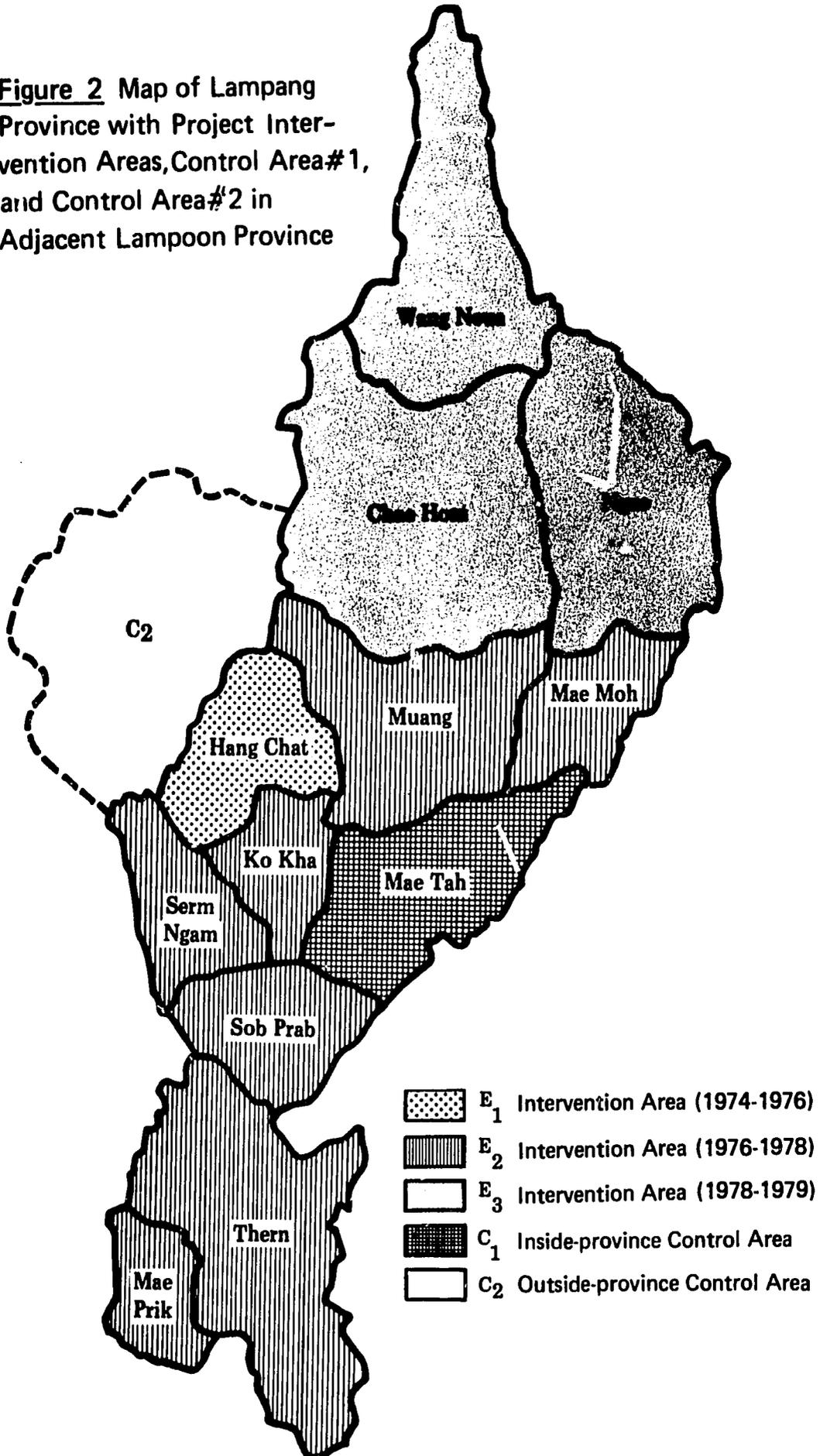
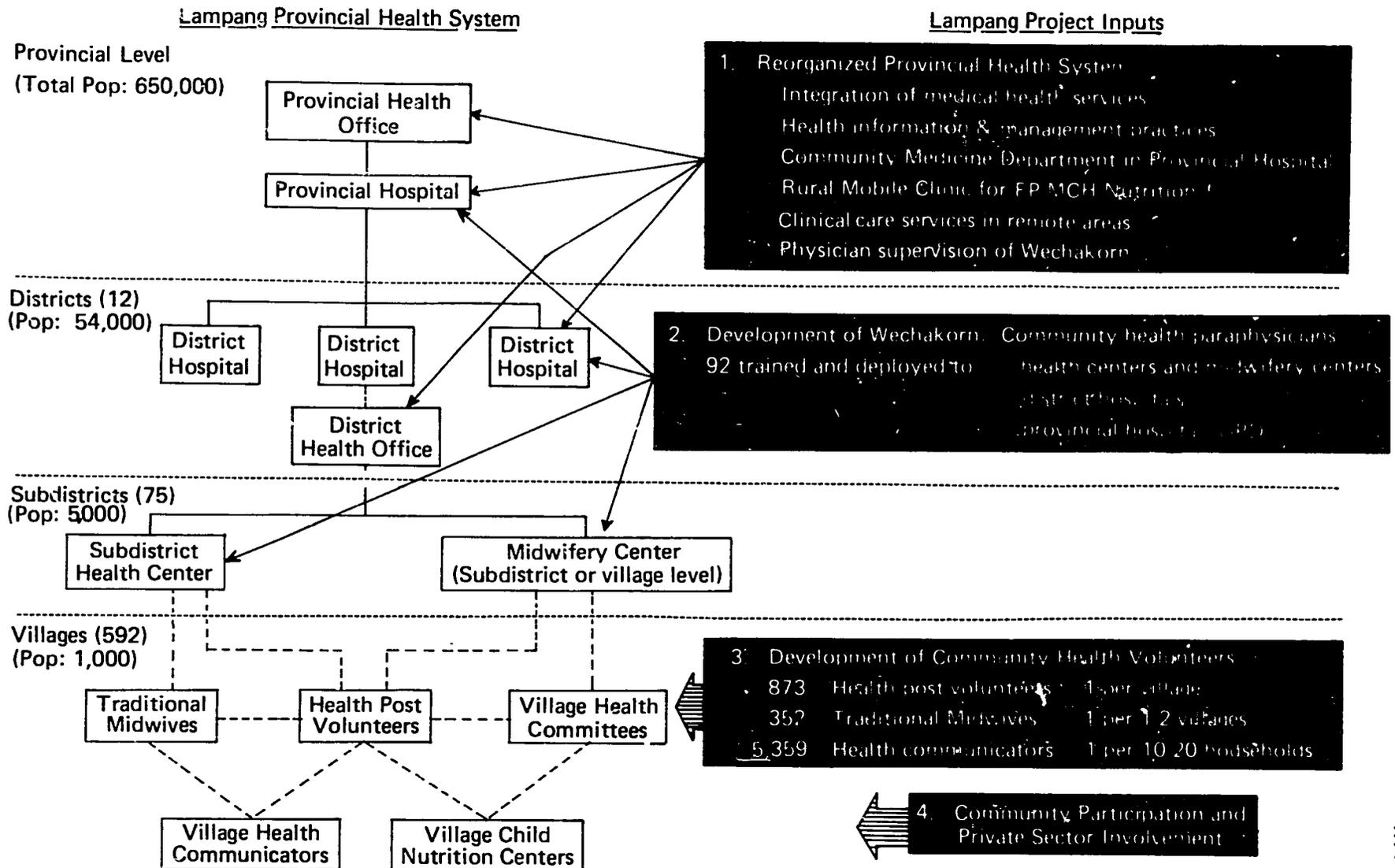


Figure 3 Lampung Provincial Health System and the Inputs of the Lampung Health Development Project



ACKNOWLEDGEMENTS

The Lampang health Development Project, a collaborative effort of the Royal Thai Government, the University of Hawaii, and the American Public Health Association, was supported partly by the Royal Thai Government and partly through the following contracts of the U.S. Agency for International Development: Contract AID/csd-3423 with the American Public Health Association; Contract AID/ca-C-1320 with the American Public Health Association; and Contract AID/493-9025-T with the University of Hawaii.

Additional support was provided by the following organizations: Asia Foundation, United Nations International Children's Emergency Fund, United States International Communications Agency, and World Health Organization. A number of Thai Government agencies have played important roles in Project implementation and in replication of many of the Project's key features: the Ministry of Public Health; the Department of Technical and Economic Cooperation, the National Economic and Social Development Board, the Civil Service Commission, the Food and Drug Administration, the Bureau of the Budget, and the Cabinet, Office of the Prime Minister, Royal Thai Government.

Special thanks are extended to the Lampang Provincial Health Officers and personnel, including those of the Provincial Hospital, who have willingly collaborated and fully cooperated in implementing the Project's key features. The Provincial Health Office played, and continues to play, the central role in managing, coordinating, monitoring and assessing the overall provincial health care system, including the village-based primary health care network. Rural health service personnel of Lampang deserve special mention for their key role in linking the primary health care network at the village level with rural health personnel and facilities. Wechakorn paraphysicians have made a substantial contribution in greatly expanding the range of rural health services.

The Office of the Provincial Governor, the Regional Sanitation Center, the Mid-wifery training Center, the Regional Community Development Center, the Office of Agriculture and Cooperatives, and many other governmental agencies in Lampang have also played important roles in implementing the Project.

While many educational institutions have cooperated in the Lampang effort, special acknowledgement must be given to three institutions which have collaborated productively in the Project: the Chiangmai University, the National Institute of Development Administration, and the University of Hawaii.

The staff of the Lampang Health Development Project wish to acknowledge the substantial contribution of the people of Lampang Province for their participation in evolving this Thai prototype for primary health care. Without the participation of the 6,629 villagers who were now serve as health post volunteers, health communicators and traditional birth attendants in nearly 600 villages, there would be no village-based primary health care network to reach and serve the people at the village level.

Finally, sincere thanks is expressed to all who have served the objectives of the Project, directly and indirectly, particularly those who have served as personnel and consultants of the Project (Appendix 1). Special thanks and appreciation are extended to all contributors of the monograph series (Volumes I-III) and of the translated training materials for Community Health Volunteers (Volume IV) and Community Health Paraphysicians (Volumes V-VI), to Ms. Ninien Sailasuta who typed the manuscripts of all twelve monographs in the documentary series, to Ms. Judith Maurier and Ms. Beth Ramona Wassenberg who provided substantial editing and proofreading assistance in the production of the Documentary Series, and to the staff of Tippanetr Press in Chiangmai, Thailand.

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- Pirote Ningsanonda, M.D., M.P.H., Deputy Under-Secretary of State, Ministry of Public Health, and Project Director of the Lampang Health Development Project.
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- Somma Yasamut, M.D., Chief of the Department of Community Health, Lampang Provincial Hospital, Lampang Province.
- Stanley Zankel, M.P.H., Information Officer of the Lampang Health Development Project.

ACRONYMS AND TERMS

| | |
|-----------|--|
| AID/W | U.S. Agency for International Development/Washington |
| APHA | American Public Health Association |
| BAHT OR ฿ | Thai unit of currency (about 5 Cents, or U.S.\$ = ฿20) |
| CBFPS | Community-Based Family Planning Service |
| CHD | Community Health Department (Provincial) |
| CHV | Community Health Volunteers (HPV or VHV, VHC, and TBA) |
| CNC | Child Nutrition Center(s) |
| DEIDS | Development and Evaluation of an Integrated Health Delivery System, Project title during planning phase |
| DISTRICT | A subdivision of a province (population of district about 50,000) |
| DOH | Department of Health (Ministry of Public Health) |
| FP | Family Planning |
| H/A | Height for age |
| HC | Health center |
| HPV | Health Post Volunteers (or, Village Health Volunteer) |
| H/W | Height for weight |
| ICED | International Council for Educational Development |
| LHDP | Lampang Health Development Project |
| MCH | Maternal and child health |
| MEDEX | Physician extender training program |
| MOPH | Ministry of Public Health, Thailand |
| NIDA | National Institute of Development Administration, Thailand |
| PHO | Provincial Health Officer (or Office) |
| PHC | Primary health care |
| RTG | Royal Thai Government |
| SPH/UH | School of Public Health, University of Hawaii |
| TAMBOL | A subdivision of a district, or subdistrict with a population about 5,000 (pronounced "tam <u>bon</u> ") |
| TBA | Traditional birth attendant, or traditional midwife |
| UHSPH | University of Hawaii's School of Public Health |
| USAID | United States Agency for International Development |
| USAID/T | United States Agency for International Development/Thailand |
| VHC | Village Health Communicator |
| VHV | Village Health Volunteer (or Health Post Volunteer) |
| W/A | Weight for age |
| WECHAKORN | Community health paraphysician (trained by Lampang Project) |

EXECUTIVE SUMMARY REPORT
of the
LAMPANG HEALTH DEVELOPMENT PROJECT:

DEVELOPMENT AND EVALUATION OF AN INTEGRATED RURAL HEALTH
SERVICES AND PRIMARY HEALTH CARE SYSTEM IN
LAMPANG, THAILAND

I. ORGANIZATION AND PURPOSE

The Lampang Health Development Project was a collaborative effort of the Royal Thai Government's Ministry of Public Health, the American Public Health Association's International Health Division and the University of Hawaii's School of Public Health, funded primarily by the United States Agency for International Development and the Royal Thai Government. The purpose was to establish an integrated rural health services delivery system that could provide health services to at least two-thirds of the target population (children under age 5 and women of reproductive age) in a form that could be replicated nationwide at costs affordable by the Royal Thai Government.

II. AREA AND POPULATION

Lampang Province with a population over 600,000 was selected as the project site. At the beginning of the project in 1974, the provincial health care system reached 2% of villages with a child nutrition center, 5% of villages with a midwifery center, 57% of subdistricts with a health center, and 27% of districts with a district medical and health center (now called district hospitals). But less than 20% of the rural population called upon the government health service system, even when they were ill. The key features of the Project were implemented in a pilot district (E_1) during FY1975 and FY1976, in seven districts (E_2) more during FY1977 and FY1978, and in the remaining four districts (E_3) during FY1979. One district in Lampang served as a control area (C_1) until 1979, and one district outside Lampang Province served as a second control area (C_2).

III. STRATEGY AND KEY FEATURES

The major strategy was to develop the system using health manpower from human resources in each village and the existing provincial system. A village-based primary health care network linked to the government's health care system was established that included a village health committee and three types of community health volunteers: village health post volunteers, village health communicators, and traditional birth attendants. Community health paraprofessionals (called wachakorn) were recruited from four categories of existing government health personnel -- nurses, midwives,

sanitarian health workers and nurse aides. They were given one year of intensive, competency-based training and were assigned primarily to rural health facilities: midwifery centers, subdistrict health centers, and district hospitals. The Provincial Health Office and the Provincial Hospital were united under a single authority, the Provincial Health Officer. The Provincial Health Office was reorganized to provide for the expanded health care system and a Community Health Department was established in the Provincial Hospital. This new department promotes integration of medical care, disease prevention and health promotion services within the hospital and operates a mobile clinic which provides a range of services in remote areas.

The effectiveness of the system was further increased by community participation in local health activities to improve village water supplies, sanitation, and child nutrition. The private sector also participated: for example, local service organizations matched contributions with those of villagers to greatly increase the number of child nutrition centers and drugstores supplied family planning and medical supplies to many health post volunteers.

IV. IMPACT ON AREA COVERAGE: HEALTH MANPOWER AND FACILITIES DEVELOPMENT

The major thrust of project effort was health manpower development, primarily community health volunteers and community health paraphysicians to help fill the health manpower gap at the rural periphery of the system. The Ministry of Public Health increased the number of health facilities and assigned new personnel to help staff them. The changes that occurred in the availability of trained health personnel and facilities during the five years from 1974 through 1979 are summarized in Tables 1 through 4.

Table 1

Summary of Area Coverage by Government-Sponsored Rural Health Service System in Lampang Province, 1974 and 1979

| | 1974 | 1979 | % Increase/Decrease |
|--|---------|------|---------------------|
| Villages with Health Posts and HPVs | 0% | 100% | +100% |
| Villages with Trained Traditional Midwives | unkncwn | 59% | + 59% (or lower) |
| Villages with Midwifery Center | 5% | 5% | 0% |
| Villages with Child Nutrition Center | 2% | 17% | + 15% |
| Subdistricts with Health Center | 57% | 90% | + 33% |
| Districts with District Hospital | 27% | 67% | + 40% |

Table 2

Health Manpower Available in Lampang
Province, 1974 and 1979

| Total Health Manpower for Whole Province | 1974 | 1979 | % Change |
|--|------|---------|----------|
| Village health post volunteers * | 0 | 918 * | ++++ |
| Village health communicators * | 0 | 5,359 * | ++++ |
| Trained traditional birth attendants * | 0 | 352 * | ++++ |
| Sanitarian health workers | 59 | 63 | +7% |
| Government midwives | 76 | 110 | +45% |
| Nurse Aides | 37 | 179 | +384% |
| Nurses | 51 | 97 | +90% |
| Paraphysicians, <u>Wechakorn</u> * | 0 | 92 * | ++++ |
| Physicians | 17 | 41 | +141% |

* Trained by Lampang Project

Table 3

Number of Rural Health Service Personnel and Community
Health Volunteers per 100,000 Villagers in
Rural Areas of Lampang in 1974 and 1979

| Type of Personnel/Volunteer | Number Available for 100,000 Rural Residents | | |
|--|--|------|----------|
| | 1974 | 1979 | % Change |
| Village Health Post Volunteers * | 0 | 134 | ++++ |
| Village Health Communicators * | 0 | 870 | ++++ |
| Trained Traditional Birth Attendants * | 0 | 56 | ++++ |
| Sanitarian Health Workers | 9 | 9 | -0- |
| Government Midwives | 13 | 18 | +38% |
| Nurse Aides | 0.5 | 3 | +500% |
| Nurses | 0.5 | 2 | +300% |
| <u>Wechakorn</u> Paraphysicians * | 0 | 13 | ++++ |
| Physicians | 0.3 | 1 | +233% |

* Trained by Lampang Project

Table 4

Number of Government-Sponsored Health Facilities in
Lampang Province, 1974 and 1979

| | 1974 | 1979 | % Change |
|---------------------------------|------|------|----------|
| Village Health Posts | 0 | 918 | +++ |
| Village Child Nutrition Centers | 11 | 100 | +809% |
| Village Midwifery Centers | 31 | 30 | -3% |
| Subdistrict Health Centers | 36 | 70 | +94% |
| District Hospitals | 2 | 7 | +250% |
| Provincial Hospital: | | | |
| Mobile Unit | 0 | 1 | +++ |
| Community Health Department | 0 | 1 | +++ |

V. IMPACT ON UTILIZATION OF HEALTH SERVICES

The acceptance and utilization of health services increased in all project areas with few exceptions. The objective of reaching and serving two-thirds of the respective target populations was achieved for many types of health services.

Child Health Services: The most notable changes in utilization of child health services were the following:

- (1) A much larger proportion of target group children in project intervention areas was reached with government health services than in the control areas.
- (2) Project intervention areas demonstrated broader coverage of children with health promotion and disease prevention services than in control areas.
- (3) Medical care services increased in all areas.
- (4) In project intervention areas, there was a clear shift in child health services utilization towards rural health facilities and village-based providers, with a concurrent reduction in provincial hospital use; but, in control areas the shift was toward increased use of the provincial hospital.

Table 5

Percent of Target Child Population Using Government-Supported Services in Lampang, Baseline and Follow-up Surveys

| Type of Child Health Services | Area | Baseline | Follow-up | % Increase/Decrease |
|---|--------------------------------|----------|-----------|---------------------|
| A. Any child health services | E ₁ | 30.1% | 65.5% | +35.4% |
| | E ₂ | 42.4% | 60.3% | +17.9% |
| | E ₁ +E ₂ | 37.5% | 62.2% | +24.7% |
| | C ₁ | 42.7% | 39.5% | -3.2% |
| | C ₂ | 42.4% | 50.0% | +7.6% |
| B. Medical Care Services | E ₁ | 19.1% | 20.5% | +1.4% |
| | E ₂ | 10.4% | 18.8% | +8.4% |
| | C ₁ | 12.4% | 16.7% | +4.3% |
| | C ₂ | 7.6% | 16.3% | +8.7% |
| C. Immunization Services | E ₁ | 13.1% | 24.9% | +11.8% |
| | E ₂ | 33.7% | 23.3% | -10.4% |
| | C ₁ | 26.6% | 20.9% | -5.7% |
| | C ₂ | 30.6% | 10.5% | -20.1% |
| D. Nutrition, Well Child, and Other Child Health Services | E ₁ | 3.1% | 51.7% | +48.6% |
| | E ₂ | 5.9% | 41.8% | +35.9% |
| | C ₁ | 7.3% | 12.5% | +5.2% |
| | C ₂ | 15.1% | 38.3% | +23.2% |

Women's Health Services: The most notable changes in utilization of women's services were:

- (1) Over 80% of women delivering a child received delivery care services from attendants in project intervention areas, substantially more than in control areas, and this change is attributed primarily to the contribution of trained TBAs, although utilization of government personnel also increased.

Table 6
Percent of Target Group Women Using Government-Supported Health Services, Baseline and Follow-up Survey Years

| Women's Health Services: | Area | Baseline | Follow-up | % Increase/ Decrease | |
|------------------------------|---|----------------|-----------|-------------------------|--------|
| A. Any Type of Service | E ₁ | 36.2% | 44.7% | +8.5% | |
| | E ₂ | 30.1% | 45.0% | +14.9% | |
| | C ₁ | 40.7% | 42.8% | +2.1% | |
| | C ₂ | 30.1% | 43.6% | +13.5% | |
| B. Delivery Care Services | E ₁ | 44.0% | 88.1% | +44.1% | |
| | E ₂ | 41.8% | 78.3% | +36.5% | |
| | C ₁ | 31.9% | 42.5% | +10.6% | |
| | C ₂ | 30.9% | 45.8% | +14.9% | |
| C. Pre-natal Care Services | E ₁ | 55.7% | 70.3% | +14.6% | |
| | E ₂ | 51.9% | 66.4% | +14.5% | |
| | C ₁ | 53.2% | 75.3% | +22.1% | |
| | C ₂ | 40.2% | 62.5% | +22.3% | |
| D. Post-natal Care Services | E ₁ | 9.6% | 17.8% | +8.2% | |
| | E ₂ | 11.6% | 15.4% | +3.8% | |
| | C ₁ | 11.5% | 13.7% | +2.2% | |
| | C ₂ | 11.3% | 12.5% | +1.2% | |
| E. Family Planning Services: | (1) Proportion of all currently married couples who practice contraception | E ₁ | 56.0% | 70.6% | +14.6% |
| | | E ₂ | 53.7% | 55.8% | +2.1% |
| | | C ₁ | 50.7% | 65.2% | +14.5% |
| | | C ₂ | 59.8% | 75.6% | +15.8% |
| | (2) Proportion of all contraceptive married women who received family planning services from government sources, including village health post volunteers | E ₁ | 94.6% | 92.7% | -1.9% |
| | | E ₂ | 83.4% | 82.2% | -1.2% |
| | | C ₁ | 95.2% | 94.9% | -0.3% |
| | | C ₂ | 61.9% | 65.6% | +3.7% |

- (2) The majority of deliveries for both periods were done at home, primarily by TBAs, government midwives and wechakorn; however, there is a slight proportionate reduction in the use of TBAs and increased utilization of hospital for delivery.
- (3) Pre-natal care services were used by 60%-70% of mothers in all areas, and these services were received primarily from rural health personnel other than TBAs who rarely provided pre-natal care.
- (4) Post-natal care services were available but rarely used in any area except when apparent problems arose.
- (5) Family planning services and contraceptive use, already at high levels of over 50% during baseline surveys, rose to even higher levels in all areas (up to 71% in E_1 and 76% in C_2). The predominant contraceptive practice is oral contraceptives and the health post volunteers provided oral contraceptives to 20% to 30% of all users.
- (6) Utilization of government health service by target group women reached 45% from baseline levels of 30% to 36%.

Illness Care Services Utilization by General Population: Utilization of illness care services increased more in project intervention areas than in the control areas, where the differences were quite small. The proportion of the population that utilized government services as a first choice when ill increased about 10% (from 20% to 30%) in project intervention areas, but changed only slightly in control areas. The proportion of the general population seeking illness care services from private sector sources fell in all areas, but fell most in project intervention areas. The increase in utilization in project areas was mostly due to (1) increasing use of rural health facilities which had increased in number and which had wechakorn paraprofessionals available, and (2) the availability of health post volunteers. Utilization of health post volunteer-provided illness care services in all areas where they had been trained accounted for about 5% of the total volume of illness care services received by the rural population. Coverage of the total estimated number of illness episodes in the general population by government health services reached approximately 36.5% in 1979, 17.5% more than in the baseline year. Coverage of the estimated number of illness episodes by government services in the C_1 area increased 8.5% to 21.1% from a baseline of about 12.6%.

Table 7

Proportion of General Population Using Government and Private Sector Illness Care Services as a First Choice When Ill, Baseline and Follow-up Years

| | Area | % Population Using Service | | % Increase/Decrease |
|----------------------------|----------------|----------------------------|-----------|---------------------|
| | | Baseline | Follow-up | |
| Government Sector Services | E ₁ | 24.4% | 32.7% | +8.3% |
| | E ₂ | 16.2% | 28.6% | +12.4% |
| | C ₁ | 13.7% | 17.0% | +3.3% |
| | C ₂ | 16.4% | 16.0% | -0.4% |
| Private Sector Service | E ₁ | 70.1% | 62.9% | -7.2% |
| | E ₂ | 80.1% | 68.2% | -11.9% |
| | C ₁ | 82.4% | 78.0% | -4.4% |
| | C ₂ | 81.9% | 76.6% | -5.3% |

Table 9

Proportion of Estimated Illness Episodes Covered by Government-Provided Illness Care Services in Project Areas During Baseline and Follow-up Years

| | Area | % Population Using Service | | % Increase/Decrease |
|---|---------------------------------|----------------------------|-----------|---------------------|
| | | Baseline | Follow-up | |
| General population illness care services provided by government health services for estimated episodes in past year | E ₁ | 26.2% | 55.8% | +29.6% |
| | E ₂ | 18.1% | 34.0% | +15.9% |
| | E ₁ + E ₂ | 19.0% | 36.5% | +17.5% |
| | C ₁ | 12.6% | 21.1% | +8.5% |

VI. IMPACT ON THE POPULATION'S HEALTH

Fertility rates decreased substantially in all project areas, including control areas. The crude birth rate for the province decreased consistently over the period observed. These changes, however, appear to represent general trends, similar to other areas of northern Thailand, and should not be attributed to project interventions. Despite the increased rates of utilization of health services and general improvements in household environmental conditions (particularly in improved water supply

and waste water disposal), little change was observed in the health or nutritional status of the target populations or of the general population. The slight effects observed cannot be clearly attributed to project interventions.

VII. IMPACT ON COST-EFFECTIVENESS OF THE HEALTH SYSTEM

The total service output of the strengthened provincial integrated health services system increased greatly, although the average service output of individual rural health facilities has not generally increased. The overall increase was a result of (1) the substantial contribution of community health volunteers and (2) the increased number of rural health personnel and facilities. Community health volunteers and personnel of rural health facilities delivered increasing proportions of total health services, and the provincial hospital's proportion decreased. The unit costs of delivering family planning and medical care services decreased as a result of the substantial contribution of community health volunteers. However, the overall costs of health care have sharply increased at the national and provincial levels. Costs per service contact of all types have increased at all government health care facilities.

VIII. FEASIBILITY OF REPLICATION NATIONWIDE

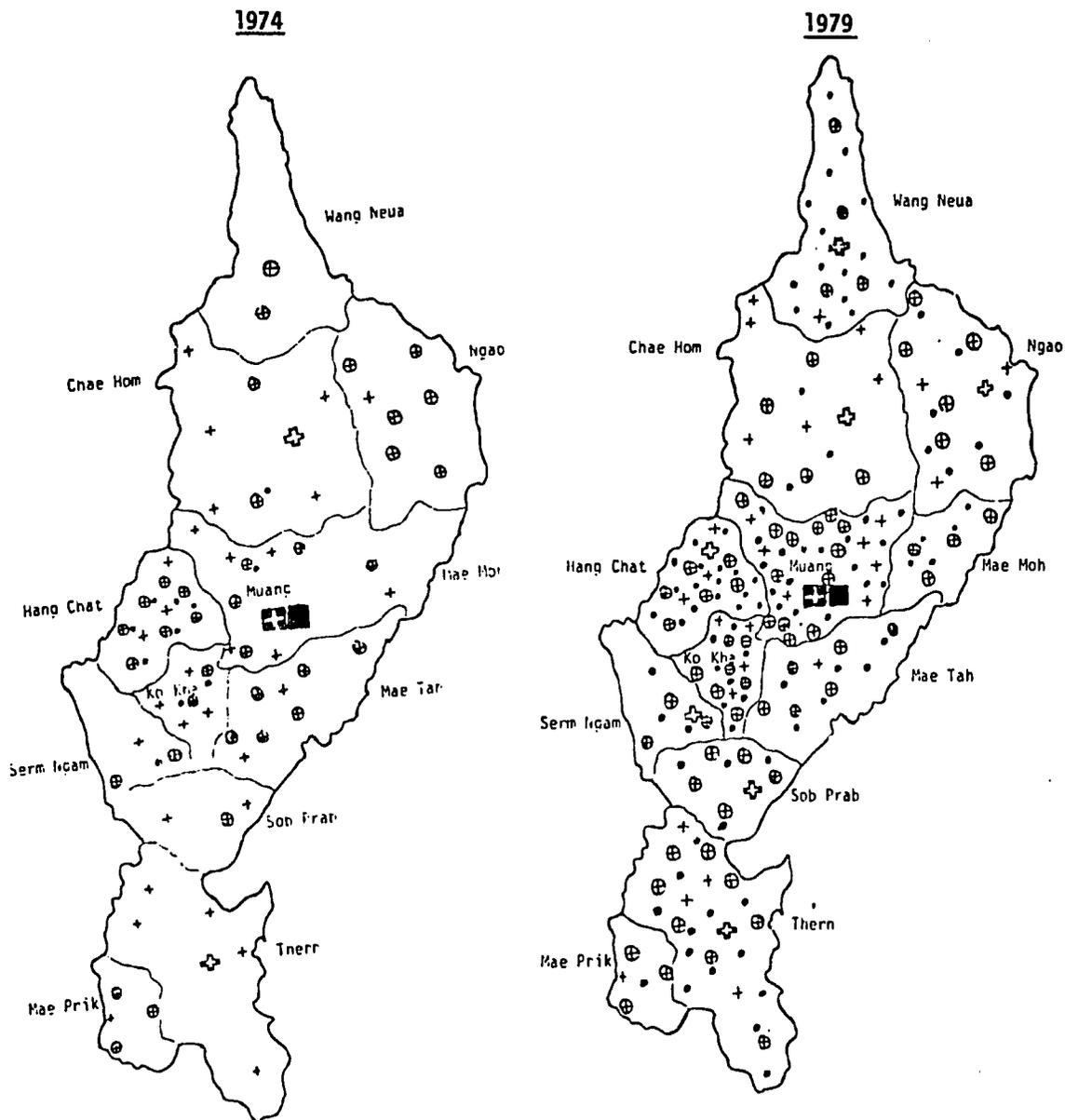
The feasibility of replicating the project's key features nationwide is clearly evidenced by Thailand's National Health Policy and Plan and by the Fourth and Fifth National Social and Economic Development Plans (1977-1981, 1982-1986). In 1977, the MOPH launched a nationwide village health volunteer and health communicator training program which virtually reached its target in 1981 to cover 22,400 villages, 50% of all rural villages in the country. Remaining villages and urban areas will be covered by the end of 1986. Paraphysician training, adapted from wechakorn paraphysicians in Lampang, emerged in two different national plans in 1977: (1) A national plan for training nurse practitioners which produced 495 nurse practitioners by the end of 1981. (2) A national plan for training all rural health center midwives and sanitary health workers in medical care under which 2,202 workers have been trained. The unit training costs of these national programs are substantially lower than those in Lampang. The MOPH has begun implementation of a national plan to develop Departments of Community Health in all provincial hospitals and has promoted reorganization of provincial health offices along the lines of the reorganization in Lampang. Community participation and private sector involvement in health are cornerstones of the National Primary Health Care Program, launched in 1977. In 1979, the Cabinet approved the principle of Primary Health Care as a National Health Development

policy. And, in 1981, the National Health Development Network was established as an integral component of the National Social Development Center of the National Social and Economic Development Board, effectively linking the MOPH and the Bureau of State Universities for long-term collaboration in health services and manpower development, health research, and disease prevention and control.

"Thailand's action plan on health development is...undertaken within the framework of primary health care which concentrates on basic manpower development with emphasis on wider coverage of the rural populations, comprising primarily village health volunteers and health communicators, supplemented by local healers, traditional birth attendants and traditional practitioners. By the end of this year (1981), the program is expected to cover 22,400 villages -- or 50% of Thailand's rural population. By 1986, all rural villages will be covered...In addition, the Ministry of Public Health is aiming to provide an infrastructure of one health center in every subdistrict, one 10-30 bed hospital in every district, and one hospital with 240-360 beds in every province. Apart from a national health development network, key health-related sectors are included in multi-focus planning and coordinating bodies... Medical schools, the Medical Council, and training institutions for medical auxiliaries have cooperated in re-orienting their curricula to include primary health care concepts and approaches."

- Dr. Prakorb Tuchinda, Under-Secretary of State for Public Health, Ministry of Public Health.
Bangkok Post, 31 July 1981.

LAMPANG PROVINCIAL HEALTH SYSTEM



| LAMPANG PROVINCIAL HEALTH SYSTEM | | 1974 | 1979 |
|----------------------------------|---------------------------------|------|-------|
| ■ | Provincial Health Office | 1 | 1 |
| ⊕ | Provincial Hospital | 1 | 1 |
| ⊕ | District Hospitals | 2 | 7 |
| ⊕ | Subdistrict Health Centers | 36 | 70 |
| + | Village Midwifery Centers | 31 | 30 |
| • | Village Child Nutrition Centers | 11 | 100 |
| | Village Health Posts and HPVs | 0 | 918 |
| | Village Health Communicators | 0 | 5,359 |
| | Trained Traditional Midwives | 0 | 352 |

**SUMMARY FINAL REPORT
OF THE
LAMPANG HEALTH DEVELOPMENT PROJECT**

**Monograph 12
Lampang Health Development Project Documentary Series
1981**

PROJECT DEVELOPMENT AND AREA BACKGROUND

ORIGIN AND DEVELOPMENT OF PROJECT

Health leaders in Thailand have long recognized the need to strengthen the government health care delivery system and extend basic health services to the majority of the Thai population, 85 percent of which resides in under-served rural areas. During the 1960s, the rural population which was growing at over three percent a year suffered primarily from easily-diagnosed and simply-treated conditions, such as communicable and infectious diseases common in Southeast Asia, diseases of pregnancy and childbirth, malnutrition, gastrointestinal problems, skin infections, and accidents. Scarcely 25 percent of the rural population had convenient access to government health facilities; and even where such facilities were available they were often not utilized. Only 15 to 17 percent of the rural population would seek health care from government facilities and personnel. Only 2 to 3 percent of the national budget was allocated to health services, and the limited numbers of trained medical and health personnel gravitated to Bangkok and other urban centers.

In 1971 the United States Agency for International Development in Washington (AID/W) contracted the American Public Health Association (APHA) to develop and evaluate new approaches for integrated rural health care delivery systems for improved health, population, and nutrition services in the developing world. The USAID-APHA contract called for "long-term (up to eight years) pilot, experimental work to be carried out in four representative less-developed country locations... with a large population base (500,000 or more) in such a manner that general conclusions on accessibility, acceptability, and affordability can be drawn."¹

In 1972, the APHA approached the Royal Thai Government (RTG) and the University of Hawaii to elicit their interest in collaborating on a "DEIDS" (Development and Evaluation of an Integrated Health Delivery System) project for Thailand. In 1973, a joint team from USAID, APHA, and the University of Hawaii School of Public Health (UHSPH) reached agreement in principle with the Thai Ministry of Public Health (MOPH) to plan a "DEIDS" project for Thailand. A health professional was recruited by APHA and UHSPH to work with the Ministry to plan the project.

The plan for the DEIDS/Thailand Project was completed by late 1973 and was submitted, approved and funded in 1974.

The "DEIDS/Thailand Project" was inaugurated in September 1974, with the Royal Thai Government (RTG) and the APHA signing the project agreement for development and evaluation of a health delivery system in Lampang Province. In December the University of Hawaii contracted with the American Public Health Association to provide technical assistance to the RTG in support of the DEIDS/Thailand Project. The administrative and collaborative structure of the Project provided for "central funding" from AID/W (under the AID-APHA/DEIDS Contract), a Project Agreement between APHA and the RTG to provide financial assistance, and a subcontract between the APHA and the UHSPH to provide technical assistance. The Project, approved by the Cabinet of the Royal Thai Government, was administered by the Ministry of Public Health and implemented by the Ministry's Department of Health and the Lampang Provincial Health Office. The Government's role in planning the Project and its steadfast commitment to the goal and objectives of the Project have been noteworthy.

AREA BACKGROUND

The province of Lampang was selected by the Ministry of Public Health to be the site for the "DEIDS/Thailand Project," now best known as the "Lampang Health Development Project." Criteria for selection as the project site included: (1) a population over 500,000, (2) fair communications to and within the province, (3) a noninsurgency area, (4) moderate economic status, and (5) endorsement by provincial officials.

Lampang is one of 16 provinces in the northern region of Thailand and is located centrally within the region. Lampang had an estimated population of about 660,000 in 1979 in an area of 12,518 square kilometers (4,890 square miles). The population growth since 1970 has averaged 1.8 percent per year. In 1974, the province had 11 districts, 75 subdistricts, and 538 villages. As of this writing, the province has 12 districts, 78 subdistricts, and 592 villages. The provincial center, Lampang town, has a population of about 50,000.

Lampang is located on the rail lines between Bangkok and Chiang Mai and on the main highways linking Bangkok and Chiang Mai, Chiang Rai and other major points in the northwest. The population is predominantly Buddhist and rural; the economy is largely agricultural. Rice is the main crop; others include

peanuts, pineapple, tobacco and sugar cane. Because of its location along communication arteries, agro-processing plants have been established, including major canning facilities and usgar processing plants. Lamphang also derives income from extractive industries, such as timber, wolfram, tin, fluorite, and lignite. In one district, a lode of lignite has been discovered, stimulating the development of a large power generating plant using lignite as fuel. There is also a variety of cottage industries producing wood carving, decorative weapons, and pottery.

PRE-EXISTING HEALTH SERVICES

When the Lamphang Project began field operations in late 1974 there was one provincial hospital with 300 beds, a staff of 16 physicians and 58 nurses, an average daily occupancy rate of 100 percent, and a daily out-patient load of from 300 to 500 patients. Provincial hospitals provide basic curative health services. Patients requiring more sophisticated care were referred to the teaching hospitals in Chiang Mai or Bangkok. Male and female sterilization, as well as IUDs, birth control pills, and Depo-Provera injections were available in the hospital's family planning unit. Subdistrict Health Centers provided first aid and emergency treatment for minor illness and injury, pre- and post-natal care, deliveries, child and school health services nutrition center services, family planning services (including pill and condom distribution) and sanitation and environmental health services. Midwifery Centers offered pre- and post-natal care, deliveries, and family planning services (including pill and condom distribution). Three of the province's 11 districts had district hospitals, but only two of these had a physician in attendance. District hospitals provided clinical care for most acute illnesses, trauma episodes and minor surgery, along with short-term, acute in-patient care. They also provided the full range of maternal and child health and family planning services (including vasectomy, IUD insertion, pills, and Depo-Provera injection).

Twenty-six of the province's 75 subdistricts had a health center staffed by a sanitarian and a midwife. In addition, there were midwifery centers located in 33 of the province's 538 villages.

Within the provincial health office there were units for communicable disease control, venereal disease control, and epidemiology. There were also a malaria control unit, a regional sanitarian center, a leprosy control center, and a regional midwifery school located in the health service complex. In addition to government-sector health services, there were at least 20 private medical clinics in Lamphang town (staffed mostly by hospital physicians in nonofficial hours),

and two private hospitals of 25 to 50 beds each. In the rural villages there were a variety of indigenous practitioners, such as, herbalists, injectionists, traditional birth attendants, magical and spirit doctors.

PROJECT PURPOSE, STRATEGY AND RATIONALE

The Lampang Health Development Project was primarily designed to develop and demonstrate a low-cost, multi-purpose delivery system in Lampang Province which, at a minimum, would provide family planning services integrated with maternal, child nutrition and other basic health services to two-thirds of the women of reproductive age and children under six at a cost not to exceed resources available to the Province. An important element of the Project strategy was to thoroughly test the system for replicability in order to gain useful experience which could be applied to the establishment of low-cost integrated systems elsewhere in Thailand and in other countries.

Given the limitations of budget, trained health manpower, health facilities and other resources needed for implementing and maintaining a viable and effective health delivery system, planners of the Lampang Project sought ways to expand health services that would be the most cost-effective. They recognized that it would be far too expensive to build enough facilities and train enough physicians to cover the target groups. Therefore, project planners decided to retrain existing categories of health workers (nurses, midwives, and sanitarians) to enable them to provide a limited range of relevant curative services. These community health para-physicians, called wechakorn*, were trained to significantly extend clinical care services in the subdistricts (population about 5,000). A patient referral system was planned to link all service facilities thereby providing for more sophisticated clinical care by physicians.

The planners believed that an integrated system providing a combination of curative, disease prevention, and health promotion services -- with special emphasis on nutrition, family planning, and maternal and child health services -- would be more cost-effective than fragmented single-purpose services. They also believed that integrated services would be more comprehensive, convenient, and acceptable to consumers. Hence, the Lampang Project strategy was to integrate previously separate health services and to strengthen the existing health system infrastructure.

Community organization and community participation in an expanded health system was considered essential. The mobilization of available community private sector resources would vastly increase the coverage of the coordinated government primary health care providers. It was felt that community health volunteers could be supervised and guided by the wechakorn and other health workers at the nearby health center, and that the wechakorn could provide the first referral point for community health volunteers. It was recognized that most rural deliveries are performed by traditional birth attendants. Thus, rather than attempt to change this pattern, plans were made to train the traditional birth attendants in more sanitary practices and to recognize conditions requiring more skilled attention.

PROJECT OBJECTIVES AND KEY FEATURES

The specific objectives of the Lampang Health Development Project were:

- (1) To expand health care coverage to at least two-thirds of the rural population, especially women in their child-bearing years and pre-school age children, with an emphasis on family planning, nutrition, and maternal and child health services.
- (2) To establish a model integrated provincial health service delivery system which extends integrated curative-preventive-promotive health services to every village through trained community health volunteers.
- (3) To establish a provincial health care system that is more cost-effective, meaning "lower-cost" per service unit, the key features of which can be replicated nationwide within the limitations of Royal Thai Government resources.

The Project's key features included the following innovations and modifications to the provincial health system:

- (1) Reorganization and strengthening of the provincial health service infrastructure by:
 - (a) Integrating curative, disease prevention, and health promotion services by coordinating and administering them under a single provincial health administration.
 - (b) Establishing a Department of Community Health within the Provincial Hospital.

- (c) Improving management and supervisory practices, in part by developing a practical management information system.
- (2) Development of community health paraphysicians (wechakorn) to overcome the lack of skilled curative services available at the periphery. Ninety-two wechakorn, recruited from among nurses, midwives, sanitarians, and nurse aides were trained for one year in the provincial and district hospitals, after which the majority returned to assignments in subdistrict health centers.
- (3) Deployment of three types of community health volunteers in every village of the province. At least one health post volunteer (HPV) and, where available, one traditional birth attendant (TBA) were trained for each of the province's 545 villages, making primary health care services, including nonprescription drugs, accessible to every villager in the province. To assist the health post volunteers, groups of health communicators (HC) were also trained, one for every ten or twenty families, providing a network of advice, referral, and health information in every household.
- (4) Stimulating community and private sector involvement. Community support was actively sought through the formation of village health committees, who select volunteers and provide local support to them once they are in place. Efforts were made at the local level to involve private organizations, health care providers and others with important roles in village health care and development (e.g., the Rotary and Lions Clubs, druggists, private clinics).

Figure 3 of the preface provides a summary of how the inputs of the Lampang Project modified and supplemented the pre-existing provincial health system in order to expand its reach and improve its range of rural health services.

PROJECT ORGANIZATION

To describe the Lampang Project organization is a complex task because project personnel included existing staff members from the provincial health organization, professionals assigned from other units within the Ministry of Public Health and other government agencies, as well as other technical and administrative staff hired specifically for the project. Project field operations -- delivery of services, training, supervision, management -- were carried out by resident provincial health staff. Those who came to the project from the outside acted as planners and stimulators, helping to introduce and evaluate the new approaches that were the heart of the Lampang Project. In the final analysis, it is the provincial health organization that must deliver health services to the population of Lampang. The Lampang Project aimed to make this organization more pervasive, more efficient, more integrated, more community-oriented, and more affordable.

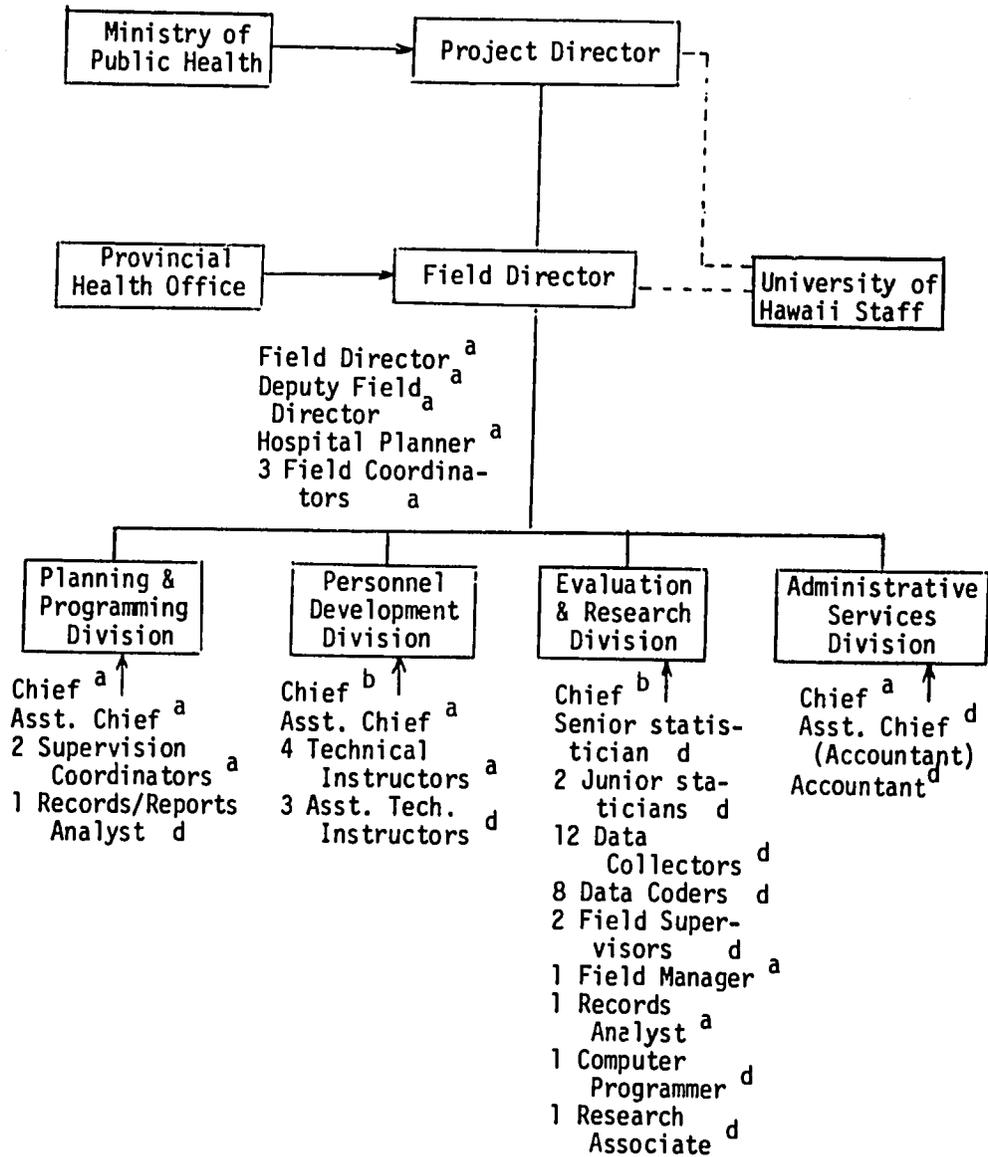
One activity which is not normally a responsibility of the provincial health organization (and one for which it is not equipped) is project evaluation. Evaluation activities were carried out by special evaluation staff with necessary coordinating support from the province. Project evaluation staff assisted the provincial health staff in strengthening its own information and analysis systems.

The Lampang Project was organized into a number of components to assist Project implementation at the provincial level and to coordinate support from the central ministry in Bangkok. Figure 1 outlines the general Project organization and staff. The Project Director has been the Director General of two of the five departments within the Ministry (Department of Health and Department of Communicable Diseases Control). The Project Director took responsibility for coordinating all support with the various agencies both inside and outside the Ministry of Public Health, and he established a Project office within the Department of Health. In Lampang Province, the Project Field Director oversaw Project operations at the provincial level, and all Project division chiefs reported to him. Because the overall goal of Project operations was to improved coverage and delivery of health services within the province, it was recognized from the outset that the Field Director must also be a senior provincial health official. Consequently, the Project Field Director was also the Provincial Health Officer for the entire duration of the Project.

Under the Field Director were four Project Divisions: the Planning and Programming Division, the Personnel Development Division, the Evaluation and Research Division, and the Administrative Services Division.

Figure 1

Lampang Project Organization and Key Personnel



- ^a Regular MOPH or Lampang Provincial Health Personnel
- ^b Special assignment personnel from RTG agencies (including MOPH and institutions).
- ^c US Personnel (University of Hawaii).
- ^d Hired from private sector.

The Planning and Programming Division had responsibility for assisting the provincial health staff in planning and implementing the various modifications and innovative approaches in the Project. The small staff of five professionals assisted health staff at all levels of the province in selecting the paraphysician wechakorn, in organizing the village committees, in selecting village health volunteers, in stimulating participation from private sector groups, and in organizing programs of special emphasis, such as nutrition services and expanded family planning services. In short, the Planning and Programming Division was responsible for assistance in planning all activities related to service delivery. In the latter stage of the project, the functions of the division were incorporated into those of the provincial health office and the project division was no longer needed.

The Personnel Development Division, with a staff of training specialists, had responsibility for planning and implementing all training and orientation required to implement the various project approaches. This included the design and development of the wechakorn paraphysician curriculum, organizing the training schedule in cooperation with the provincial hospital and other health facilities, and preparing all related training materials. It also included developing a two-week training curriculum and field-training programs for the health post volunteers and traditional midwives, and the two-day training sessions for the health communicators. In addition, the division organized orientation programs for the various service and supervisory personnel at the provincial level. It also implemented a training-for-trainers program for provincial staff responsible for field training. The Personnel Development Division prepared all teaching materials and aids needed for each of the training programs, and drew on a wide range of experience available at other training institutions for assistance.

The Evaluation and Research Division had responsibility for monitoring project progress and for measuring its impact on service delivery and on the health status of the target population. Because the demands of the evaluation process were unique and not expected to continue beyond the project, evaluation was considered to be a health service activity. The Evaluation Division carried out its activities with its own personnel. Given its wide range of activities, the Evaluation Division had the largest staff of all Project divisions.

The Division of Administrative Services was set up to administer financial and administrative services. It prepared the project budget, oversaw project expenditures, controlled fiscal and administrative procedures, and prepared all required financial reports.

In addition to the project divisions, a technical assistance staff of three (reduced to two in 1978) faculty members of the University of Hawaii School of Public Health worked as integral members of the Project staff, providing technical consultation in the areas of planning and management, manpower development, evaluation and research. They also assisted in coordinating Project activities with international agencies. The American Public Health Association monitored and managed the project during 1974 through 1979, and the University of Hawaii monitored and managed the Project during the final period 1980 through 1981.

PROJECT DESIGN AND GEOGRAPHICAL PHASING OF IMPLEMENTATION

The Project design was a quasi-experimental, pre-test/post-test type, with two control areas, one within Lampang Province and one outside of Lampang Province. In the Lampang operational area there were three sequentially-phased experimental areas which were designated E_1 , E_2 and E_3 .

Phase one, from October 1974 to October 1976, involved the pilot district, E_1 . Phase two, from October 1976 to 1978, covered seven districts, designated E_2 . Phase three, from October 1978 to 1979, extended the project to the three districts of the E_3 area and finally, to the one control district within the province, C_1 .

COMMUNITY HEALTH VOLUNTEERS
AND PRIMARY HEALTH CARE

When project implementation began in 1974, international health specialists were greatly interested in new concepts for health development which were termed "primary health care". It was coincidental that many of the elements of the Lampang Health Development Project such as community participation, community health workers, private sector involvement, and community-based health and development activities were similar to elements of the primary health care approach promoted by leaders of the World Health Organization. Because of these similarities, the Lampang Project quickly became identified as a "primary health care" project.

COMMUNITY PARTICIPATION AND COMMUNITY HEALTH VOLUNTEERS

The Lampang Project drew on locally available resources -- primarily manpower, the most available village resource -- as a central strategy of the Project. The basic hypothesis was that if local health volunteers were mobilized and trained to provide basic health services, there would be a great increase in coverage of the population with basic health services, an increased acceptance of these services because of the general acceptability of local health care providers and respected local leaders who would participate, and increased cost-effectiveness of the overall health system because of the low cost of mobilizing local volunteer manpower.

A community health volunteer network was created consisting of:

- (1) Health Post Volunteers -- 1 for every village
 (or Village Health Volunteers) (or 2 for larger villages)
- (2) Health Communicators -- 1 for every 10 to 20 households
- (3) Trained Traditional Midwives -- 1 for every 1 to 3 villages, as available

The community health volunteer network was established to provide an essential link between the village communities and the rural health service infrastructure -- district hospitals staffed by a few nurses and doctors and subdistrict health centers and midwifery centers staffed by government midwives and sanitarian health workers.

Project leaders believed that two elements were crucial for the network of community health volunteers to perform effectively: (1) functional linkages with the government health care system for referrals, technical guidance, and when needed, materials and logistics support, and (2) organized community effort through the role of village health committees. The training and deployment of wechakorn to every subdistrict health center and district hospital, and the motivation of other health center personnel are two important elements of the Lampang approach for establishing viable long-term support for community health volunteers, health committees, and primary health care activities at the village level.

COMMUNITY HEALTH VOLUNTEER TRAINING

Health Post Volunteers (HPV, VHV)

Health post volunteers were trained by local health personnel, other government officials, and training staff of the Lampang Project's Division of Personnel Development. The two-week training was conducted in the local area, usually at the district hospital or a health center, for groups of twenty to thirty trainees.

The training objectives were in accord with the planned role and expected activities of the health post volunteers. At the completion of ten full days of training health post volunteers were expected to be able to: (1) provide simple first-aid and illness care using household medicines, (2) provide health promotion and disease prevention information, (3) promote nutrition care, (4) provide family planning information, condoms and birth control pills, (5) refer patients with serious injuries and illnesses, (6) supervise health communicators, (7) keep a health post log, and (8) help coordinate government health activities.

Traditional Birth Attendants

Traditional midwives were trained at the Regional Midwifery School in Lampang in a two-week course. At the end of training, each traditional midwife was expected to be able to: (1) conduct normal deliveries using the aseptic technique, (2) refer patients with complications, (3) report births, (4) give advice concerning the use of other health care services, (5) advise about nutrition, (6) promote family planning, and (7) distribute condoms and birth control pills.

Each of the 352 traditional midwives trained by the Lampang Project is supervised by the government midwife, who is stationed at the midwifery center closest to her, or by a wechakorn, nurse, or midwife stationed at the local subdistrict health centers.

Village Health Communicators

Village health communicators were trained in groups of 50 to 100 in a two-day course conducted by local health officials and other government officials at a local school or temple. At the completion of training, each village health communicator was expected to be able to: (1) advise concerning health care services, (2) disseminate health information, (3) assist in implementing village health activities, (4) report births, deaths and migrations.

Village health communicators were oriented to work directly under the supervision of the village health post volunteers. Being popular local residents and "good communicators", they are employed primarily for health promotional purposes. Covering 10 to 20 households each, they can readily spread information and influence their friends and neighbors to accept health services offered by the mobile unit, the nutritional surveillance team and the sanitation workers who come to discuss water supply improvement. The village health communicators are a potentially strong force for rapid and effective communication of health activities and health promotion when they are properly guided, supervised and motivated.

COMMUNITY HEALTH VOLUNTEER ROLES

Upon completion of training, each HPV returned to his or her village and established a small area at home which serves as a consultation area when neighbors come for help. This consultation area usually has a bed for examining and treating. It also has a small medicine cabinet to store simple non-prescription medicines which the HPV sells to his patients each month. The medicines are provided to the HPV through a revolving fund, and the volunteer sells medicines inexpensively as possible, but with an allowance for a small profit.

After completing each patient contact the HPV records an entry into his daily log of patient contacts. This record assists the local health worker to supervise the HPV by seeing whether the latter has given the proper treatment for the diagnosed ailment. In addition, the log allows the health worker to know which health problems are most prevalent in the community, as well as which of the HPV's supplies must be replaced. By helping his neighbors in times of need, the HPV establishes his credibility which facilitates the introduction of preventive and promotive health care in his community.

Table 1

Summary of Community Health Volunteer Training in Lampung

| | Health Post Volunteers | Traditional Birth Attendants (midwives) | Health Communicators |
|------------------------|--|--|--|
| 1. Main Job | Provide primary health care services | Perform normal deliveries and assist MCH | Provide health, FP, nutrition information |
| 2. Background | Local literate residents | Practicing TBA | Local resident, local volunteer village committee member |
| 3. Selection Method | Village health committee | Local health officials and village health committee | Sociometry for few, village health committee for most |
| 4. Training: | | | |
| Duration | 10 days (60 hrs) | 10 days (54 hrs) | 2 days (12 hrs) |
| Place | District hospital | School of Midwifery | School or temple in village |
| Curriculum | | | |
| MCH | 4% | 69% | 8% |
| Nutrition | 4% | 9% | 16% |
| FP | 4% | 9% | 8% |
| Preventive & Promotive | 12% | 9% | 33% |
| Supportive Treatment | 11% | 4% | 35% |
| Treatment | 65% | - | - |
| Trainers | District hospital and subdistrict health staff | Provincial and midwifery school staff | Local health officials |
| Special Training | Agriculture | - | - |
| 5. Service Area | 1-2 for each village | Less than one per village | 1 for 10-15 households |
| 6. Logistics: | | | |
| Supervision | By local health officials | By local health officials | By HPV and local health officials |
| Support | Village committee, local health officials & district coordinator | Local health officials | Village health committee |
| Incentive | Rotating fund for medicines FP pills and supplies given free to HPV's Free medical care for family; small income from sale of medicines and contraceptives | FP pills and supplies given free to a few TBA's Free medical care | Free medical care |
| Total Trained | 873 | 352 | 5,359 |

Source: Lampung Health Development Project, Personnel Development Division Records, 1974-1979

Table 2
Profile of Community Health Volunteer Characteristics

| | Health Post Volunteers | | Traditional Midwives | | Health Communicators | |
|-------------------|------------------------|----------|----------------------|----------|----------------------|----------|
| | Number | % | Number | % | Number | % |
| <u>Total</u> | 873 ^a | 100% | 352 | 100% | 5,359 | 100% |
| Male | 711 | 81% | 1 | Under 1% | 3,444 | 64% |
| Female | 162 | 19% | 351 | 99+% | 1,920 | 36% |
| <u>Age</u> | | | | | | |
| Under 20 years | 14 | 2% | 0 | 0 | 308 | 6% |
| 20-29 | 245 | 28% | 10 | 3% | 1,557 | 29% |
| 30-39 | 309 | 35% | 46 | 13% | 1,702 | 32% |
| 40 and over | 305 | 35% | 296 | 84% | 1,792 | 33% |
| <u>Education</u> | | | | | | |
| None | 11 | 1% | 154 | 44% | 104 | 2% |
| 1-4 years | 733 | 84% | 193 | 55% | 4,442 | 83% |
| 5-7 years | 65 | 7% | 5 | 1% | 575 | 11% |
| 8 or more years | 56 | 6% | 0 | 0 | 172 | 3% |
| Other/Unknown | 8 | 1% | 0 | 0 | 76 | 1% |
| <u>Occupation</u> | | | | | | |
| Agriculture | 747 | 86% | 317 | 90% | 4,474 | 83% |
| Trade | 85 | 10% | 8 | 2% | 408 | 8% |
| Agriculture+Trade | 5 | Under 1% | 1 | Under 1% | 0 | 0 |
| Other | 32 | 4% | 25 | 7% | 459 | 9% |
| Unknown | 4 | Under 1% | 1 | Under 1% | 18 | Under 1% |

Source: Personnel Development Division, Lampang Project, 1974-1979

^a Does not include 45 HPVs trained by CBFPS in Ngao District (where there are no health communicators).

Health Post Volunteer Activity

Table 3 provides an overall summary of health post volunteer performance and activities derived from their monthly reports. The table reflects the phased geographical implementation that began with one district and gradually added other districts.

Table 3
Selected Health Post Volunteer
Performance Data, 1975-1979 ^a

| Year | No. of Dis-tricts | No. of HPV's | Total No. HPV Contacts | Av. No. Contacts /HPV per Annum | Av. No. Med. Care Contacts/ HPV/Annum | Av. No. Referrals /HPV per Annum | Av. No. FP Con-tacts/ HPV/Annum | Av. No. Pill Cycles Distributed /HPV/Annum |
|------|-------------------|--------------|------------------------|---------------------------------|---------------------------------------|----------------------------------|---------------------------------|--|
| 1975 | 1 | 72 | 9,833 | 137 | 56 | 1.3 | 13 | 13 |
| 1976 | 1 | 75 | 14,623 | 190 | 65 | 4.0 | 22 | 28 |
| 1977 | 4 | 270 | 34,125 | 128 | 89 | 3.5 | 14 | 23 |
| 1978 | 8 | 490 | 95,089 | 194 | 137 | 4.2 | 33 | 62 |
| 1979 | 9 ^b | 618 | 199,059 | 322 | 196 | 5.0 | 130 | 143 |

^a These data underestimate the actual performance of the volunteers by 13-16%, due to under-reporting.

^b 9 of 12 districts included. No reports available for Mae Tah, the C₁ control area, and for Serm Ngam. Also, CBFPS volunteers in Ngao district are not included.

Source: Monthly Health Post Volunteers Reports, Lampang Provincial Health Office and Division of Evaluation and Research, Lampang Project.

The overall volume of HPV services and the volume of services provided per HPV generally increased over time. Although there was an overall dip in total contacts per volunteer in 1977, there was a strong upsurge in the final two years. The sharpest increase in volunteer activity was for family planning. Family planning performance by health post volunteers was modest through the first three years of the Project, but in 1978 and 1979, after increased emphasis, oral contraceptive distribution by the health post volunteers expanded dramatically.

Figure 2 suggests that with each succeeding group, the time required to reach a relatively high level of performance became shorter and shorter. Also when the performance data is separated by area, the overall dip in the volunteer performance in the 1977 period disappears.

Figure 2

Average Number of Medical Care and Family Planning
 Contacts Per Health Post Volunteer Per Annum, by Operational Area
 1975-1979

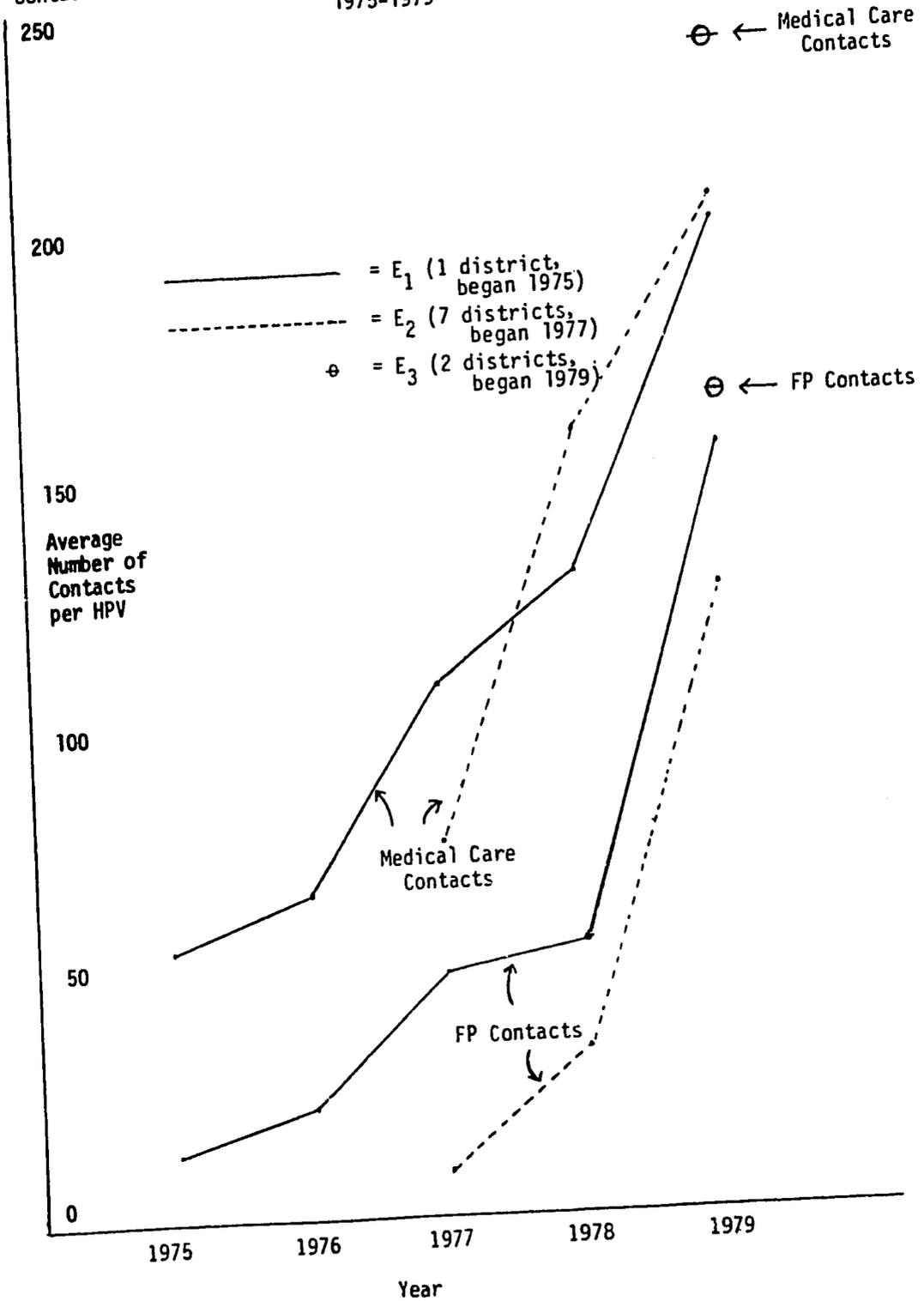


Table 4 summarizes the simple medical care and first aid activities of health post volunteers in 1979, when all Project field components had become fully operational. HPV's saw 196 villagers each year, or slightly more than 16 each month. In 1979, volunteers referred about 2.5 percent of all medical care contacts. This data suggests that most of the people who came to the health post volunteer for care had relatively minor ailments.

Table 4

Health Post Volunteer Performance in Provision
of Medical Care Services in 9 Districts, 1979^a

| District | Experimental Area | No. HPV's | % Reporting | Med. Care Contacts /HPV | Est. Med. Care Contacts/1000 Population ^b | % of Cases Referred |
|----------------------|-------------------|-----------|-------------|-------------------------|--|---------------------|
| Hang Chat | E ₁ | 75 | 94.6 | 206 | 363 | 0.8 |
| Muang | E ₂ | 141 | 96.6 | 125 | 133 | 1.2 |
| Mae Moh | E ₂ | 29 | 91.5 | 162 | 244 | 1.5 |
| Koh Kha | E ₂ | 69 | 84.5 | 328 | 459 | 0.4 |
| Sob Prab | E ₂ | 34 | 62.0 | 221 | 357 | 2.6 |
| Thern | E ₂ | 87 | 91.7 | 120 | 196 | 1.0 |
| Mae Prik | E ₂ | 21 | 98.4 | 155 | 249 | 0.7 |
| Wang Neua | E ₃ | 58 | 90.1 | 232 | 362 | 9.5 |
| Jae Hom | E ₃ | 104 | 64.8 | 248 | 400 | 3.9 |
| Total | | 618 | - | - | - | - |
| Average per District | | 69 | | 196 | 279 | 2.5 |

^a Three districts excluded: CBFPS volunteers in Ngao District do not report medical care activities, and no activity reports available for the control district, Mae Tah, or for Serm Ngam District.

^b Population estimated from provincial population estimates in 1978.

The overall rate of volunteer medical care contacts was 279 medical care contacts per 1,000 population. Table 5 shows the proportion of medical care services provided by health post volunteers in comparison with rural health facilities and the provincial hospital.

Although the quality and content of the specific services provided are not the same, Table 6 does reflect the relative frequency of interaction of the volunteers in comparison with other medical care providers. In 1979, health post volunteers accounted for over 28% of all medical care contacts.

Table 5

Proportion of Medical Care Service Contacts Provided by
Health Post Volunteers and by Government Health Facilities,
1979

| Provider | N | % of Total Provincial Medical Care Services | N | % of Total District-Level Medical Care Services |
|--------------------------------------|---------|--|---------|--|
| Health post volunteers | 81,787 | 28.3% | 81,787 | 44.6% |
| Rural health facilities ^a | 101,652 | 35.2% | 101,652 | 55.4 |
| Provincial hospital | 105,444 | 36.5% | | |
| Total | 288,883 | 100.00% | 183,439 | |

^a Rural health facilities = district hospital + subdistrict health centers
+ midwifery centers

Source: Monthly reports on Health Post Volunteers, Lampang Provincial
Health Office and Division of Evaluation and Research, Lampang
Project

In 1979, each volunteer had an average of 130 user contacts and distributed 143 pill cycles. In other words, each volunteer, on the average, provided a full year's supply of pills to about 12 women.

To gain some estimate of the magnitude of volunteer family planning activity, Table 6 summarizes volunteer family planning activities as a part of overall government family planning activity in each district.

The family planning user contacts at the provincial hospital were excluded so that the volunteer's proportion of user contacts and pill distribution at the peripheral level could be estimated. In 1979, 4% of all pill cycles were distributed by health post volunteers, while 63% of total birth control pill user contacts were made by HPV.

The data in Table 6 reflect the proportion of total government pill services that are attributable to health post volunteers. However, as with medical care, this does not directly reflect the proportion of women who are actually being served by health post volunteers. The Community Health Survey conducted by the Project in 1979 indicated that 34% of the women using oral contraceptives in the E₁ district said they received their pill supply from health post volunteers, whereas in the seven E₂ districts, 21% of the current pill users said they received their supply from health post volunteers.

Table 6
Health Post Volunteer Contribution to Government
Family Planning Services at the District
Level, 1979

| District | Experi- mental Area | Total FP Pill User Contacts in District | Total FP Pill Cycles Distri- bution in District | Pill User Contacts by HPVs (% of Total) | | Pill Cycles Dis- tribution by HPVs (% of Total) | |
|-----------------------------|---------------------------|---|--|---|---------|---|---------|
| | | | | Number | Percent | Number | Percent |
| Hang Chat | E ₁ | 17,649 | 29,486 | 11,850 | 67.1 | 13,446 | 45.6 |
| Muang | E ₂ | 15,235 | 47,071 | 9,451 | 62.0 | 12,107 | 25.7 |
| Mae Moh | E ₂ | 6,033 | 7,460 | 4,321 | 71.6 | 4,810 | 64.6 |
| Koh Kha | E ₂ | 23,920 | 30,135 | 10,441 | 43.6 | 10,810 | 35.9 |
| Sob Prab | E ₂ | 6,575 | 7,758 | 5,658 | 86.1 | 5,699 | 73.5 |
| Thern | E ₂ | 12,745 | 18,039 | 9,729 | 76.3 | 11,487 | 63.6 |
| Mae Prik | E ₂ | 2,936 | 6,054 | 1,336 | 45.5 | 1,516 | 25.0 |
| Wang Neua | E ₃ | 23,924 | 31,398 | 17,010 | 71.1 | 17,571 | 56.0 |
| Jae Hom | E ₃ | 18,392 | 36,779 | 10,404 | 56.6 | 11,164 | 30.4 |
| Total for Nine Districts | | 127,409 | 214,180 | 80,200 | 62.9 | 88,610 | 41.4 |
| Ngao (CBFPS HPV) | | 10,374 | 27,353 | 2,213 | 21.3 | 2,213 | 8.1 |

Note: This table excludes family planning user contacts of the Provincial Hospital.
 Resource: National Family Planning Program reports for nine districts, HPV monthly reports, and CBFPS reports.

Health Post Volunteer Income

Health post volunteers receive a small profit from the household drugs they sell. They normally purchase their drugs wholesale at a 30 to 35% discount, and then sell the drugs at market prices.

In 1979, the annual income for health post volunteers was 270 baht, or slightly more than 21 baht (US\$1.05) per month. These are gross income figures; net profit would be much smaller.

Health Post Volunteer Attrition

Attrition of health post volunteers has been relatively modest over the course of project operations. Table 7 summarizes volunteer attrition from 1975 through 1979 and classifies the volunteer groups by the number of years of services. In no area did attrition of volunteer groups reach 20%, and the overall dropout rate for all volunteers trained during the five years is 17.5%. Experience in working with health post volunteers has suggested that dropouts can be kept to a minimum

Table 7
Health Post Volunteer Attrition Rates, 1975-1979

| Length of Volunteer Service | Number of Districts | Number HPVs Trained | No. HPVs Actually Working 12/79 | % Attrition |
|-----------------------------|---------------------|---------------------|---------------------------------|-------------|
| 5 years | 1 (E ₁) | 89 | 75 | 15.7 |
| 3 years | 3 (E ₂) | 255 | 206 | 19.2 |
| 2 years | 4 (E ₂) | 243 | 211 | 13.2 |
| 1 year | 2 (E ₃) | 162 | 162 | 0.0 |
| Overall for 5 years | 10 | 749 | 618 | 17.5 |

Source: Provincial Health Office and Lampang Project records.

if local health center workers are diligent in providing encouragement, technical guidance and support to the volunteers under their responsibility. In areas where district and health center level workers have taken an active interest and have provided regular guidance and support, attrition has been minimal.

An indication of the link between the government services and the health post volunteers is provided by the Project's Administrative Analysis in which 17% of all health post volunteers in both the E₁ and E₂ districts were interviewed concerning their activities and their perceptions on a variety of issues. When asked how frequently they had been visited by local health workers, 77% responded that they had been visited at least 10 times. More than 50% of all volunteers had been visited over 20 times. Given that most of the volunteers interviewed had been working two years or less, the frequency of visits is relatively high. When the volunteers were asked what person visited them most frequently, 45% mentioned the wechakorn, and almost 86% of all visits had been made by either the wechakorn, the local government midwife, or the male sanitarian worker -- the three members who staff rural health centers and midwifery centers. When asked which person the health post volunteer went to see most often for consultation, over 90% of the volunteers who had ever gone for consultation indicated they had gone to either the wechakorn, the male sanitarian worker, or the government midwife at the health center or midwifery center.

Traditional Birth attendants and Maternal Health Services

Table 8 presents the total number of services provided by all government-supported providers, and the proportion of those maternal care services that have been provided by traditional birth attendants and government facilities.

Given a birth rate that has been declining slowly for the past several years, the data for both E_1 and E_2 suggest that government-supported providers are increasing coverage of the target population, especially for delivery and prenatal care

Table 8

Maternal Care Services Delivered by Trained
Traditional Birth Attendants, Rural Health Personnel, and Provincial
Hospital Personnel in Areas E_1 and E_2 by Year, 1976-1979

| Type and Source of Service | Services by Year and Area | | | | | | |
|---|---------------------------|-------|-------|-------|--------|--------|--------|
| | E_1 | | | | E_2 | | |
| | 1976 | 1977 | 1978 | 1979 | 1977 | 1978 | 1979 |
| <u>Deliveries</u> | | | | | | | |
| Total No. served by govt. supported services | 712 | 753 | 756 | 853 | 4,318 | 5,056 | 5,052 |
| % by TBA | 33.6 | 27.1 | 15.7 | 18.9 | 3.2 | 16.0 | 11.4 |
| % by rural health personnel ^a | 24.7 | 25.5 | 46.6 | 50.6 | 12.9 | 15.2 | 14.6 |
| % by prov. hospital pers. | 41.7 | 35.5 | 37.7 | 30.4 | 83.8 | 68.8 | 73.9 |
| <u>Prenatal Care</u> | | | | | | | |
| Total No. contacts at govt. supported sources | 1,920 | 2,372 | 2,748 | 2,736 | 17,974 | 18,338 | 19,292 |
| % by TBA | 5.4 | 13.4 | 10.5 | 16.6 | 0.8 | 10.1 | 8.3 |
| % by rural health personnel | 39.0 | 44.1 | 41.4 | 50.8 | 11.3 | 13.3 | 21.7 |
| % by prov. hospital | 60.4 | 42.5 | 48.1 | 32.6 | 87.9 | 76.6 | 70.0 |
| <u>Postnatal Care</u> | | | | | | | |
| Total No. contacts at govt. supported sources | 441 | 611 | 832 | 719 | 2,188 | 3,158 | 2,872 |
| % by TBA | 25.9 | 48.6 | 56.3 | 72.3 | 9.3 | 74.0 | 68.5 |
| % by rural health personnel | 74.1 | 41.4 | 43.7 | 27.7 | 91.7 | 26.0 | 31.5 |

^aRural facilities = district hospital + health centers + midwifery centers

Data Source: Lampang Provincial Health Office records, 1976-1979

services. Prenatal services generally followed the same pattern as deliveries in both E_1 and E_2 , except that the proportion of total prenatal visits credited to the traditional birth attendant increased over 300% in the E_1 area, and the proportion of prenatal contacts credited to rural health facilities almost doubled in the E_2 area.

Data concerning post-natal contacts were not available for the provincial hospital, and therefore Table 8 only compares contributions of TBAs with those of rural health workers. But with post-natal contacts, a different pattern emerged in both the E_1 and E_2 areas: the traditional birth attendants appeared to have assumed a greatly increased level of responsibility for post-natal contacts, whereas the proportion of contacts credited to rural health facilities declined. From 1977 to 1979, the proportion of post-natal contacts credited to the traditional birth attendants increased 46.6% to 72% of the contacts recorded in E_1 , and they increased 59.2% to 69% of the contacts in the E_2 area. At the same time, the proportion of post-natal care service contacts credited to the rural facilities declined by 46.4% in E_1 , and by 60.2% in the E_2 area.

It seems clear that the role of the traditional midwife in maternal health care is still a significant one, and investment in training to improve the quality of maternal care they provide is therefore worthwhile. Overall, the contribution of the traditional midwife is still a major one in terms of total delivery care provided, although the precise magnitude, given these various data, is somewhat unclear. Adapting to their declining role, many traditional midwives who received training enthusiastically support family planning, and are important sources of motivation for new acceptors. With emphasis on family planning built into the two-week training course at the regional midwifery school, the trained traditional midwives returned to their villages with an enhanced capability to motivate women in the important post-partum period, when the TBAs are in close contact with the newly-delivered mother.

Health Communicators

Health communicators gather and disseminate health information, and these interpersonal contacts are difficult to enumerate and report. Moreover, the communicators do not carry out such activities on a routine basis. They are more likely to act when some specific activity has been organized. On occasion, community health activities have been organized which have used health communicators: when publicizing and motivating acceptors for the mobile vasectomy clinics the health communicators have made important contributions along with the health post volunteers in their

villages. Communicators have also helped with nutritional surveillance programs and with safe household water supply activities.

VILLAGE HEALTH COMMITTEES AND COMMUNITY PARTICIPATION

Village health committee members were identified by the village headmen. Some villagers had previously been involved in health care as indigenous practitioners of various types and former volunteers in the earlier village health and sanitation program, malaria eradication program, or local health program that called for village participants.

Village Health Committee Selection of Village Volunteers

The first task of the village health committee in most areas was the selection of village health communicators and village health post volunteers. Selecting health communicators by the sociometric survey method was time-consuming and costly, requiring that health workers conduct a survey to identify those village members who were already focal points of local communication. Those selected by sociometry were not necessarily more influential or more appropriate than those health communicators selected by the village health committee. When Project staff compared the two methods, sociometric versus village health committee selection, there was little difference in the apparent appropriateness of those selected. Therefore, the sociometric method was abandoned in favor of the village health committee selection method in the interest of saving cost and personnel time.

General Role of Village Health Committees

Village health committees have taken responsibility for stimulating and organizing local health activities, especially for priority programs such as water supply and sanitation, communicable disease control, family planning and nutrition. Village health committees are generally well-motivated and resourceful in their own right, but they frequently express a need for technical guidance from health officials and health workers. When technical guidance of health workers is combined with traditional wisdom of villagers towards a common objective, such as a permanent source of clean potable water for each cluster of households, implementation of the high priority program can be rapidly implemented and maintained.

The major requirement for cooperation and coordination between the government health services and the primary health care structure is establishing mechanisms for information transfer through regular, frequent, and supportive contact between government health workers, village-level HPVs, health committees, and subdistrict councils. A strengthened system of communication and information transfer has been

provided through monthly meetings, visits, follow-up training, and other mechanisms. By strengthening communication and information transfer mechanisms, extension and expansion of integrated family planning, nutrition, maternal and child health, and other high-priority health programs has been facilitated. Increased community involvement and cooperation in health programs has been observed, particularly in village water supply and nutrition improvement programs.

Community Water Supply Program

A village-based water supply and sanitation program evolved based on (1) participation of village health committees and village health volunteers, (2) an appropriate technology -- a polyvinylchloride (PVC) handpump, (3) technical guidance from local health workers, and (4) periodic water-quality monitoring by provincial health personnel. After a well improvement and pump installation demonstration has been made by government sanitarians, villagers then carry out the same process on other unprotected wells. In each village, the first demonstration PVC pump is provided by the province, but all other preparations are done by the village people. Village health committees and village health volunteers have been oriented and trained in well improvement and simple PVC handpump operation and maintenance.

Villagers contribute labor and necessary materials, including the well cover, wooden post, and handle of the handpump; the village health volunteer provides preventive maintenance of the handpump. One demonstration PVC handpump, which can be produced locally with materials costing about \$50, is provided by the Provincial Health Office for each well improved. Materials needed for repairs and for construction of additional PVC handpumps are available in local markets.

Each improved well can serve up to 250 people. The village health post volunteer or the appointed member of the village visits the well daily to ensure it is functioning properly. A member of the village health committee visits the well weekly, and assists in making improvements or repairs if necessary. If the repair cannot be made, the subdistrict health worker is consulted and, if necessary, he assists in the repair.

Monitoring this program includes regular examination of water quality, reports of patients with diarrhea or other intestinal disturbances, and reports of the occurrence of pump breakdown and repair.

In summary, the primary functions of well improvement, handpump installation, maintenance and repair are in the hands of the villagers themselves. They call upon the local health worker only when technical problems develop, or when he comes to check water quality as part of his routine work. The results to date are very encouraging.

Village-Based Child Nutrition Centers (CNC)

Recognizing the problem of malnutrition, the provincial health office began to emphasize the construction and operation of village-based child nutrition centers, utilizing a system of matching funds with donations made by the communities. Contributions made by the communities were matched with provincial health funds or contributions made by private sector and service organizations for the construction of village Child Nutrition Centers. The community provided manpower and some materials for construction. The center operates like a day care center or nursery school where children play and are educated during the day. Participating children aged two and 6 months to 6 years receive nutritious, high-protein snacks in the mid-morning and afternoon, and they have a well-balanced lunch. The CNC provides protein-vitamin-mineral rich side dishes to eat with their rice. Donations or monthly fees are requested to pay for the operational cost which includes a small stipend for the community resident who operates the center. That person is trained by the Division of Nutrition, MOPH staff, and is supervised primarily by local health workers.

Child Nutrition Centers serve as a central place for nutrition and health education for both children and mothers, for children to learn good personal hygiene, for stimulation for normal growth and development, and for recreation and play.

In the past four years, many village-based child nutrition centers have been constructed through community participation and contributions matched by provincial health and private sector donations. By 1980, there were 172 Child Nutrition Centers in Lampung, and many more were being planned or in the process of construction. The 172 centers at the village level are located in 29% of all villages. Over 6,500 pre-school age children are enrolled. But this is only a fraction of over 37,000 children affected by malnutrition in Lampung.

PRIVATE SECTOR INVOLVEMENT

Service Organizations

Private sector service organizations in Lampung were asked to provide support and matching funds to poorer rural communities in a joint effort to raise adequate resources for the construction of village-based Child Nutrition Centers. The response from a number of organizations, particularly the Rotary and the Lions Clubs in Lampung, was impressive. It was primarily because of the contributions of private sector service organizations and village communities that the Lampung Provincial Health Office was able to construct 172 Child Nutrition Centers in the past five years. The Provincial Health Office is continuing this program

with strong support, mostly through private sector service organization contributions matched with village contributions.

Drugs Sellers and Druggists

Drug sellers and druggists, most of whom are not pharmacists, are the principal source of medical care service in Thailand. They are highly accepted by consumers because they offer services that are easily accessible, no waiting time is required and they generally can provide medicine at an affordable cost.

The Lampang Project staff, together with officials of the Ministry of Public Health, the Food and Drug Administration, and the Government Pharmaceutical Organization, developed guidelines for five roles that private drugstores could play in the context of the Lampang Health Development Project. These include the following: (1) provision of curative services for simple illnesses; (2) referral of patients with difficult diagnostic or serious medical problems to the appropriate government health care facility; (3) provision of family planning services, with particular reference to resupplies of birth control pills and condoms; (4) health education for specific communicable diseases, and reporting for control purposes; and (5) advertisement and promotion of government drugs which are generally cheaper than imported, commercial drugs.

Druggists who participated in the training program were asked to cooperate with the government health care system by sending to the provincial health office two types of reports: (1) a daily log reporting service contacts by symptoms and drug dispensed, and (2) an illness report form, including symptoms, drugs dispensed and the name and address, for each patient. This reporting mechanism did not work well, however, possibly because the objectives of the government health services system and the objectives of the drugstores are not the same. Druggists are primarily in business to promote sales and make profits, while government health services are public health oriented with an interest in improving service delivery and raising overall health status.

The most important role that druggists have played in the Lampang system is the provision of drugs and other supplies to health post volunteers who experienced earlier supply problems with the government health and medical supply logistical system. With over 800 health post volunteers now operating in Lampang, the logistics

of support and supply has been a constant problem. In an attempt to improve on the governmental supply system, the Project turned to the private sector drugstores to supply volunteers. The drugstores sell household drugs to volunteers at the same price as the government. The drugstore supply system for health post volunteers and the cooperative arrangement with the provincial health office has been relatively successful, although volunteers find it somewhat inconvenient traveling to town to pick up their supplies and operating on a strictly cash basis.

Herbalists and Other Indigenous Practitioners

Some herbalists, injectionists, and other indigenous practitioners were selected and volunteered to serve as village health post volunteers or village health communicators. This was facilitated through the selection process of the village health committee. The local providers were welcomed by Project and provincial health personnel. Besides those selected as health post volunteers and health communicators, a number of other indigenous health care providers (primarily herbalists) were identified and trained in a special pilot program. The objectives of the program were to improve their skills in diagnosing and treating uncomplicated problems, to recognize more complicated or serious problems that were beyond their capabilities, to promote their cooperation in referring such complicated or serious cases to the appropriate government health care facility for treatment, and to stimulate their support and cooperation in promoting local health activities.

Traditional Midwives

The involvement of traditional midwives has already been discussed, and represents one of the more successful efforts to involve the private sector in the Lampang Project and in government health services throughout Thailand. The traditional midwives are functionally linked to the government health care system through the government midwife at the nearby midwifery center or health center, or through the health post volunteer wechakorn relationship. Traditional midwives in Lampang have proven willing to receive more training, to provide improved prenatal delivery and post-partum care, and to work in a cooperative fashion with the health post volunteer and the local government health services personnel. They have also played a role in family planning promotion and service delivery, health and nutrition education, and other maternal and child health services. Their role has been significant and should be continued.

COMMUNITY HEALTH PARAPHYSICIANS: WECHAKORNTHE ROLE OF WECHAKORN PARAPHYSICIANS

The development of wechakorn paraphysicians and their deployment to subdistrict health centers and district hospitals in the Province was one of the central strategies of the Lampang Project for extending integrated health services to those most in need at the rural periphery of the health care system, and for stimulating and guiding community health volunteers.

The major role of wechakorn paraphysicians is to provide integrated health promotion, disease prevention, and curative health services for the rural population. Wechakorn work in midwifery centers at the village level, in rural health centers at the subdistrict level, in district hospitals at the district level, and in addition, a few are assigned to the Provincial Hospital and Provincial Health Office.

The wechakorn paraphysicians and other health workers at rural health centers are key government health personnel who stimulate and provide technical support to the community health volunteers. The wechakorn is a major mid-level health care provider in a referral system that extends from every village health post to subdistrict health centers, district hospitals and to the Provincial Hospital. The relationship between the community health volunteers and the wechakorn paraphysicians and other health personnel at health centers and midwifery centers is the basis for the crucial link between villagers and the government health care system. For this reason, the Lampang Project has given a great deal of attention to the development of wechakorn (paraphysicians), to their deployment and support, to their job performance, and to their effect on consumer utilization of health services.

Wechakorn paraphysicians in Lampang:

- (1) provide medical care for illness and injuries;
- (2) provide first-aid and refer serious cases;
- (3) supervise the health center personnel;

- (4) supervise village health post volunteers;
- (5) administer health centers; and
- (6) promote community health development programs.

DEVELOPMENT OF TRAINING PROGRAM

Training Staff

Wechakorn training was organized and directed by the Personnel Development Division of the Lampang Project which was staffed by three physicians with technical, clerical and administrative staff. The Division Chief was responsible for the overall planning and the operations of training activities. The Assistant Chief was responsible for coordinating all training inputs from the Provincial Hospital and for supervising the hospital-based preceptorship training phase of the program. One senior instructor was a general medical practitioner responsible for routine classroom activities. Each of these two physicians was oriented to competency-based training and other aspects of the "Medex" approach at the University of Hawaii.

Medical staff of the Provincial Hospital and district hospitals were employed as classroom instructors for the didactic phase of training. For the preceptorships phase of training, preceptors and clinical supervisors were selected from the Provincial Hospital and district hospitals where the preceptorship phase of training was conducted. Most preceptors were physicians, but some preceptors - specifically for obstetrics-gynecology and family planning service - were very experienced nurses.

Curriculum Development

The steps in curriculum development were as follows:

- (1) Identification of Local Health Problems. Patient service records of health post volunteers, outpatient records of health centers, a district hospital, Lampang Provincial Hospital and Chiang Mai Medical School Hospital were analyzed to identify common diseases and health problems. This information was used as a framework for organizing and reviewing training content.

- (2) Review of the Present Jobs of the Trainees. Existing jobs of the nurses, midwives, junior health workers (male sanitarians) and nurse-aides were reviewed to determine the knowledge and skill gaps in each group's job training, thus identifying the job discrepancies.
- (3) Definition of the Wechakorn Role. Based on job analysis and the agreement of health experts and local health authorities, the role of the wechakorn was defined. The job discrepancy was generally identified as a lack of curative skills, and it was agreed that wechakorn should be capable of managing about 80% of common local illnesses.
- (4) Development of the Training Program. Behavioral objectives and learning experiences were established and a system for evaluating the training process and results was developed. Learning materials, audio-visual aids and teaching plans were prepared.

The Training Program

A modified modular approach was used in the preparation of materials for the wechakorn training program. Instructors, preceptors, specialists and the physicians from the provincial hospital participated in drafting modules used in the training of the first class, and they also participated in lectures during the didactic phase. Later, the training content was reviewed and improved by specialists from Chiang Mai University's Faculty of Medicine and other institutions based on analysis of additional information available and feedback from trainees. The University of Hawaii provided sample prototype teaching modules, assisted in preparation of lesson plans, provided teaching slides, and helped prepare a system for monitoring the training.

The twenty-four wechakorn training modules, written by the Thai staff, are listed in the contents of volumes V and VI of the LHDP documentary series.

The content of each module was organized around a problem or group of problems. For each a protocol was developed to provide a framework on which wechakorn could base decision-making and action. Each protocol outlined possible presenting problems (complaints or the symptoms and signs to look for) and what action should be taken.

Because of the decision that paraprofessionals be chosen from existing categories of health workers -- specifically, nurses, midwives, nurse aides and sanitarian health workers -- who had already received training in many aspects of health promotion and disease prevention, the training of paraprofessionals emphasized curative skills. The training approach was problem-oriented, and the methods of training were competency-based, meaning that training emphasized specific knowledge and skills required to deal with a prescribed range of problems, and that as much theoretical and non-essential material as practical was eliminated.

Didactic and Preceptorship Training Phases

The total length of training was 12 months, including four months (16 weeks) of intensive classroom training, and eight months (33 weeks) of preceptorship rotations. Each class passed through the didactic phase together as a group for the entire four months. The eight-month preceptorship phase was divided into an initial phase of 29 weeks for clinical rotations among the various department of the hospital, including night duty. Each class of trainees was broken up into smaller groups for rotation through the various departments. Working under close supervision of hospital physician preceptors, trainees learned to take histories, examine patients, diagnose problems, and prescribe proper treatment. Protocols guided the learning process for wechakorn by providing simplified decision chains which systematically present the steps in dealing with a given problem or set of problems. In addition to the 29 weeks of hospital rotations, wechakorn spent four weeks working in rural health centers: one week for community health resource planning, one week for office management orientation and practice, and another two weeks on electives.

The didactic phase was divided into a series of discrete units, employing problem-oriented modules. Each module is a self-contained learning unit, which generally served as the basis of classroom sessions, and might require from a day to several weeks to complete.

The topics and time allocations in the didactic phase were as follows:

| | | |
|---|----|------|
| Introduction to Comprehensive Health Care | 3 | hrs. |
| Medical Terminology | 3 | hrs. |
| Anatomy, Physiology, History Taking and Physical Examination | 72 | hrs. |
| Laboratory Examination | 24 | hrs. |
| The Use of Formulary | 15 | hrs. |
| The Use of Protocol | 3 | hrs. |
| Skin Problems | 18 | hrs. |
| Ear, Eye, Nose, Throat Problems | 18 | hrs. |

| | | |
|---|----|------|
| Dental Health | 12 | hrs. |
| Medical Problem | 60 | hrs. |
| Pediatric Problems | 30 | hrs. |
| Emergency Care | 30 | hrs. |
| Maternal and Child Health | 30 | hrs. |
| Gynecological Problems | 18 | hrs. |
| Family Planning | 18 | hrs. |
| Statistics | 24 | hrs. |
| Epidemiology | 12 | hrs. |
| Communicable Disease Control | 6 | hrs. |
| Health Education | 12 | hrs. |
| Organization and Supervision of Local Health Programs | 12 | hrs. |
| Public Health Administration | 6 | hrs. |
| Primary Health Care | 6 | hrs. |

In the preceptorship phase, trainees rotated among each of the various clinical departments in the provincial hospital, and in district hospitals for a period of three weeks. The preceptors provided demonstrations of clinical problems, re-checked patients seen by trainees, discussed problems and treatment, provided immediate feedback to the trainees on their performance, and recorded observations in their evaluative log books. Each required skill had to be demonstrated by the trainees, and later observed and recorded by the preceptor to provide a basis by which the trainee's progress could be reviewed. During the final week, the trainees were extensively oriented to administration of peripheral health units, office work, recording and reporting, and financial management; at the end of the course, comprehensive written examinations and practical examinations were administered and assessed.

Some difficulty was anticipated and encountered, in jointly training individuals with different backgrounds and educational levels. This was partly overcome by special refresher sessions to bring everyone to a standard level. But it is important to note that at the end of training, there were no significant differences among the final test scores of the various trainee categories. This is attributed primarily to the effectiveness of the problem-oriented, competency-based approach used in this health manpower development program.

Through this approach wechakorn were trained to be able to recognize the following common problems:

- (1) Common Infectious Disease Problems: Amoebic Dysentery, Bacillary Dysentery, Conjunctivitis, Cholera, Chickenpox, Diphtheria, Encephalitis/Meningitis, Fungal Infection, Gastroenteritis, Hemorrhagic Fever, Influenza, Leprosy, Intestinal Parasites, Mumps, Malaria, Ophthalmia Neonatorum, Non-Specific Urethritis, Poliomyelitis, Pneumonia, Typhoid

Fever, Pulmonary Tuberculosis, Tetanus Neonatorum, Tetanus, Tonsillitis, Trichomoniasis, Viral Hepatitis, Upper Respiratory Infection, Whooping Cough, Venereal Diseases

- (2) Problems of the Respiratory System: Bronchial Asthma, Bronchitis, Pneumonia
- (3) Problems of the Digestive System: Appendicitis, Constipation, Flatulency, Gastritis, Hernia (Inguinal & Femoral), Intestinal Obstruction, Peptic Ulcer
- (4) Problems of the Circulatory System: Congestive Heart Failure, Hypertension, Heart Diseases
- (5) Problems of the Genito - Urinary System: Cervical Polyps, Cervicitis, Condiloma Acuminata, Cystitis, Dysmenorrhea, Pelvic Inflammatory Diseases, Leukorrhea, Urinary Tract Infection, Renal and Bladder Stone, Stricture of Urethra, Vaginitis
- (6) Problems of the Musculoskeletal System and Skin Diseases: Abscess, Acne Vulgaris, Arthritis, Atopic Dermatitis, Cellulitis, Contact Dermatitis, Diaper Rash, Eczema, Osteomyelitis, Pediculosis, Scabiasis, Sebaceous Cyst
- (7) Problems of the Ear, Eyes, Nose, Throat (EENT) and Nervous System: Allergic Rhinitis, Alcoholism, Blepharitis, Bell's Palsy, Cataract, Corneal Ulcer, Drug Addiction, Epistaxis, Foreign Bodies in Nose, Eyes, or Ears, Laryngitis, Glaucoma, Neurosis, Mastoiditis, Otitis Media, Nasal Polyps, Psychosis, Pharyngitis, Stye, Pterygium, Sinusitis
- (8) Problems of the Endocrine System and Nutritional Diseases: Angular Stomatitis, Beriberi, Diabetes Mellitus, Kwashiorkor, Marasmus, Simple Goitre, Toxic Goitre, Vitamin A Deficiency
- (9) Blood Problems: Iron Deficiency Anemia, Thalassemia, Nutritional Anemia
- (10) Ill-Defined Problems: Abdominal Pain, Jaundice, Bloody Urination, Anemia, Fever, Headache, Edema, Vomiting
- (11) Accident, Poisoning and Violence Problems: Anaphylaxis, Burns, Drug Poisoning, Dog Bite, Drowning, Electrocutation, Fainting, Fractures, Injury of the Head and Neck, Injury of the Chest, Injury of the Abdomen, Injury of Spine, Insecticide Poisoning, Pneumothorax, Shock, Sprain/Strain, Snake Bite

- (12) Obstetrics Problems: Antepartum Hemorrhage, Abortion, Abnormal Labor, Abruptio Placentae, CPD, Ectopic Pregnancy, Obstructed Labor, Prolonged Labor, Pregnancy with Previous Caesarean Section (Cesareotomy), Premature Rupture of Membranes, Polyhydramnios, Postpartum Hemorrhage, Twin Pregnancy, Toxemia of Pregnancy, Uterine Inertia
- (13) Tumour Problems: Breast Tumor, Cervical and Uterine Tumor
- (14) Problem Prevention and Health Promotion Services: Antenatal Care, Nutritional Surveillance, Family Planning, Postnatal Care, Well-baby Clinic.

WECHAKORN DEVELOPMENT

Table 9 shows the post-training assignments of wechakorn in late 1979. The overwhelming majority (79%) of wechakorn are midwives and sanitarian health workers located in subdistrict health centers and midwifery centers, the most peripheral government units. Adding the wechakorn located in district hospitals, approximately 85% (78/93) are located in the rural areas. Seventy-three percent of the wechakorn are women. Fourteen (15%) are nurses, and as Table 9 shows, most of these are located in the provincial hospital, with two at the district hospital level. This follows the normal assignment pattern for nurses within the Ministry of Public Health: most located outside of Bangkok are in provincial hospitals, a few are in district hospitals, and none are located below the district level.

Table 9
The Deployment Sites of Wechakorn in Lampang, 1979

| <u>Wechakorn</u> Background | Number & Percent of Wechakorn Deployed to: | | | | | | | | Total | |
|-----------------------------|--|-----------|--------------------|----------|---------------------|-----------|------------------|----------|-----------|------------|
| | Health & Midwifery Centers | | District Hospitals | | Provincial Hospital | | Midwifery School | | | |
| | # | % | # | % | # | % | # | % | # | % |
| Nurses | - | - | 2 | 40 | 11 | 92 | 1 | 1 | 14 | 15 |
| Nurse-Aides | - | - | - | - | 2 | 8 | - | - | 2 | 2 |
| Midwives | 49 | 67 | 2 | 40 | - | - | - | - | 51 | 55 |
| Sanitarian Health Workers | 24 | 33 | 1 | 20 | - | - | - | - | 25 | 27 |
| Total | 73 | 79 | 5 | 5 | 13 | 14 | 1 | 1 | 92 | 100 |

Most district hospitals have a wechakorn, and almost all subdistrict health centers have a wechakorn, distributing them throughout all districts of the province. Wechakorn assigned to rural health centers added a new range of clinical skills and services previously unavailable at the subdistrict and village levels. The new range of medical care skills and medicines, broadened range of family planning services, community health organization and program planning which the wechakorn were able to offer created the potential for improving the low credibility of the rural health center. Wechakorn deployed to rural health centers were cognizant of their key role in the evolving primary health care system. In addition to providing medical care referral services for villagers too ill to be cared for by the health post volunteer or traditional birth attendant, the wechakorn provided technical guidance and encouragement to health post volunteers and health committees in conducting local health programs. For example, health center wechakorn played key roles in organizing and coordinating local nutritional surveillance, treatment and follow-up for children severely affected. To a great extent, the level of community health activity is related to the relationship between the wechakorn and the community health volunteers, particularly the health post volunteers in the area served by the health.

Role Satisfaction and Appropriateness of Assignments

Wechakorn were asked in which type of health facility they would prefer to work. Of the health center wechakorn, 82% said they would choose to remain where they were as health center chief, 16% preferred to be in the district hospital, and only 2% preferred the provincial hospital. All wechakorn located in midwifery centers indicated they would prefer to serve at the health center level. All district hospital wechakorn would choose to be chief of the subdistrict health center. Of the provincial hospital wechakorn, 33% would prefer subdistrict health center, none preferred the district hospital, and 67% would choose the provincial hospital.

In general, the wechakorn in the provincial hospital have not been given responsibility to practice and utilize their full range of skills and develop the role for which they were trained. However, in other major hospital activities, such as in the community health department and in the family planning section wechakorn have assumed broader responsibility, utilizing many of the new skills they have acquired.

In summary, experience to date indicates that the most viable wechakorn role and the one with the greatest individual satisfaction has evolved at the subdistrict rural health centers and midwifery centers. In the provincial hospital physicians

and many other highly skilled professionals, some of whom are sceptical of wechakorn capabilities, greatly overshadowed and limited the potential contribution of the wechakorn. At the district hospital level, the wechakorn has gained more responsibility, though this depends on the physician heading the hospital. But at the rural health center level, the wechakorn brought a new range of skills and services not previously available at that level, and not duplicated by any other worker in that center. Not only has this enhanced the service output of the rural center, but the potential for conflict or competition with other members of the health team is minimal.

PERFORMANCE OF WECHAKORN

Medical Care

A review of wechakorn in all locations indicates clearly that the greatest amount of working time is used for provision of medical care services. Half of the provincial hospital wechakorn, all of the district wechakorn, and 82% of those at the rural health center level said they spent a majority of their work time providing medical care services. It is not unusual for the provincial hospital nurse wechakorn to be involved in medical care, given that this is the main work of the hospital. Wechakorn who are not involved in medical care are located in the community health department and the family planning section, as well as the senior nursing supervisors. Likewise, a major thrust of the district hospital services is medical care, and wechakorn usually participate in this activity. There are other preventive and promotive services provided by the district hospital, but these are carried out by other staff as well.

The large majority of the wechakorn in the subdistrict health centers also indicated they spend the largest proportion of their work time in medical care. However, given the prior gap in medical care services at this level, given the emphasis on medical care during training and their new range of medical care skills, instruments and drugs acquired, it is not surprising that meeting the demand for medical care is where the wechakorn has used his time. Furthermore, because it is medical care that rural villagers normally demand, effective treatment of the medical problem which brings relief to the patient will promote acceptance of the wechakorn who may then build on this new credibility and social status to promote and launch disease prevention and health promotion services in the community.

Assessment by the wechakorn themselves tends to confirm the high priority that must be given to meet the demand for medical care. Seventy-eight percent of all wechakorn interviewed said they thought medical care is the most appropriate work for the wechakorn, and the proportions expressing this opinion were roughly similar for each wechakorn group -- those in the provincial hospital, district hospitals, and rural health centers.

The medical problems encountered most frequently during patient contacts appear to be relatively uniform in the rural locations. More than 90% of medical care contacts served by wechakorn at the district hospital and health center level were fever of various types, gastro-intestinal problems, and respiratory ailments. In the provincial hospital, however, only a third of the wechakorn said these were the major problems encountered.

Family Planning

A special study of the training and performance of wechakorn candidates in inserting contraceptive interuterine devices at the Lampang Provincial Hospital was conducted and reported by Dr. Nopadol Somboon (Health and Environment, 1:1, Jan-April, 1978). The results of the study indicated that wechakorn candidates were able to achieve the same levels of performance as physicians. There were no severe complications for the 217 cases managed by wechakorn. The wechakorn rate for minor complications was only 8.7%, lower than that of physicians (11.3%). The removal rate was lower for wechakorn (19.3%) than for physicians (24.7%), and the continuation rate of those served by wechakorn was slightly higher (63.2%) than among those served by physicians (60.1%). These results substantiate the conclusion made above concerning the effectiveness of the competency-based training approach. Dr. Nopadol concludes that wechakorn can play a potentially significant role in Thailand's family planning effort to reduce the population growth rate in rural areas.

Community Health Activities

The wechakorn role in providing medical care services does not appear to affect the overall preventive/promotive service output of rural health centers. The wechakorn normally spends the morning hours on medical care, when public health regulations require that there be a health worker attending the health center, and there is still ample free time available to do other community health programs. Wechakorn have enhanced some community health programs, such as the mobile vasectomy clinics for which they have helped recruit acceptors and have assisted in operating the clinics. They have been the key to organizing nutritional surveillance

programs. They have helped to promote cooperation with the village health volunteers, both in medical care and especially in oral contraceptive distribution. The health center wechakorn was the one most frequently visited by health post volunteers and was relied on most for consultation and support. Most evidence tends to support the conclusion that although wechakorn see medical care as their most important, most appropriate and satisfying function, and practice it more than in the past, they continue to serve their other community health roles and responsibilities as midwives and junior health workers.

ACCEPTANCE OF WECHAKORN

Two surveys were conducted in 1979 and 1980 to learn more of the villagers' responses to the new range of services at rural health centers and, specifically, of their attitudes towards and perceptions of wechakorn paraprofessionals.

The first survey, conducted in 1979, involved interviews with 288 villagers by independent interviewers from outside Lampang. When asked if they had ever used the health center services, 95% responded that they had used the health center services while 5% indicated that they had never used health center services. Of those (95%) who had used the health center services, 96% expressed satisfaction, 2% were indifferent, and 2% were not satisfied. Of the 96% who expressed satisfaction, 15% were very satisfied and 81% were satisfied with the rural health center services. Of those who were "very satisfied", the reasons given for their satisfaction were distributed as follows: good treatment - 23%, good advice - 22%, good physical examination - 20%, good human relations - 27%, and frequent home visits - 8%. Of those (2%) who were "not satisfied" with the health center services, the reasons given for their dissatisfaction were distributed as follows: expensive charge - 64%, incompetency - 12%, poor human relations - 12%, and no advice given - 12%.

When villagers were asked "What do your friends think about wechakorn?", 72% said they liked wechakorn because of good treatment, good human relations, and because they were accessible. 17% were indifferent because the wechakorn were not always available when needed, and 11% did not like wechakorn because they were not available at night or would not make home visits.

In 1978, 14 wechakorn paraprofessionals received dental health service training. The 1980 survey of villagers was conducted to assess villager attitudes towards and perceptions of wechakorn dental services. The survey was conducted in six subdistricts and included 193 respondents who had received dental health services from wechakorn.

The type of dental health service received from wechakorn by the 193 respondents was distributed as follows: Extraction - 65%, Filling - 14%, Scaling - 11%, Advice - 5%, Medication - 9%, Drain abscess - 1%, and Examination only - 1%. Of these, 67% of respondents visited wechakorn for dental health services only once, and 33% had visited the wechakorn from 2-7 times for dental health services.

When asked, "Are you satisfied with Wechakorn service?", 91% were satisfied, 2% were not satisfied, 7% were indifferent or did not respond. When asked if the wechakorn's dental service helped the problem, 92% said "yes", 1% said "no", and 7% did not respond or did not know. When these villagers were asked where they would advise friends and relatives to go for dental health services in the future, the results are similar to their own intentions: 87% said the Health Center (wechakorn), 1% - Provincial Hospital, 1% - District Hospital, 1% -- Self-treatment, 9% - no response or no consultation.

The results of these studies, together with other data sources such as health service records, indicate both directly and indirectly that wechakorn have been well accepted by villagers.

SUPPORT, SUPERVISION, CONTINUING EDUCATION

In a discussion of support and supervision of wechakorn, most attention is properly given to the needs of wechakorn located in subdistrict health centers and midwifery centers. Those in the provincial hospital and district work under the direct supervision of physicians and rarely experience shortages of drugs, supplies or equipment. And they can easily find technical consultation or make additional needs known quickly.

Wechakorn in rural health centers operate much more independently, distant from those who could provide technical supervision and support, and often their isolated locations make communication difficult even within the district. A number of the new skills and services for which the wechakorn were trained have not, in the past, been authorized for health center personnel, and frequently, new drugs and other supplies needed to provide the new range of services have been unavailable, or in very short supply. Rural health centers have been chronically underfinanced and underequipped when compared with district hospitals and the provincial hospital.

On returning to their health center assignments trained to practice a new range of skills, the first wechakorn groups found that little had been done to facilitate their new role. The range of drugs which they would need to provide the new range of medical care services was formerly unavailable at a health center, and health center workers had not been authorized to give antibiotic injections. Trained to insert IUD's and inject Depo-Provera - services that had previously only been provided by physicians - wechakorn found that the equipment and drugs needed were unavailable, and they initially encountered reluctance from senior provincial staff when they were requested. Some of these problems were resolved quickly, but others took an extended period to resolve, and some problems remain. Authorizing wechakorn to practice a new range of services under the overall responsibility of the provincial health officer, and convincing and assuring other senior provincial health staff that these were legitimate activities, was an immediate and time-consuming concern of senior project staff. Part of this problem related to the lack of a clearly written directive from the Ministry of Public Health specifying the Wechakorn role and responsibilities.

In the rural areas, the health center wechakorn are distant from any physician, making it difficult to receive consistent technical support and regular supervision. Moreover, the person officially responsible for supervision of health center workers is the district health officer, frequently a senior sanitarian who has no clinical training, unlike wechakorn. This makes him inappropriate in a role as their technical supervisor.

The provincial health office encouraged doctors in the district hospitals to provide assistance when possible. But several district doctors were reticent to contact health center wechakorn, anticipating the possibility of district health officers' sensitivity to the district physicians usurping their role.

To provide emergency technical consultation, a shortwave radio system was set up linking selected rural health centers with the provincial hospital and the provincial health office. This was a Ministry of Public Health program set up in provinces all over the country, in which health center workers in remote locations were trained in specific medical care skills, and equipped with a special drug kit, kept under lock and key in the health center, and only used as authorized by a consulting physician through the radio linkage. A few wechakorn also received this training. A senior wechakorn in the provincial hospital monitored the radio network, directing requests for assistance to the appropriate physician when necessary.

Provincial health and project staff have recognized for some time that the mechanisms to provide technical support for rural health center wechakorn are inadequate, but, after several approaches, no clear and effective solution to this problem has been found. However, in recent months, there may be an important development in resolving this problem: two of the more experienced and outstanding wechakorn have been appointed district health officers.

This places a technically-qualified wechakorn in a position of direct responsibility for supervising health center personnel, including the resident wechakorn. Having been a health center wechakorn before, the new wechakorn district health officers fully understand the need for technical support, and should be more responsive to the needs of their colleagues. This may be the most pragmatic resolution of the supervision problem.

Given the relative infrequency of on-the-job technical supervision, refresher training on a regular basis was another means to provide technical support, particularly for the more isolated, rarely-visited wechakorn. During early phases of the project, monthly clinical conferences and attendance at some medical meetings were arranged. However, this was on an occasional, rather than regular, basis. A group of 14 wechakorn was also selected to receive six weeks of intensive dental health care training in a pilot program sponsored by the Provincial Health Office and the Faculty of Dentistry, Chiangmai University. This training program was received enthusiastically by the wechakorn, many of whom had seen dental health as an important service need. Such continuing education programs clearly stimulated the morale and initiative of wechakorn.

The experience in Lampang has shown that developing a problem-oriented curriculum, operating a competency-based training program, and imparting relevant knowledge and practical skills to develop new mid-level, medical-health care practitioners can be achieved. But to sustain the workers in their new roles requires improved and increased technical supervision and support, periodic follow-up training, and adequate budgetary and reliable logistic assistance commensurate with their new roles and responsibilities. These support needs are ongoing, and must be carefully planned and reliably sustained for the delivery system to have impact in improving the health of the population it aims to serve.

COMMUNITY HEALTH ROLE OF THE PROVINCIAL HOSPITAL

The initial steps in developing a role for the provincial hospital were designed to establish a base from which more substantive activities could spring. First, the Project's Planning and Programming Division (initially called Medical and Health Services Division) was placed inside the hospital. The Chief of this division was responsible for planning and coordinating the implementation of all Project rural health strategies through both the hospital and the provincial health office.

Another Project staff position, designated "hospital planner" was staffed by a senior physician from the hospital. The planner acted as a link between the Project and the hospital staff, helped develop specific activities in which the hospital would participate, and assisted in explaining project goals and strategies to hospital staff. The provincial hospital director was encouraged to take part in Project and provincial health planning meetings to gain an overall understanding of project strategies.

The most intensive involvement of the provincial hospital in the early stage of the project was in providing assistance in preparing for and conducting a training program for the wechakorn paraphysicians. The hospital staff shared responsibility for preparing each of the 24 training modules, the heart of the competency-based training program. In addition, project and hospital staff who had been oriented to the training approaches persuaded others in the hospital to assume responsibility for training activities. There was resistance from some hospital staff members, but in the end, a small nucleus in the hospital enthusiastically supported the program, and the majority willingly provided the support needed.

DEVELOPMENT OF THE COMMUNITY HEALTH DEPARTMENT

Establishing closer links with the provincial hospital, as part of the general reorganization of the provincial health care infrastructure, required a unique modification and rearrangement of service units and relationships. The Project strategy for establishing the hospital as the nucleus of the health care network consisted of several steps:

- (1) A temporary extension of the hospital out-patient department to district health centers.
- (2) Establishing a department of community health in the hospital with responsibility for direct support of rural health services.
- (3) Combining a number of provincial health office service functions in the Community Health Department.

Extended Outpatient Services

In the first phase, hospital out-patient department services were extended to the district health center in Hang Chat, the first district to which integrated services were introduced. Since the district health center had no physician in residence, provincial hospital physicians were rotated through the center in Hang Chat at two-month intervals. The rotation program continued for almost two years, providing services during the clinic hours five days a week, until the new district hospital was completed and staffed by a permanent physician.

Role of the Community Health Department

The hospital planner undertook the initial organization of the Community Health Department and became the department's chief. An old building separate from the main building of the provincial hospital was assigned as the Community Health Department.

The Department of Community Health established in the Lampang Provincial Hospital was the first of its type in Thailand.

Developing a community health department in a non-teaching provincial hospital was a complex task. The main objective of such a department is to make the community health department the center for stimulating and coordinating health services in all rural districts. Community health departments of medical schools on the other hand generally operate only in a select area.

The Department of Community Health was initially headed by the Project hospital planner, assisted by a public health nurse/health educator, a social worker, an epidemiologist/statistician and secretary. With a seriously limited number of available staff positions and resources at its disposal, most of the early activities of the department were focussed inside the hospital. These were:

- (1) Organizing educational activities for the prenatal, well-baby, post-natal and family planning clinics.
- (2) Implementing education activities and counselling programs in the various wards.
- (3) Producing a variety of educational brochures and leaflets for distribution in the various out-patient clinics.
- (4) Improving the public address for broadcasting health messages at various periods during the day.
- (5) Improving environmental sanitation on the hospital premises.
- (6) Coordinating collection of hospital statistics and epidemiological reports normally sent to the provincial health office.

MOBILE VASECTOMY CLINIC

In mid 1977, the Lampang Project Director suggested that the Community Health Department become involved in the Ministry of Public Health's mobile vasectomy program. Under this program, a part of the National Family Planning Project, teams had been set up within provincial health offices in a number of provinces to provide vasectomies to villagers in rural locations. This was an ideal activity for the Community Health Department by which it could expand rural services as the chief of the department was a skilled surgeon specializing in urology. With assistance from the vasectomy training team of Ramathibodi Medical School, the first mobile clinic was organized in Hang Chat District in October, 1977. The response was much greater than expected -- 150 rural villagers had a vasectomy in the first two days of the clinic, confirming the acceptability of vasectomy in the rural areas. After the first clinic, the mobile team travelled to rural locations twice a month, preceded by a motivation team which worked with local village leaders and health volunteers.

The Family Health Division of the Ministry of Public Health provided a mini-bus for the mobile team, as well as costs of supplies and per diem for participating staff. The mobile vasectomy team achieved important results during the first year of operation -- almost one thousand vasectomies were performed, compared with less than a hundred performed in the hospital in previous years.

The mobile clinic has filled a major gap in the generally successful National Family Planning Project. It seems apparent that many rural men are interested in having a vasectomy. But the provincial hospital, where vasectomies have been most readily available, often is not accessible. Bringing the service close to their homes -- the mobile clinics have been operated from rural health centers -- has made it more convenient, and the high quality of service provided has reinforced acceptance among rural villagers.

Expansion of the Mobile Clinic

As the mobile vasectomy team travelled through rural areas of the province, large groups of villagers also came to the clinic site seeking care for other ailments. It became clear to the mobile clinic team that although the vasectomy service could continue to be a spearhead, the clinics were also a good opportunity to provide care for villagers on a walk-in basis, and to emphasize immunizations, maternity care, and well-child care, in addition to general physical examinations. The addition of the clinical, promotive, and preventive services has made the Lampang mobile vasectomy program unique.

The clinics have also served to provide support and training for physicians, wechakorn, and other health workers at the district hospitals and rural health centers. Physicians and nurse wechakorn from the Community Health Department have often used the mobile clinics to train district hospital doctors in improving their vasectomy technique, and in supervising health center-based wechakorn. This continuing education and supervision function is a morale booster for peripheral health staff; it also provides the local health workers with opportunities to discuss clinical problems, which is often not possible with their administrative supervisors. Equally important, the mobile clinics are a vehicle through which provincial hospital and provincial health office staff can gain a clearer understanding of rural health care needs, the management and logistic limitations in serving these needs, and the difficult conditions under which health workers at the periphery operate. This understanding is crucial for hospital staff who encounter rural patients only briefly, and have no opportunity to know the full background to the health problem and the environment which fostered it. The mobile clinics also give new credibility to the health center where the clinics are held.

EXPANSION AND CONSOLIDATION OF HOSPITAL-BASED ACTIVITIES

Since its inception, the Community Health Department has expanded its activities and consolidated its service program within the hospital. The completion of the large, integrated out-patient department in mid 1978 facilitated the department's development. The service programs that have been consolidated under the department's responsibility are the following:

Medical Care for Referred Patients

Although most patients seeking medical care in the hospital go to one of the out-patient departments, those referred from rural health centers and district hospitals come to the Community Health Department. If other, more specialized, out-patient care or in-patient care is required, the Community Health Department refers patients to the appropriate service.

Infectious and Communicable Diseases (Tuberculosis Clinic)

The Community Health Department treats patients with communicable diseases such as dengue fever, pneumonia, skin disease and intestinal parasites; the most common problem is tuberculosis. Starting out as a curative service, the department has added a preventive/promotive component to its tuberculosis clinic that includes health education of patients and family members. Aside from treating patients with antituberculosis drugs and vitamins, family contacts are encouraged to have a tuberculin test and, if the tests are negative, they are given BCG immunization.

Well-Baby Clinic

When the well-baby clinic was turned over to the Community Health Department by the Pediatrics Department in 1977, well-child activities primarily emphasized immunizations. This activity was conducted by instructors and students from the Lampany Midwifery School in one afternoon session each week. Although the immunization program was important, the department staff felt the well-child clinic was not comprehensive in scope. When the clinic was expanded to a full day each week in 1978, the scope of services was broadened to include nutritional assessment, physical examination, clinical assessment, and the complete range of primary immunizations. The Midwifery School still uses the afternoon session for training, but has expanded its emphasis to include health education, nutrition and physical assessment.

Prenatal Clinics

Prenatal clinics are run by the Obstetrics/Gynecology Department, but the Community Health Department assists the prenatal clinics by educating new mothers in the importance of immunizations, family planning, and proper child care. The Community Health Department wechakorn and social worker have provided expectant mothers with special health education classes in the clinic waiting room. Emphasis is given to the importance of breast-feeding, proper infant food preparations, and contraception. Expectant mothers who go to the well-baby clinic are encouraged to utilize the prenatal clinic.

Social Welfare Services

The Community Health Department has assumed responsibility for overall supervision of welfare services at the hospital, including free medication, supplementary food for children, and other types of support for indigent patients and their families. Private sector support has been provided by the Rotary and Lions Clubs of Lampang.

Health Education

Health Education is an important activity of the Community Health Department. Initially the department disseminated health information to both patients and hospital staff. Later it developed specific educational programs associated with the well-baby, prenatal, and tuberculosis clinics. Group education sessions are held at the out-patient departments and various in-patient wards. On three mornings each week, films are shown to large groups of people gathered at the out-patient department, on such topics as transmission and prevention of communicable diseases, promotion of good child nutrition, and the importance of family planning. Messages are also broadcasted through an intercom system which connects every ward and department to the Health Education Unit of the Community Health Department.

Special health education sessions have been given to members of the hospital staff with the aim of encouraging all staff members to take an active role in disease prevention and health promotion. Head nurses of all in-patient wards have been trained to teach patients ways to prevent and reduce health problems commonly found in the North.

Environmental Sanitation

From its earliest days, the Community Health Department assumed responsibility for monitoring environmental sanitation in the provincial hospital. Its activities include improvement of the sewerage system, development of safe collection of refuse

in each ward, construction of latrines throughout the hospital, improvement of drinking water at the various wards in departments, and control of vector-borne disease agents through the use of insecticide and addition of screens in the in-patient wards.

Other Activities in the Lampang Municipality

The Department has focussed primarily on health activities in the provincial hospital or in selected rural communities of the province. However, the department has also addressed health problems within the municipality of Lampang. Discussions were held with municipal officials to explore the possibility of using school administrators and staff to influence the health of the school age population. The importance of including a school health program in the curriculum of all undergraduate programs at the Lampang Teacher Training College was also stressed. In late 1978, a health exhibition was held at the largest secondary school in town. The department has since established a routine school health program in the first six grades of all schools located in the municipality. Aside from health education, immunizations and health examinations are given in cooperation with the Lampang municipal health authorities.

A later development in the Community Health Department's activities was establishing a jail health program and a narcotics control program. Occasionally, Community Health Department staff also participate in special social welfare projects organized with the Red Cross and other service agencies to extend education, agricultural and economic assistance within Lampang.

Figure 3 summarizes the current functions of the Community Health Department and the plans for future additions. Figure 4 outlines the specific responsibilities of each unit within the department.

STAFFING, AN EXPANDING BUT UNMET NEED

The Community Health Department began in 1975 with a professional staff of three, none of whom had a permanent position in the department, and with no budget of its own. Since it was considered experimental it had no official recognition from the Ministry of Public Health. This made recruitment of staff especially difficult during the first three years.

Initially, major tasks of the department were (1) to seek support within the provincial hospital, (2) to make the department an officially-recognized unit, and (3) to secure permanent staff positions from the Civil Service Commission. Acceptance of the Community Health Department's status within the hospital structure and

Figure 3

Current and Planned Functions - Community Health Department
Lampang Provincial Hospital
1979

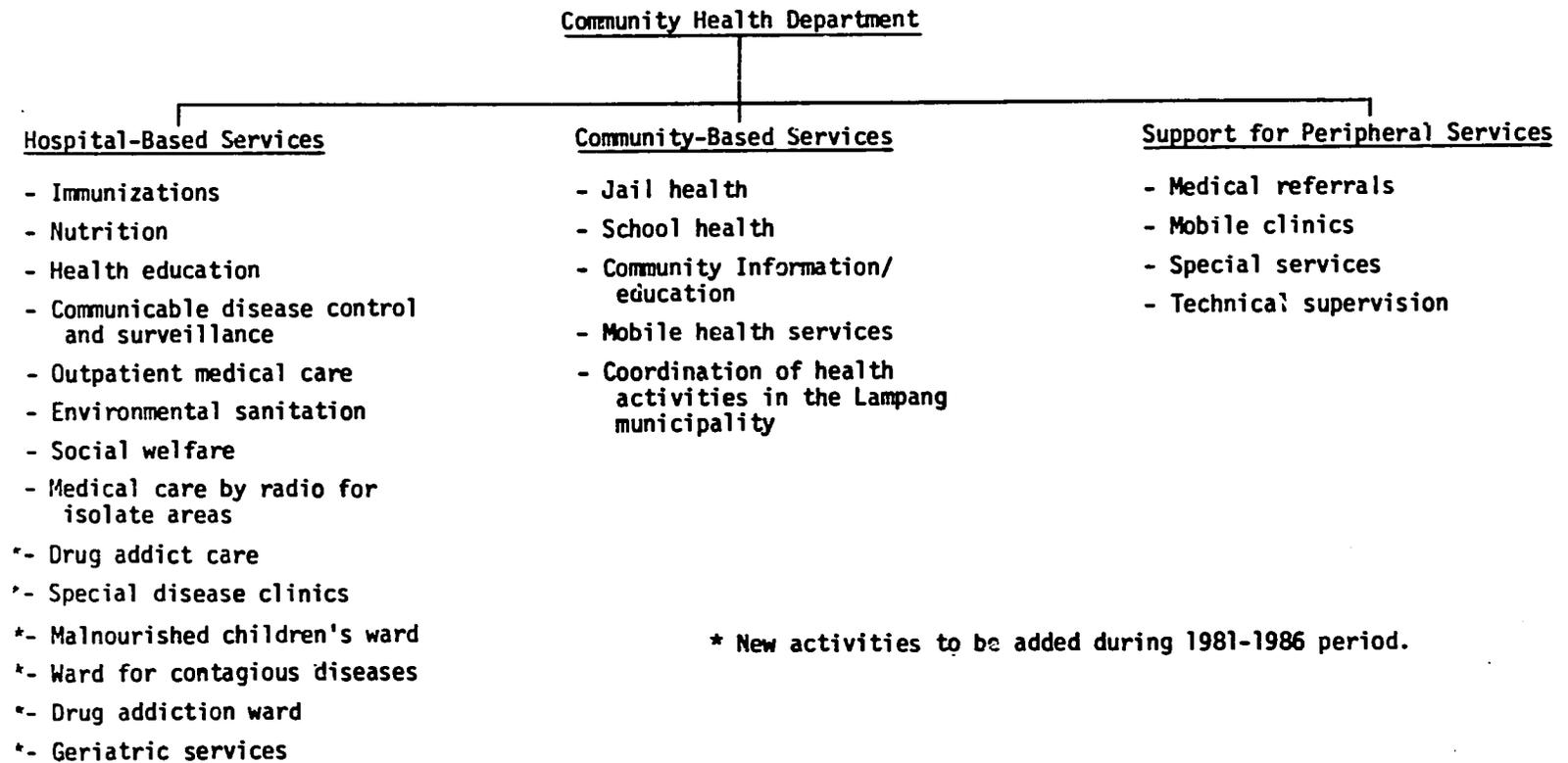
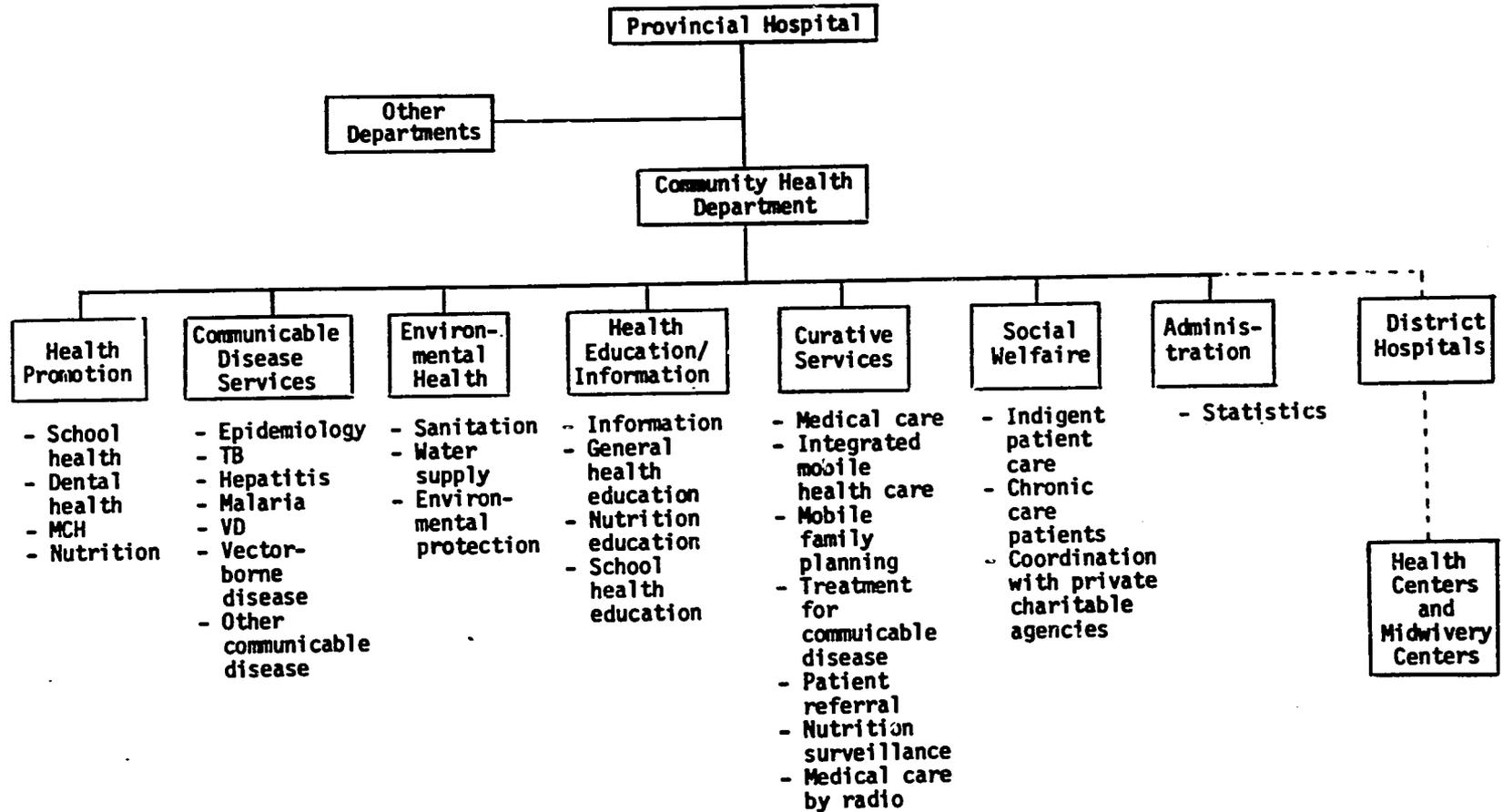


Figure 4

Responsibilities of the Community Health Department, Lampang Provincial Hospital
1979



Resolution of the staffing problems has been complicated, but there has been, and continues to be, a progressive increase in both the total number and professional backgrounds of the department's staff. Table 10 summarizes the staffing pattern over the period of Lampang Project operations.

After the Ministry of Public Health adopted community health departments as formal policy, official positions for department staff were requested from the Civil Service Commission. A number of positions have been authorized, but the department has continued to fill almost half of its staff needs with personnel on loan from other departments and from the provincial health office.

Table 10
Community Health Department Staff
1975-1979

| | 1975 | 1976 | 1977 | 1978 | 1979 |
|-------------------------------------|------|------|------|------|------|
| Physicians | 1 | 2 | 1 | 2 | 2 |
| Nurses | - | 1 | 1 | 4 | 2 |
| <u>Wechakorn</u> * (paraphysicians) | - | - | - | 2 | 3 |
| Nutritionist | 1 | - | 1 | - | 1 |
| Sanitarians | - | - | - | 3 | 1 |
| Nurse aides | - | - | - | - | - |
| Health Educator | 1 | - | - | - | 1 |
| Clerical/Other | 2 | 3 | 5 | 5 | 8 |
| Total | 5 | 6 | 8 | 16 | 18 |

* Wechakorn in the department are hospital nurses or provincial health nurses trained as wechakorn.

PERFORMANCE OF THE COMMUNITY HEALTH DEPARTMENT

Table 11 summarizes services provided by the Community Health Department since 1977, when data were first consolidated for the unit.

The mobile vasectomy program has been a unique activity, and has produced results which merit special mention. Before the mobile team was organized, about 30 to 40 men came to the provincial hospital for a vasectomy each year.

Table 11
 Summary of Services Community Health Department
 Lampang Provincial Hospital
 1977-1979*

| Services | 1977 | 1978 | 1979 |
|---------------------------------------|--------|--------|-------|
| Well Child Services - Total | 4,793 | 5,330 | 6,761 |
| Immunizations: BCG | | | 627 |
| DPT | ** | ** | 5,631 |
| OPV | | | 6,002 |
| Child Nutrition Services | 890 | 3,563 | 4,432 |
| Maternal Health: Tetanus Immunization | - | 817 | 1,250 |
| Pre- & Post-Natal Education | - | 194 | 855 |
| Tuberculosis Patients (old and new) | 751 | 1,365 | 2,005 |
| Outpatient Medical Care | 11,733 | 10,469 | 4,678 |
| Mobile Vasectomy Services | 265 | 761 | 401 |
| Other Mobile Services | 1,001 | 12,577 | 7,317 |
| Social Welfare Services | 1,975 | | |
| Outpatient | - | 3,364 | 3,732 |
| Inpatient | - | 1,573 | 4,200 |
| Jail Health Contacts | - | - | 2,734 |

Source: Community Health Department Report, June 1980

* Before 1977, there was no unified collection of this data

** Totals for 1974 & 1978 unavailable

But in the first two and a half years of operation, the mobile clinic brought the vasectomy service to 1,540 rural men. Operating out of rural health centers, the mobile team has made vasectomies more accessible to rural men who desire no more children, bringing the service close to their homes.

MANAGEMENT, SUPERVISION AND SUPPORT

The overall goals of the Lampong Project included increasing health care coverage to at least two-thirds of the target groups, expanding the integrated health care delivery network to every village of Lamapng Province, increasing the range and improving the quality of curative, promotive and preventive services at all levels; and, improving cost-effectiveness of the whole system. To achieve these ends required the development of a number of specific objectives within the area of management, supervision and support. These objectives were to:

- (1) Reorganize the provincial health infrastructure by bringing together the predominantly curative-oriented Provincial Hospital and the public-health service units under a single coordinating authority, the Provincial Health Office.
- (2) Establish a Department of Community Health in the Provincial Hospital as a link between the hospital and the Provincial Health Office, and between the Provincial Hospital and the network of peripheral health care facilities.
- (3) Reorganize roles and responsibilities within the Provincial Health Office, by modifying organizational structure and management functions to facilitate appropriate coordination and support for the new arrangement of integrated health services, with special emphasis on securing adequate support and appropriate technical guidance for the newly-deployed wechakorn and the network of village health volunteers.
- (4) Establish a streamlined health information system by determining the minimal information needed to be effective, developing processing methods for quick analysis of the data collected, and placing it at appropriate decision points for program monitoring and management.
- (5) Decentralize decision-making to the lowest appropriate levels, and stimulate initiative and self-reliance in the peripheral health units.

- (6) Seek approval from the Ministry of Public Health for the new organization of the Lampang Provincial Health Office, and gain the necessary approval for new positions from the Civil Service Commission.

REALLOCATION OF ROLES AND RESPONSIBILITIES IN THE PROVINCIAL HEALTH OFFICE

The reorganization of roles and responsibilities within the Lampang Provincial Health Office, and the relationship of the Provincial Health Office to Lampang Project divisions is depicted in Figure 5. The two major areas of responsibility that were created are the Planning and Evaluation Division and the Private Sector Division. The former satisfies the chronic need for overall coordination of planning and evaluation. The private sector division is predominantly responsible for community health volunteer support and coordination. It is called the private sector division because volunteers are not officially part of the provincial health structure and because this division also takes responsibility for coordination with private sector practitioners, druggists, and service agencies.

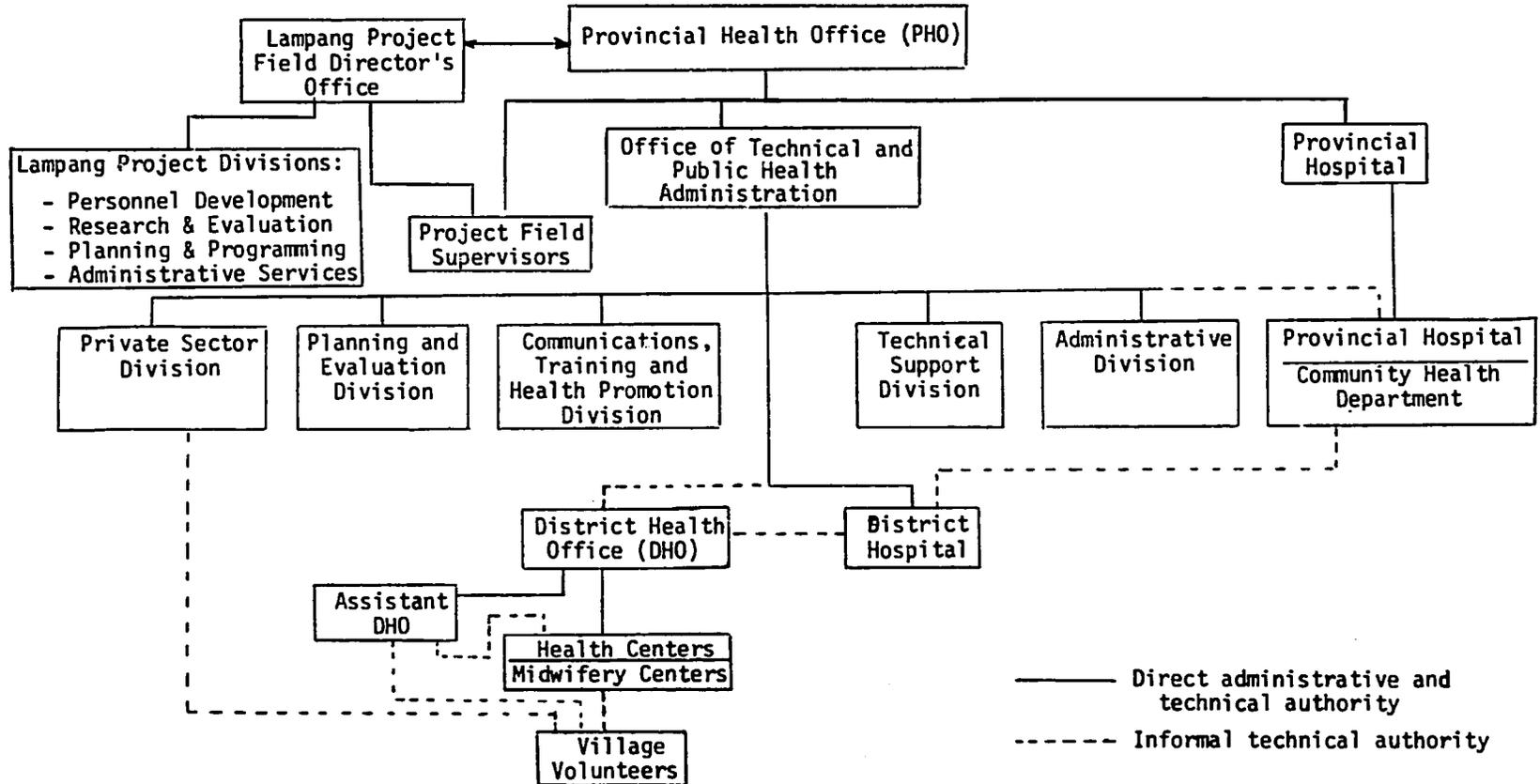
Planning and Evaluation Division

The planning and evaluation division of the Provincial Health Office (which should be distinguished from the Lampang Project Evaluation and Research Division) is responsible for:

- Preparing the master plan of the provincial health office, and monitoring the progress of the plan;
- Assembling the data and information necessary for analyzing problems and operational constraints;
- Coordinating activities with other divisions of related responsibility;
- Planning curative services, including resource planning for curative services in the district hospitals and other health facilities (excepting the provincial hospital) and seeing that sufficient supplies and materials are provided in a timely manner;
- Planning of immunization and communicable disease control programs;
- Planning program activities in maternal and child health, nutrition, and family planning;
- Planning dental health and school health programs (a new activity); and
- Planning sanitation and safe water supply programs in the rural areas.

Figure 5

Reorganized Lampang Provincial Health Office Structure



In 1978, the functions of the Project's Planning and Programming Division were taken over by the Planning and Evaluation Division in the Provincial Health Office.

Private Sector Division

The Private Sector Division has responsibility for support of the community health volunteer network, including health post volunteers, traditional midwives, health communicators, and the village health committees. This includes monitoring and performance of the volunteers and their monthly reports, identifying problems, and assisting in resolving problems in cooperation with the district and tambon health workers, who are in a direct support role.

The division also has control of activities concerned with public health law, including all licensing procedures and authorization of health activities as required by health law.

Technical Support Division

The Technical Support Division is responsible for collecting all data and reports, including those generated by units within and outside the provincial health office, and for selecting the items appropriate for management decision-making; for supplying information to any unit requesting it; for completing all reports required by the Ministry of Public Health, and for providing summary feedback reports to units generating the information.

The Technical Support Division also provides technical support to other internal and external health units. This includes supplying technical resource people for required institutional presentations, distribution of technical documents, public health exhibitions, and responding to enquiries concerning public health in Lampang.

The division monitors the performance of technical units, in particular, activities of the Division of Training, Communications and Health Promotion. This unit is also responsible for any research required by the province or by the ministry to improve technical standards and the quality of health care.

Communication, Training and Health Promotion Division

The Communication, Training and Health Promotion Division takes responsibility for all public health communications, public affairs, and public relations required in Lampang Province. The division arranges training at all levels as specified in the provincial plan, and according to the needs and requests

of district hospitals and district health offices. This includes providing trainers and resource people for training sessions. This division is responsible for manpower development at all levels, including selection and pretesting of candidates for training, seminars, and continuing education, as well as for promotions. It is also responsible for follow-up evaluation of training programs.

Administrative Division

The administrative division is responsible for all provincial financial transactions, including budget control and disbursement, procurement, bidding and contracts for construction. The division oversees all personnel procedures, including salaries and leave records. It is responsible for the Provincial Health Office secretariat which types and files all official correspondence. Equipment inventory also falls within the division's duties. Although not directly involved in service programs, the administrative division plays a key role in providing timely, adequate financial and material support for program activities, and in maintaining the morale of field personnel.

IMPROVEMENT OF INFORMATION QUALITY AND UTILIZATION

A large amount of potentially useful information is generated from the more than 40 types of records and reporting forms utilized in the provincial health care system. However, its unprocessed form and frequent unavailability at key decision points weaken its actual value. Several steps have been taken to strengthen the provincial health information system during the course of project operations.

Data Processing

Staff analysts from the Project's evaluation and research division have routinely reviewed provincial health service statistics, summarized them and processed them for the Provincial Health Office. The project staff provided this assistance during the period when the Provincial Health Office had no strong analytic capability of its own. The analysis of service statistics enabled both provincial health staff and project staff to identify problem areas and effective performance.

Primary Health Care Reporting

With the addition of a primary health care network (the village health volunteers) a whole new information component had to be added to the provincial health information system. Information demands on the volunteers had to be minimized and the system kept as simple as possible. The health post volunteer records his health activities in a daily log, and the local government health worker closest to him visits each month to record the service contacts on a master sheet, which are then consolidated at the district level and sent to the district health office. The research and evaluation division of the Project assisted in establishing the volunteer reporting system, and during the course of Project operations provided a monthly summary of volunteer activities to the Provincial Health Office field staff. A review of these monthly performance summaries pin-pointed problem areas and areas that provided no report, enabling field staff to quickly judge where to focus their attention.

Training Seminars

As modifications in the reporting and information system have been introduced, training and consultation seminars have been held, bringing together local service personnel and project and provincial health leaders in an attempt to create a more meaningful information system. Some progress has been made in providing routine feedback to the peripheral units generating the reports and information, but achievements in this area have been modest.

Informal Channels

In addition to the routine sets of reports and records that are the foundation of the provincial health information system, there are also informal channels of information flow, which have traditionally been more important to provincial decision-making. To strengthen this informal channel of information flow, senior provincial health staff have encouraged responsible division staff to review requests for support carefully, to exchange as much information from monthly meetings as possible, and to promptly respond to requests and problems.

DISTRICT MANAGEMENT WORKSHOPS

To deal with district-level health organization and management needs in a systematic fashion, Project and provincial health staff organized a formal workshop to address these needs pragmatically and comprehensively. A number of senior officials in the Ministry of Public Health (MOPH) who recognized the same management needs agreed to join the project in planning a workshop that might serve as a prototype for other MOPH training workshops on a wider scale. The University of Hawaii sponsored three one-week pilot management workshops in Thailand between June, 1978 and June, 1979. Staff from Lampang and other provinces participated.

Workshop planners tried to make the meetings interesting and useful to the participants, by using less conventional approaches than simply presenting technical lectures. The first meeting was organized using the following approaches to content and methodology:

- District hospital physicians and district health officers (senior sanitarians) were invited to participate jointly in the workshop.
- Case studies, incorporating actual field experiences, were the basis of problem-solving, small-group discussions. As a final product, the groups had to write a joint short-term health plan of action for programs in the district.
- Provincial health officers, superiors of the participating doctors and health officers joined the final sessions to review and respond to the meeting outcomes since recommendations developed by the participants for improved district management would require the assent and active support of the provincial health officers to have any long-term effect.

TECHNICAL AND OTHER SUPPORT FOR DISTRICT HEALTH WORKERS

The Provincial Health Officer provides encouragement and technical support for planning and implementing the programs proposed at the district level. The Community Health Department in the Provincial Hospital also is a continuing source of technical support for rural health work. It receives referred cases from the district hospitals and rural health centers; it has provided considerable support for community-based programs, such as nutrition, school health, mobile vasectomy and mobile health care; and it acts as a source of technical support through its mobile clinics in the rural health centers.

The development of the parapsychian wechakorn has been one of the outstanding contributions of the Lampang Project to provincial health care. The Provincial Health Office has provided support to facilitate the wechakorn role by authorizing a new range of medical and health services, and by providing supplies, drugs, and equipment to meet their technical needs. However, technical support and supervision for the wechakorn in the rural health centers, where most are working, is one area which has not been well resolved. However, the promotion of two outstanding wechakorn to district health officers should improve the capacity for technical supervision at the district level, especially in those districts without a physician.

Several steps have been taken to improve the supply system for rural health facilities. A new building has been constructed for drug and supply storage, and a reorganized inventory system established. The Provincial Health Office has made transportation available to facilitate the movement of medicine and supplies to rural facilities.

SUPPORT FOR PRIMARY HEALTH CARE

The major service activities of the health post volunteer are simple medical care and first aid, distribution of household drugs, and distribution of oral contraceptives. On a less frequent basis, volunteers are also involved in nutritional surveillance, education about vasectomy clinics, condom distribution, immunization programs, and improved water supply.

Factors in Maintaining Performance

The performance of volunteers frequently reaches a high level shortly after completion of their training, tapers off to a plateau within the first year, then gradually increases. Sustaining this plateau depends on how well the household drug supply of the volunteers is maintained, and how frequently the volunteers are visited by the local health worker who brings supplies, provides technical support, and assists with problems. The support has been inconsistent from area to area, depending on the interest and initiative of the local health workers directly responsible for volunteer work. Where there have been relationships of trust and confidence, the volunteers tend to have performed better, and have been more involved in community health programs.

Supply of Household Drugs

Supplying the volunteers with household drugs for simple medical care has been a key problem for which several approaches have evolved. Initially, a consignment of household drugs was given to each volunteer on completion of training. These drugs were to be sold and the proceeds used for purchasing the next consignment. However, volunteers often received no payment for medicines they dispensed, creating cash flow problems. Sometimes they did not have enough money on hand to purchase the resupplies normally distributed through the local health center. At first, the local health center staff issued the resupply drugs on credit, but after a short period of time, the health workers found they were running up large debts. To remedy this, an arrangement was made with one of the large local drug distributors to sell the drugs to volunteers at wholesale prices, using drug stores in each district as the supply outlets. The system eliminated the problem of health worker debts. However, it became less convenient for the volunteers to get drug supplies, and required that they have cash for immediate payment. This tended to reduce the probability that the volunteers would refill their drug supplies promptly.

The system as it is currently organized is a mixed one: in some areas, health workers continue to provide the drugs to the volunteers, but on a cash basis. In other areas, the private drugstores still provide the resupplies.

Perhaps the best system of resupply is carried out in the district where training and support for volunteers have been turned over to the private-sector Community-Based Family Planning Services organization (CBFPS) on a pilot basis. In this district, where 45 volunteers have been trained by CBFPS, the resupply function is carried out by the district volunteer coordinator, who is hired by and directly responsible to CBFPS. The coordinator travels throughout the district, bringing household drugs and contraceptive resupplies to volunteers on a cash basis, and gathering information for the reporting system. This system is undoubtedly more convenient for the volunteers since they are spared the inconvenience and lost time in travel to a resupply point, and are guaranteed regular visits. As with HPVs, CBFPS volunteers must pay for household drugs and contraceptives.

LINKS BETWEEN VILLAGE VOLUNTEERS AND RURAL HEALTH FACILITIES

Although the network of village health volunteers is relatively autonomous, its link to the rural health center network is crucial for technical and material support, and for maintaining volunteer motivation and participation. A measure of this link is the frequency of contacts between health center and midwifery center workers and the health post volunteers.

Frequency of contacts varies widely from area to area, depending on the needs of the individual volunteer and on the interest level of the health center workers. Normally, the health workers in a given center share responsibility for volunteer support and visits. Each worker therefore has direct responsibility for about 3 to 5 health post volunteers, depending on the number of villages in the subdistrict. Confirmation of the level of health worker-volunteer contact was covered by a project survey of health post volunteers. A random sample of 113 volunteers from 10 of the province's 12 districts, or about 17% of the total health post volunteers working in those districts showed the following:

- 75% of the health volunteers had been visited at least 10 times since completing training;
- Almost 17% had been visited more than 30 times;
- Only one volunteer had never been visited;
- Visits were mostly made by health center and midwifery center workers: wechakorn (45% of the visits); government midwives (24% of visits); and male sanitarian workers (17% of visits);
- Volunteers also travelled to consult with health workers: 76% said they most frequently went to see either a wechakorn, male sanitarian worker, or the government midwife; and
- Finally, the health post volunteers interviewed indicated the health worker interactions they favored most were with wechakorn (48%); the government midwives (20%); and the male sanitarian workers (14%). Most of these workers are located at the health center and midwifery center levels.

This is a clear indication of relatively frequent contact between the rural health center workers and the village health volunteers. The content of those interactions is not specified in the survey data, but drug resupply and gathering volunteer performance information are generally the reasons for contact.

FUTURE CONSIDERATIONS

Long-term performance and continued motivation of village health volunteers need to be given careful consideration. The basic assumption of many health leaders is that motivation and performance will be maintained because volunteers gain prestige and status in their communities, because they feel they are serving their neighbors and making merit as Buddhists, and because they receive personal and technical support through frequent visits by the local health worker. While such idealism may motivate some, it may be inadequate for many others in the pragmatic environment of village life.

In the short term, during the months immediately following training, the novelty and the status of their work may motivate the volunteers, particularly if they only see villagers and distribute medicine from their home when convenient. However, despite the minimal demands on their time, a slackening in some areas of performance after the first year has been observed. One method to counter this slackening in performance and to improve the volunteer contribution to community health is to have volunteers trained and employed in high-priority programs such as oral rehydration therapy for infant and child diarrheas, nutritional surveillance, promotion of immunizations, water supply and sanitation. However, such an approach requires more time and a greater effort on the part of the volunteer working within the community. (To be successful, volunteers have to do more than wait at home for villager visits). It seems unrealistic to expect this kind of work from the volunteer without some additional form of reward, whether it be from the community itself (not yet tested in Lampang) or from other government sources.

Finally, one of the major components of the primary health care approach is that community participation and community involvement is required as a foundation of support and motivation for the primary health care worker. There is, of course, a clear need for such a program to succeed. But it is unrealistic to expect that community participation will emerge spontaneously. Rural villagers in Thailand have long been capable, pragmatic, and self-sufficient where their own immediate economic and daily life needs are concerned. But they have not taken initiative or joined together in community programs, such as preventive or promotive health, when the direct and immediate benefit to them seems less clear. Such programs have been left to the government to organize and carry out.

The government has mandated that training and programming for primary health care begin immediately. The pragmatic health manager at the provincial level cannot wait for community involvement to develop; it takes time, and there has not been a strong record of cooperation between the village and the government. The provincial health manager must recognize that as the primary health care volunteers return to their villages to begin work, they need to be strongly supported, and immediately involved in a narrow range of high-priority programs for which they are well-trained. At the same time, the support of the community must be continually sought, and may gradually emerge as the utility and contribution of the volunteers becomes more apparent in the community.

ACCESSIBILITY AND UTILIZATION OF HEALTH SERVICES

ACCESSIBILITY OF HEALTH SERVICES

Availability of Health Manpower

The major gap in the capacity of the government health delivery system to reach and serve the rural population was due to the relative unavailability of health personnel at the periphery of the health system -- the district level, the subdistrict level, and the village level. Thus, the major emphasis of the Lampang Project was the development of health manpower for these levels: wechakorn paraphysicians for district and subdistrict levels, and three types of community health volunteers for the village level.

Table 12 summarizes the numbers of Lampang provincial health personnel within the province in late 1974 when the Project began operations and in 1979 when Project interventions were completed. Table 13 summarizes the numbers of various types of health workers per 100,000 residents in Lampang in 1974 and in 1979.

Table 12

Health Manpower Available in Lampang
Province, 1974 and 1979

| Total Health Manpower for Whole Province | 1974 | 1979 | % Change |
|--|------|---------|----------|
| Village health post volunteers * | 0 | 918 * | +++ |
| Village health communicators * | 0 | 5,359 * | +++ |
| Trained traditional birth attendants * | 0 | 352 * | +++ |
| Sanitarian health workers | 59 | 63 | +7% |
| Government midwives | 76 | 110 | +45% |
| Nurse aides | 37 | 179 | +384% |
| Nurses | 51 | 97 | +90% |
| Paraphysicians, <u>Wechakorn</u> * | 0 | 92 * | +++ |
| Physicians | 17 | 41 | +141% |

* Trained by Lampang Project

Table 13

Number of Rural Health Service Personnel and Community Health Volunteers per 100,000 Villagers in Rural Areas of Lampang in 1974 and 1979

| Type of Personnel/Volunteer | Number Available per 100,000 Rural Residents | | |
|--|--|------|----------|
| | 1974 | 1979 | % Change |
| Village Health Post Volunteers * | 0 | 134 | +++ |
| Village Health Communicators * | 0 | 870 | +++ |
| Trained Traditional Birth Attendants * | 0 | 56 | +++ |
| Sanitarian Health Workers | 9 | 9 | -0- |
| Government Midwives | 13 | 18 | +38% |
| Nurse Aides | 0.5 | 3 | +500% |
| Nurses | 0.5 | 2 | +300% |
| Wechakorn Paraphysicians * | 0 | 13 | +++ |
| Physicians | 0.3 | 1 | +233% |

* Trained by Lampang Project

While government midwives and sanitarian health workers were in touch with rural residents, their skills were limited and they were unable to satisfy the major demand for service -- medical care. Government midwives and sanitarian health workers were chosen to receive medical care training as a first step in introducing integrated rural health services. Of the 92 wechakorn paraphysicians trained, 77 were assigned to rural health facilities: 72 were stationed at village-level midwifery centers and subdistrict-level health centers, and 5 were stationed at district hospitals.

Even with medical care training and additional public health training provided to government midwives and sanitarians by the Project's wechakorn paraphysician training program, government midwives and sanitarian health workers were too few to provide needed primary care services close to the homes of rural residents. The development of community health volunteers at the village level was another major focus of Project effort during the first five years of operations. A total of 918 health post volunteers were trained to serve in all 574 villages of Lampang. There were 5,359 village health communicators and 352 traditional midwives who were trained to provide village-level health information and other limited health services in coordination with the health post volunteers.

While the ratios of wechakorn-to-population in Lampang reached optimal levels for medical care purposes, 1:7,960 for rural areas and 1:7,130 for the whole Province, health volunteers provided the most complete coverage of the rural population, as volunteer to population ratios show. In the rural areas of Lampang, there is now one active HPV for every 745 rural villagers, one active village health communicator for every 115 rural residents; and one TBA for every 1,772 rural residents. This represents 134 active HPVs per 100,000; 870 health communicators per 100,000; and 56 active traditional birth attendants per 100,000 rural residents in Lampang.

Availability of Health Facilities

When the Project began operations in 1974, the province had only 11 child nutrition centers, 31 midwifery centers, 36 subdistrict health centers, and two district hospitals to serve Lampang's rural areas. By 1979, there were 100 child nutrition centers and 918 health posts at the village level, 30 midwifery centers, 30 subdistrict health centers, and 7 district hospitals serving Lampang's rural areas. These increases in rural health facilities are summarized in Table 14.

Table 14
Rural Health Facilities Development in
Lampang Province, 1974 to 1979

| | 1974 | 1979 | % Change |
|---|------|------|----------|
| Village Health Posts | 0 | 918 | +++ |
| Village Child Nutrition Centers | 11 | 100 | +809% |
| Village Midwifery Centers | 31 | 30 | -3% |
| Subdistrict Health Centers | 36 | 70 | +94% |
| District Hospitals | 2 | 7 | +250% |
| Provincial Hospital Mobile Unit | 0 | 1 | +++ |
| Provincial Hospital Comm. Health Department | 0 | 1 | +++ |

Table 15 summarizes the changes in geographic coverage by government health facilities and village health posts from 1974 to 1979. Districts with hospital coverage include the district hospitals in rural districts and the Provincial Hospital which effectively functions as a "district hospital" for the very large Muang District of Lampang.

The increased coverage of subdistricts with health centers was accomplished primarily by upgrading a number of existing midwifery centers to function as health centers. Many midwives who had been trained as wechakorn returned to their former midwifery centers to help expand their range of services and to operate them as

Table 15
 Summary of Area Coverage by Rural Health Service
 System in Lampang Province,
 1974 to 1979

| | 1974 | 1979 | % Increase/Decrease |
|--|---------|------|---------------------|
| Villages with Health Posts and HPVs | 0% | 100% | +100% |
| Villages with Trained Traditional Midwives | unknown | 59% | + 59% (or lower) |
| Villages with Midwifery Center | 5% | 5% | 0% |
| Villages with Child Nutrition Center | 2% | 17% | + 15% |
| Subdistricts with Health Center | 57% | 90% | + 33% |
| Districts with District Hospital | 27% | 67% | + 40% |

health centers. As midwifery centers were converted to health centers, there was a corresponding but slight decrease in coverage by midwifery centers. The most notable increase in coverage relates to the establishment of 89 new village-based child nutrition centers.

Figure 6 presents a visual portrayal of the distribution of government health care facilities in Lampang in 1974 and 1979, respectively.

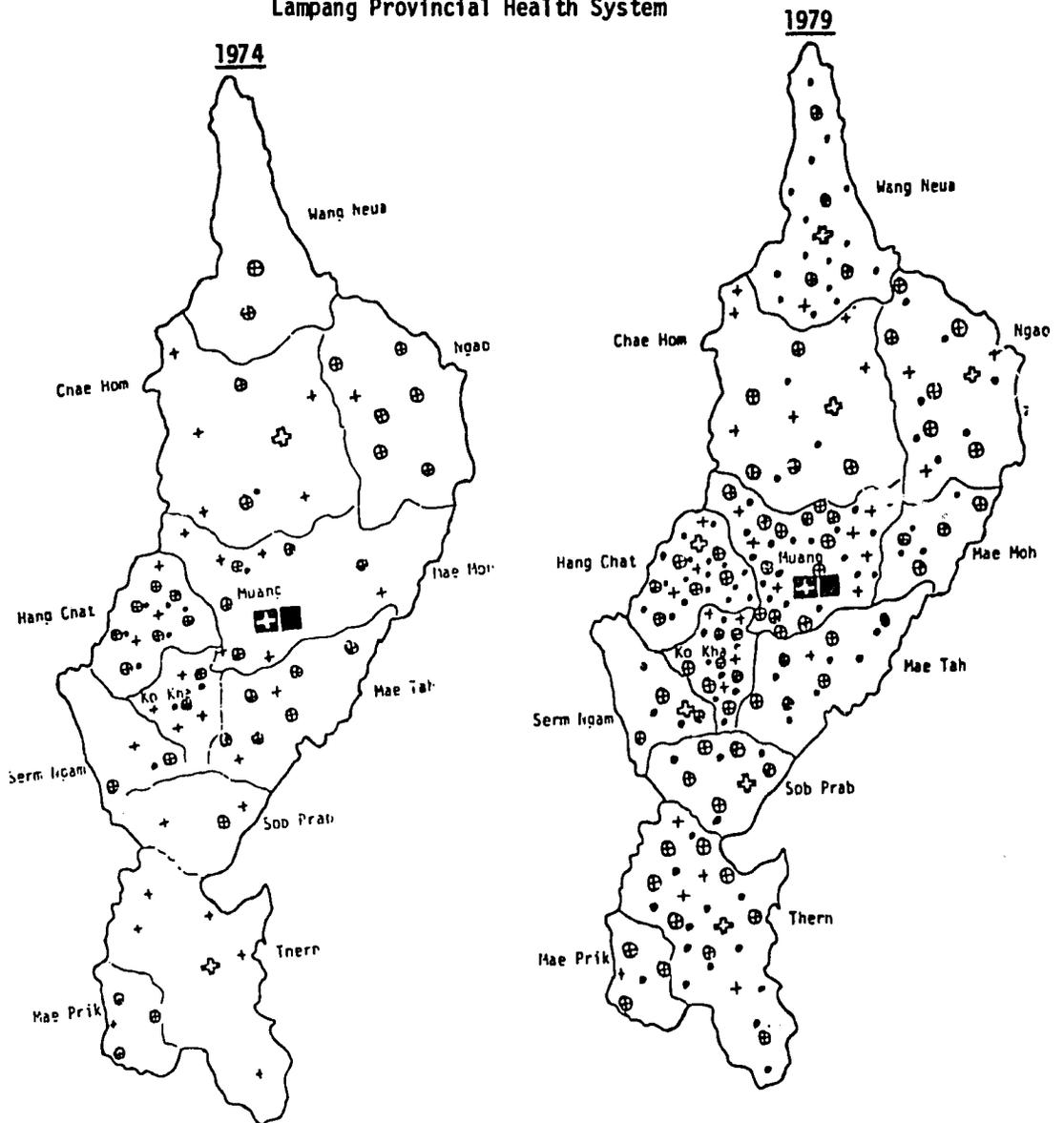
Access to Provincial Hospital Services

Although the Provincial Hospital is utilized by people from all over the province (and on occasion by people from neighboring provinces), the majority of patients come from areas near the hospital, or which are along convenient access routes. 54% of all hospital patients came from Muang District where the Provincial Hospital is located (Muang District contains only 27% of the province's population). In general, the more distant the patient's home, the less likely the patient will come to the provincial hospital for care. Figure 7 shows the proportion of patients coming from each district.

In general, the districts near the hospital -- within the radius of 25 to 30 kilometers -- account for almost 90% of all hospital patients. The four districts most distant -- 80 to 100 kilometers from Lampang town -- accounted for only 4% of all patients.

Figure 6

Lampang Provincial Health System

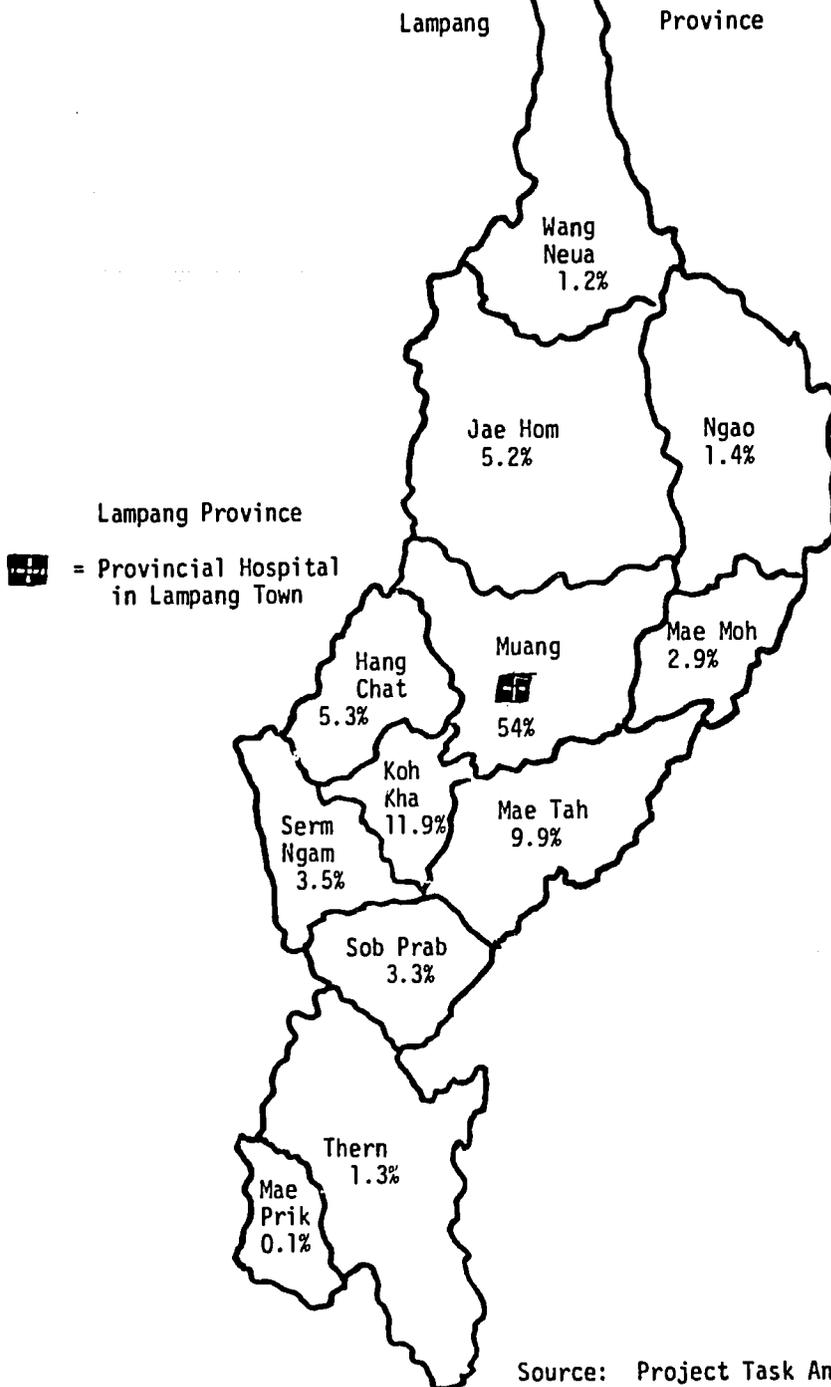


LAMPANG PROVINCIAL HEALTH SYSTEM

| | 1974 | 1979 |
|-----------------------------------|------|-------|
| ■ Provincial Health Office | 1 | 1 |
| ⊞ Provincial Hospital | 1 | 1 |
| ⊕ District Hospitals | 2 | 7 |
| ⊗ Subdistrict Health Centers | 36 | 70 |
| + Village Midwifery Centers | 31 | 30 |
| • Village Child Nutrition Centers | 11 | 100 |
| Village Health Posts and HPVs | 0 | 918 |
| Village Health Communicators | 0 | 5,359 |
| Trained Traditional Midwives | 0 | 352 |

Figure 7

Proportion of Sample Patients in Lampang
Provincial Hospital by
District of Origin



Access to Rural Health Services

The majority of people who came to rural health facilities traveled less than four kilometers. The proportion of consumers traveling a longer distance (over four kilometers) increased sharply in the post-intervention period. Less than 15% of the consumers traveled over four kilometers in the baseline period, whereas this increased to over 25% in the post-intervention surveys.

In the pre-intervention surveys, walking was the most common form of travel to receive services; between 80% and 95% of the consumers either walked, rode a bicycle or a motorcycle. In the post-intervention period, fewer people walked to receive care, and there was a large increase in the proportion of people who rode motorcycles. In both the pre- and post-intervention periods, approximately 80% of all villagers who came to rural health facilities for care traveled less than 30 minutes (and about half traveled 10 minutes or less). In only a few of the cases was payment for public transportation required, as 90% of the service users walked, rode a bicycle, or used their own motorcycle.

A large proportion of consumers at the rural health facilities paid less than one baht (five US cents) for services received (payment is made as a "donation" to the health center). Between 60% and 70% of all consumers paid under ten baht (50 US cents) for services received in both pre- and post-intervention periods; over 90% paid less than 30 baht (US\$1.50). In the post-intervention period, although the proportion of consumers paying little or nothing was large -- almost 40% -- there appeared to be a general increase in the proportion who paid 10 to 30 baht. Generally, payments made at rural health facilities are for "medicine", rather than for "services", and the increase in payments ranging from 10 to 30 baht may reflect the increased range and quality of medicines and supplies available at rural health facilities after the assignment of Project-trained wechakorn.

In summary, the data suggest that consumers who came to rural health facilities for services came from slightly farther away in the post-intervention period, although at least 70% came from a distance of less than 4 kilometers. Although the great majority -- over 90% -- walked, rode a bicycle or motorcycle, there was a slight increase in the proportion of consumers who used public transportation, with a corresponding increase in travel costs.

The broad increase in the availability of government rural service providers is documents in the previous chapter. The evidence that in the post-intervention period service users traveled somewhat farther and longer in time and paid a bit more for transportation and services received could suggest that access to

service declined. On the other hand, these facts could also reflect the improved credibility of the service facilities and providers, resulting in an increased consumer willingness to come from afar and pay for better medicines and care. Further analysis of utilization data should help to clarify this issue.

Access to Community Health Volunteers' Services

Training health post volunteers, traditional birth attendants (TBA's) and health communicators for every village in Lampang Province was a major Project strategy to improve rural consumer access to health care. The volunteers are close to the people they serve both socially and geographically, their services are extremely low cost and they can facilitate access to other services of government health care. These factors suggest relative ease of access to volunteer care.

Volunteer service data and other survey data provide information about access to volunteer services. Service data indicate that consumers pay, on the average, slightly more than one baht per medical care contact; an estimated 20% through 25% pay nothing. The donation for a one month's supply of oral contraceptives distributed by HPV's is one to three baht. The Community Health Survey indicates 20% through 30% of women using oral contraceptives get them from health post volunteers. In a small survey of rural contraceptive users, over 80% of those using oral contraceptives said they had chosen to get their monthly supply from the health post volunteer because the volunteers were "conveniently close".

Traditional birth attendants (TBA) have historically been the most accessible service for delivering children in the rural areas. They not only attend deliveries at villager's homes, but have played a "grandmother" role in helping with household tasks, have performed rites associated with childbirth, and act as a source of information on child care. They are considered less health care providers than family friends and counsellors.

TBA costs are low and vary according to the means of the household receiving her services. The payments villagers make (both cash and in kind) for her services are not considered to be a payment for services, but are a donation to the memory of the TBA's original teacher. The TBA maintains a lifelong relationship with the family she has served, and the family hold her in respect.

The Project strategy to train community health volunteers was built on factors in the village setting which contribute to easy access to village-based health care. Health post volunteers live in and are familiar with the village they

serve; their services are very low in cost; and they meet existing villager demands for health and family planning services.

Ultimately, the best indicator of accessibility is the response of rural villagers to available services in terms of their actual utilization of these services.

UTILIZATION OF HEALTH SERVICE BY CHILDREN

Table 16 summarizes utilization of health service by children under age six in the year previous to the interview (baseline and follow-up).

Table 16

Percent of Target Child Population Using Government-Supported Services in Lampung, Baseline and Follow-up Surveys

| Child Health Services | Area | Baseline | Follow-up | % Increase/ Decrease |
|---|--------------------------------|----------|-----------|-------------------------|
| A. Any child health services | E ₁ | 30.1% | 65.5% | +35.4% |
| | E ₂ | 42.4% | 60.3% | +17.9% |
| | E ₁ +E ₂ | 37.5% | 62.2% | +24.7% |
| | C ₁ | 42.7% | 39.5% | -3.2% |
| | C ₂ | 42.4% | 50.0% | +7.6% |
| B. Medical Care Services | E ₁ | 19.1% | 20.5% | +1.4% |
| | E ₂ | 10.4% | 18.8% | +8.4% |
| | C ₁ | 12.4% | 16.7% | +4.3% |
| | C ₂ | 7.6% | 16.3% | +8.7% |
| C. Immunization Services | E ₁ | 13.1% | 24.9% | +11.8% |
| | E ₂ | 33.7% | 23.3% | -10.4% |
| | C ₁ | 26.6% | 20.9% | -5.7% |
| | C ₂ | 30.6% | 10.5% | -20.1% |
| D. Nutrition, Well Child, and Other Child Health Services | E ₁ | 3.1% | 51.7% | +48.6% |
| | E ₂ | 5.9% | 41.8% | +35.9% |
| | C ₁ | 7.3% | 12.5% | +5.2% |
| | C ₂ | 15.1% | 38.3% | +23.2% |

In both project intervention areas, utilization of government-supported health services by pre-school children rose to significantly higher absolute levels than in the control areas; moreover, the project areas also showed much larger proportionate increase between the baseline and follow-up measurements than did the control areas.

The overall differences between the Project service areas and the control areas are equally apparent when the number of government-supported services received per 1,000 children under age six is examined. Table 17 shows that although the average number of service received per 1,000 target group children were roughly similar in the baseline period, they had increased substantially in both Project areas during the follow-up period. On the other hand, there was a decrease in the C₁ control area, and a small increase in the C₂ control area.

Table 17

Government-Sponsored Services Provided
per 1,000 Children Under Age Six

| Area | No. Services per 1,000 Target Group Children | | % Change |
|----------------|--|-----------|----------|
| | Baseline | Follow-up | |
| E ₁ | 409 | 2,003 | +390 |
| E ₂ | 636 | 1,017 | +60 |
| C ₁ | 512 | 427 | -17 |
| C ₂ | 632 | 750 | +19 |

The very substantial increase in the proportion of all children who received services in the project areas was not confined to children in any one economic level. Table 18 shows the change in the pattern of service utilization by children of different economic status. In the baseline period, service utilization among pre-school children was low for all children, and particularly for those in the poor and middle-level households. The sharp increases in child service utilization occurred in all economic groups in the E₁ and E₂ areas; this trend was not generally true in the control areas.

A breakdown of where children received health services is provided in Table 19. In both project implementation areas and control areas, clearly the major source of health care for pre-school children has been the subdistrict health center. Although this generally remained true in both baseline and follow-up surveys, there were some distinct, divergent changes in the distribution of services by source between the 78
Project and control areas.

Table 18

**Proportion of Children Under Age 6 Who Received
Government-Supported Health Services
in the Previous Year, by Household
Economic Status**

| Area | No. of Sample Children | | Baseline and Follow-up | | | | | | | |
|----------------|------------------------|-----|--|------|---------------|------|-----------------------|------|---------------------|------|
| | | | % of children using services by household economic status ^a | | | | | | | |
| | BL | FU | All Children | | Poor Children | | Middle Level Children | | Well to do Children | |
| E ₁ | 1,076 | 342 | 30.1 | 65.5 | 29.2 | 66.9 | 30.5 | 63.9 | 32.3 | 75.0 |
| E ₂ | 1,636 | 592 | 42.4 | 60.3 | 38.6 | 57.0 | 43.1 | 62.1 | 49.2 | 63.8 |
| C ₁ | 772 | 239 | 42.7 | 39.5 | 43.9 | 44.3 | 41.8 | 37.3 | 70.0 | 22.2 |
| C ₂ | 316 | 86 | 42.4 | 50.0 | 37.0 | 47.7 | 46.4 | 54.1 | 100.0 | 40.0 |

^a Generally quite small numbers in this group

In summary, several general observations concerning utilization of services by children under age six during Project implementation can be made:

- (1) A much larger proportion of target group children in Project intervention areas was reached with government health services than in the control areas.
- (2) Project intervention areas demonstrated broader coverage of children with health promotion and disease prevention services than in control areas.
- (3) Medical care services increased in all areas.
- (4) In Project intervention areas there was a clear shift in child health services utilization towards rural health facilities and village-based providers, with a concurrent reduction in provincial hospital use; but, in control areas the shift was toward increased use of the provincial hospital.

Table 19

Source of Services for Children Under Age Six
Who Received Government-Supported Services
in the Previous Year

Baseline and Follow-up

| Source of Service | % of Children Receiving Services ^a | | |
|--|---|-----------|----------|
| | Baseline | Follow-up | % Change |
| E ₁ Health Post Volunteer ^b Child Nutrition Center Subdistrict Health Center District Hospital ^c Provincial Hospital Mobile Unit/Other (N-BL = 324, N-FU = 224) | 0.3% | 5.3% | +5.0% |
| | 2.2% | 8.9% | +6.7% |
| | 72.8% | 77.2% | +4.4% |
| | 1.2% | 12.9% | +11.7% |
| | 29.3% | 16.1% | -13.2% |
| | 3.1% | 2.7% | -0.4% |
| E ₂ Health Post Volunteer ^b Child Nutrition Center Subdistrict Health Center District Hospital Provincial Hospital Mobile Unit/Other (N-BL = 693, N-FU = 357) | 0.1% | 5.3% | +5.2% |
| | 0.9% | 3.9% | +3.0% |
| | 66.8% | 77.3% | +10.5% |
| | 3.3% | 4.8% | +1.5% |
| | 21.6% | 17.6% | -4.0% |
| | 7.3% | 4.2% | -3.1% |
| C ₁ Health Post Volunteer Child Nutrition Center Subdistrict Health Center District Hospital ^d Provincial Hospital Mobile Unit/Other (N-BL = 330, N-FU = 94) | 0.0% | 0.0% | 0.0% |
| | 0.3% | 2.1% | 1.8% |
| | 74.2% | 45.7% | -28.5% |
| | 2.4% | 1.1% | -1.3% |
| | 22.4% | 43.6% | +21.2% |
| | 3.0% | 3.2% | +0.2% |
| C ₂ Health Post Volunteer Child Nutrition Center Subdistrict Health Center District Hospital ^d Provincial Hospital Mobile Unit/Other (N-BL = 134, N-FU = 43) | 0.0% | 0.0% | 0.0% |
| | 0.0% | 0.0% | 0.0% |
| | 91.8% | 76.7% | -15.1% |
| | 2.2% | 0.0% | -2.2% |
| | 11.2% | 20.9% | +9.7% |
| | 0.0% | 9.3% | +9.3% |

^a Sum of % may exceed 100% as more than one source of service was used by the same person.

^b A few volunteers had been trained before baseline data collection began.

^c There was no district hospital in E₁ during the baseline survey, but one was built before the follow-up survey.

^d There is no district hospital in these districts.

Source: Community Health Survey

Table 20
 Percent of Target Women Using Government-Supported Health
 Services in Baseline and Follow-up Surveys

| Women's Health Services: | Area | Baseline | Follow-up | % Increase/ Decrease | |
|------------------------------|---|----------------|-----------|-------------------------|--------|
| A. Any Type of Service | E ₁ | 36.2% | 44.7% | +8.5% | |
| | E ₂ | 30.1% | 45.0% | +14.9% | |
| | C ₁ | 40.7% | 42.8% | +2.1% | |
| | C ₂ | 30.1% | 43.6% | +13.5% | |
| B. Delivery Care Services | E ₁ | 44.0% | 88.1% | +44.1% | |
| | E ₂ | 41.8% | 78.3% | +36.5 | |
| | C ₁ | 31.9% | 42.5% | +10.6% | |
| | C ₂ | 30.9% | 45.8% | +14.9% | |
| C. Pre-natal Care Services | E ₁ | 55.7% | 70.3% | +14.6% | |
| | E ₂ | 51.9% | 66.4% | +14.5% | |
| | C ₁ | 53.2% | 75.3% | +22.1% | |
| | C ₂ | 40.2% | 62.5% | +22.3% | |
| D. Post-natal Care Services | E ₁ | 9.6% | 17.8% | +8.2% | |
| | E ₂ | 11.6% | 15.4% | +3.8% | |
| | C ₁ | 11.5% | 13.7% | +2.2% | |
| | C ₂ | 11.3% | 12.5% | +1.2% | |
| E. Family Planning Services: | (1) Proportion of currently married couples (with wife 15-44 years) who practice contraception | E ₁ | 56.0% | 70.6% | +14.6% |
| | | E ₂ | 53.7% | 55.8% | +2.1% |
| | | C ₁ | 50.7% | 65.2% | +14.5% |
| | | C ₂ | 59.8% | 75.6% | +15.8% |
| | (2) Proportion of all contra- cepting married women receiving family planning services from government sources, including volunteers | E ₁ | 94.6% | 92.7% | -1.9% |
| | | E ₂ | 83.4% | 82.2% | -1.2% |
| | | C ₁ | 95.2% | 94.9% | -0.3% |
| | | C ₂ | 61.9% | 65.6% | +3.7% |

- (4) In Project intervention areas there was a clear shift in child health services utilization towards rural health facilities and village-based providers, with a concurrent reduction in provincial hospital use; but, in control areas the shift was toward increased use of the provincial hospital.

UTILIZATION OF HEALTH SERVICES BY TARGET GROUP WOMEN

Measurement of service coverage for all women age 15-44 was a major objective of project evaluation, as this utilization relates directly to assessing achievement of the project objectives. But utilization rates for all women are gross measures, and do not provide sufficient detail concerning coverage of groups within this population who have specific health needs or are at high risk. Most data available suggest that service utilization is concentrated among currently married women, who are pregnant, or have delivered a child or are practicing family planning. Such needs are specific, and coverage is best measured in terms of these subgroups of the larger target group.

Utilization of Maternity Services

The group within the population of reproductive-age women who have the most important health needs are those currently married. This group comprises about 50% to 60% of all women ages 15 to 44. The target group relevant to assessing utilization of maternity services are women who have had a delivery.

For women who delivered in both Project implementation areas and control areas, there was a substantial increase in the proportion who were served by a trained attendant. (Trained attendant refer to those who provide delivery services under the provincial health service system: doctors, nurses, government midwives, wechakorn, and traditional birth attendants (TBA) trained under the Lampang Project).

While coverage of women in need of delivery care increased in both project and control areas, the absolute levels of delivery services received -- as well as the proportionate increase from the baseline periods -- considerably higher in the Project areas.

Government midwives, who are present in all district hospitals, subdistrict health centers, and midwifery centers, have maintained an important role in delivery care, accounting for over 30% of deliveries in E_1 , and over 17% in E_2 districts for the follow-up period. In the combined control areas, government midwives attended 10.3% of deliveries. Most deliveries by government midwives are done in the village women's homes; few are done in rural health facilities (except for district hospitals)

The most frequently-used provider of delivery care is the traditional birth attendant, or indigenous midwife. Despite a decline in the proportion of women using her services between the baseline and follow-up periods, the traditional birth attendant still delivers between 30% and 35% of all children born in the rural areas surveyed. The most important single factor contributing to the high rates of delivery service coverage apparent in project areas during the follow-up period were the services of Project-trained traditional birth attendants. Delivery care coverage in project areas increased by 44% between the baseline and follow-up periods, and most that increase was a result of including trained TBA services.

Utilizations of pre-natal care services at least once during pregnancy by women who had delivered during the two years previous to the time they were interviewed improved substantially in both project and control areas. At the time of the follow-up surveys, the proportion of women who said they had received pre-natal care for their most recent pregnancy had reached 68% for the combined project intervention areas and 72% in the combined control areas. These levels represented a 15% increase over baseline levels in project areas, and a 22% increase in the control areas.

Government-supported sources are the major providers of pre-natal care; although there was a small decline from baseline levels, over 90% of pre-natal services had been provided by government sources in the follow-up period. Moreover, the major sources of pre-natal care were the conventional government facilities: the Provincial Hospital, district hospitals, and rural health centers; in contrast to the pattern of delivery service use, few women reported seeking pre-natal care from traditional birth attendants.

Pre-natal care utilization had reached high, roughly comparable levels in both project and control areas by the follow-up period. There were, however, differences in the pattern of service use between project and control areas. In both project areas, there was a moderate decline in use of the Provincial Hospital for prenatal care, and a 35% to 40% increase in use of rural health facilities. The control areas showed a slight decrease in hospital use, as well as a 12% decrease in utilization of prenatal services at rural health facilities. There was, however, an increase in the use of TBA's and other types of providers, a trend not apparent in Project areas where TBA's had been trained.

Use of post-natal services by women who had delivered in the previous two years contrasted strikingly with utilization of prenatal and delivery care. Unlike other maternity services, post-natal care was received by only a small proportion of women who had delivered a child. Use of post-natal services in

the combined project areas rose to 16.4% (an increase of +8.2%) whereas control area utilization reached 13.4% (an increase of 1.7%). Despite the general increase in use of post-natal care service between baseline and follow-up periods, only a relatively few women made use of such service after delivering their children. The reason for this appears to be quite pragmatic: once the child has been born, a woman sees no need for post-natal care for herself or her child unless some problem has developed. When asked why they did not seek post-natal care, 70% to 80% responded that they had experienced no problem and had no need for this type of service. The two most frequently cited reasons for using post-natal services were that some problem or complication had developed, or that the person who delivered the baby (generally a government health worker) had made an appointment with the mother for a post-natal examination.

Family Planning Services

Baseline survey data indicated high rates of contraception in intervention Project and control areas of Lampong, and for the control area in adjacent Lampong Province. As about 50% of currently married women ages 15 to 44 were practicing contraception in the baseline periods, Project staff did not expect much change in follow-up levels. However, a general increase in contraceptive practice did occur, as summarized in Table 21. The levels of current practice in the E₁ and C₁ areas

Table 21

Proportion of Currently Married Women Age 15-44
Practicing Contraception at the Time
of Interview; Baseline and Follow-up

| Age Group | % of Women practicing contraception | | | | | | | |
|----------------------|--|-----------------------|--|-----------------------|--------------------------------------|-----------------------|--------------------------------------|-----------------------|
| | BL E ₁ n=1,058 (1975) | FU n=466 (1979) | BL E ₂ n=1,783 (1977) | FU n=811 (1979) | BL C ₁ n=838 (1975) | FU n=379 (1979) | BL C ₂ n=371 (1975) | FU n=127 (1979) |
| All ages | 56.1 | 64.4 | 50.8 | 53.8 | 50.7 | 62.5 | 58.0 | 73.2 |
| 15-19 | 22.4 | 46.7 | 21.8 | 19.5 | 13.8 | 23.1 | 25.0 | 50.0 |
| 20-24 | 47.5 | 61.1 | 43.7 | 53.6 | 46.0 | 56.0 | 49.4 | 70.6 |
| 25-29 | 74.1 | 64.8 | 59.0 | 61.5 | 68.2 | 68.2 | 75.3 | 82.1 |
| 30-34 | 73.1 | 72.4 | 63.3 | 53.0 | 61.0 | 71.4 | 68.0 | 89.3 |
| 35-40 | 58.4 | 76.0 | 57.1 | 61.3 | 56.8 | 75.3 | 68.1 | 84.6 |
| 40-44 | 45.4 | 57.8 | 39.2 | 47.4 | 39.4 | 54.0 | 41.5 | 54.8 |
| % change BL to FU | +8.3% | | +3.0% | | +11.8% | | +15.2% | |

reached approximately the same levels by the follow-up period; the E_2 level was about 10% lower (although there were only two years between baseline and follow-up) and the C_1 level was about 10% higher. The increase in the two control areas were, however, higher than in intervention areas. Table 22 shows the change in the types of contraceptives used by women. The table includes those women whose husbands have had a vasectomy, which has become an increasingly important contraceptive method during the years of Lampang Project operations. The oral pill continued to be the major contraceptive used in areas surveyed: about 50% to 60% of all women using contraceptives use the pill, and levels of pill use increased substantially in all areas except E_2 districts. Depo-Provera use increased in all areas; although, with one exception, no more than about 5% of women use this method. (In the C_2 control district in adjacent Lamphoon Province, a large proportion of women practicing contraception use Depo-Provera. A large Depo-Provera trial program began in 1965 when the McCormick Hospital in Chiangmai introduced the injectible contraceptive and began serving large numbers of women in Chiangmai and Lamphoon Province. These program services are thus reflected in the C_2 data.) Except in the C_1 district, where little change occurred, use of the IUD is declining. Sterilization has become an increasingly important contraceptive method during the period of project operations. Female sterilization increased in all areas except E_2 , and male sterilization rose substantially in the project areas. In the follow-up period, the

Table 22

Proportion of Currently Married Women Practicing Contraception
at the Time of Interview, by Type of Contraceptive
Used; Baseline and Follow-up

| Contraceptive Type | Percent of Currently Married Women Using | | | | | | | |
|------------------------------------|--|------|-------|------|-------|------|-------|------|
| | E_1 | | E_2 | | C_1 | | C_2 | |
| | BL | FU | BL | FU | BL | FU | BL | FU |
| Oral pill | 35.8 | 42.7 | 28.2 | 29.0 | 33.3 | 39.8 | 28.8 | 46.5 |
| DepoProvera Injection | 1.6 | 5.2 | 3.0 | 3.1 | 0.4 | 1.8 | 21.6 | 17.3 |
| IUD | 8.6 | 6.0 | 8.9 | 7.8 | 11.5 | 11.6 | 4.0 | 2.4 |
| Male Sterilization | 0.0 | 5.8 | 2.1 | 4.4 | 0.0 | 2.4 | 0.0 | 0.8 |
| Female Sterilization | 8.3 | 10.1 | 8.9 | 8.8 | 4.5 | 9.2 | 3.0 | 7.1 |
| Other | 1.8 | 0.9 | 3.3 | 2.6 | 1.1 | 0.3 | 2.4 | 1.6 |
| Total Using All Types ^a | 56.1 | 70.6 | 53.7 | 55.8 | 50.7 | 65.2 | 59.8 | 75.6 |

^a Some percentages are higher than in Table 18 because women whose husbands are sterilized are also included here, but not in Table 18.

proportion of contracepting women who had been sterilized, or whose husbands had a vasectomy, were: 22.5% in E_1 ; 23.7% in E_2 ; 17.8% in C_1 ; and 10.4% in C_2 .

Project activities do not appear to have had any distinguishable effect on levels of contraceptive practice. The government National Family Planning Program was well-organized and operating effectively in both Project and control areas before Project activity began. The set of social and economic factors operating had motivated very large numbers of rural women to accept the services available. However, building on the family planning service system already in place, the Project sought to bring several types of contraceptive services closer to the users: a mobile vasectomy team was organized in the Provincial Hospital's community health department; Project-trained wechakorn in rural health centers were authorized to insert IUD's and inject Depo-Provera, activities previously confined to district and provincial hospitals; health post volunteers were given oral contraceptives for distribution in their villages (after the initial prescription was made at government health facility); and all village volunteer groups participated in motivating new acceptors.

Table 23

Proportion of Those Currently Married Women Who Practice Contraception^a by Source of Contraceptive Service
Baseline and Follow-up

| Source of Contraceptive Service | % of Contracepting married women | | | | | | | |
|--|----------------------------------|------|-------|------|-------|-------|-------|------|
| | E_1 | | E_2 | | C_1 | | C_2 | |
| | BL ^b | FU | BL | FU | BL | FU | BL | FU |
| Receiving from government-supported sources ^c | 94.6 | 92.7 | 83.4 | 82.2 | 95.2% | 94.9 | 61.9 | 65.6 |
| Hospitals | 30.3 | 19.4 | 36.6 | 31.4 | 31.7 | 33.3 | 18.1 | 8.5 |
| Rural facilities ^d | 64.3 | 50.6 | 44.3 | 39.8 | 63.5 | 61.6 | 33.8 | 52.1 |
| Health Post Volunteer | 0.0 | 20.6 | 0.4 | 11.0 | 0.0 | 0.0 | 0.0 | 5.3 |
| Private hospital/clinic | 1.4 | 4.8 | 3.8 | 4.4 | 0.0 | 1.7 | 24.2 | 22.3 |
| Drug store | 2.9 | 3.3 | 13.5 | 8.9 | 3.4 | 1.7 | 5.6 | 5.3 |
| Other | 1.1 | 1.2 | 1.3 | 4.4 | 1.4 | 1.7 | 8.4 | 6.4 |
| Total ^e | 100.0 | 99.0 | 99.9 | 99.9 | 100.0 | 100.0 | 101.0 | 99.9 |
| | -1.9% | | -1.2% | | -0.3% | | +3.7% | |

^a Women practicing including those whose husbands are sterilized.

^b Baseline data incomplete in E_1 ; % are estimated from data available

^c Includes all government facilities/providers plus HPV's and tambol doctors.

^d Includes district hospitals, subdistrict health centers, and midwifery centers.

^e Totals less (or more) than 100% due to rounding.

The community health survey data showed that the government remains the major provider of contraceptive services. In the Lampang districts (including the control), about 90% of all contraceptive services were received from government sources.

The clearest project contribution to the pattern of contraceptive service utilization is oral contraceptive distribution by health post volunteers. The great majority of pills have, in recent years, normally been distributed through rural health facilities (less than 10% of women using the pill get them from drug stores). In project districts, the village-based health post volunteers had achieved an important role in pill distribution in the follow-up period. Thirty-four percent of all pill users in the E₁ area, and 20.6% of those in the E₂ area were getting their pills from volunteers in 1979. In the C₂ control area, volunteers trained under the Ministry of Public Health's national primary health care program also distributed oral contraceptives to 8.5% of women using the pill. No volunteers had been trained in the C₁ control district at the time of the follow-up surveys.

In project areas, women have increasingly turned to health post volunteers for their monthly pill supply as volunteers are easily accessible, are available in non-official hours, and provide the pills for only a small donation. Turning over a part of pill distribution to village health volunteers has relieved health center workers of many routine tasks; it has taken pill distribution close to the user's home; it has incorporated the use of low-cost providers (the HPV's); and it has established a mutually beneficial working link between the government health workers and the village volunteers.

To summarize the review of service utilization by women of childbearing age, and particularly the groups within that population who have specific health needs, several conclusions can be made:

- (1) Over 80% of women delivering a child received delivery care services from attendants in project intervention areas, substantially higher than in control areas, and this change is attributed primarily to the contribution of trained TBAs, although utilization of government personnel also increased.
- (2) The majority of deliveries for both periods were done at home, primarily by TBAs, government midwives and wechakorn; however, there is a slight proportionate reduction in the use of TBAs and increased utilization of hospital for delivery.

- (3) Prenatal care services were used by 60%-70% of mothers in all areas, and these services were received primarily from rural health personnel other than TBAs who rarely provided pre-natal care.
- (4) Post-natal care services were available but rarely used in any area except when apparent problems arose.
- (5) Utilization of government health service by target group women reached 45% from baseline levels of 30% to 36%
- (6) Family planning services and contraceptive use, already at high levels of over 50% during baseline surveys, rose to even higher levels in all areas (up to 71% in E₁ and 76% in C₂). The pre-dominant contraceptive practice is oral contraceptives and the health post volunteers provided oral contraceptives to 20% to 30% of all users.
- (7) The project effort to bring family planning services closer to the women using than has been generally successful; wechakorn have increasingly assumed more responsibility for Depo Provera injections in rural health centers, and to a lesser extent, for IUD insertions. Health post volunteers secured a major role in sharing pill distribution with rural health facilities.

UTILIZATION OF MEDICAL CARE SERVICES BY THE GENERAL THE RURAL POPULATION

Measuring use of medical care services by the Lampang population was not a major priority in evaluating coverage of the target populations. However, as earlier sections have indicated, medical care is one of the health services most frequently used by pre-school children and reproductive age women. It is also the service type most used by all groups in the population, and may, therefore, be used as one general indicator of the population's access to and acceptance of government health service system.

The majority of illness and injury experienced by the rural population are generally minor and self-limited. A large proportion of illness episodes only require symptomatic treatment by the ill person himself or by a provider who need not be highly trained. It is therefore not surprising that national surveys, as

well as the Lampang Project baseline surveys, have shown that about half of all ill people simply buy medicines at drug stores (where they also get some diagnostic and therapeutic advice). Many people with minor illness choose other local village providers such as herbalists and injection "doctors". And about 20% go to government health facilities, particularly the Provincial Hospital.

The rural villagers sampled in the Project Community Health Surveys who said they were ill in the two weeks previous to interviews reported the first provider who treated them as summarized in Table 24. About 90% to 95% of all people who reported being ill sought some type of medical assistance; about 33% used more than one provider. In Project areas, the increased use of government-supported providers was mostly a result of increasing use of rural health facilities and health post volunteers; utilization of the Provincial Hospital decreased. In the C₁ control area, use of the Provincial Hospital increased considerably, and use

Table 24
First Source of Medical Care Chosen by Persons Ill in the Two Weeks
Previous to Interviews in Areas E₁, E₂, C₁, and C₂, 1975-1979

| Source of Medical Care | E ₁ | | | | E ₂ | | | | C ₁ | | | | C ₂ | | | | |
|--|----------------|--------------|------------|--------------|----------------|--------------|------------|--------------|----------------|--------------|------------|--------------|----------------|--------------|------------|--------------|--|
| | Baseline | | Follow-up | | Baseline | | Follow-up | | Baseline | | Follow-up | | Baseline | | Follow-up | | |
| | No. | % | No. | % | |
| Government Services: | | | | | | | | | | | | | | | | | |
| Health post volunteers ^a | 0 | 0 | 10 | 3.7 | 10 | 1.1 | 36 | 5.5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 5.1 | |
| Health centers ^b /district hospital | 86 | 12.2 | 48 | 17.6 | 63 | 6.6 | 102 | 15.5 | 41 | 8.0 | 22 | 8.9 | 7 | 4.0 | 10 | 7.3 | |
| Hospital ^c | 86 | 12.2 | 31 | 11.4 | 81 | 8.5 | 50 | 7.6 | 29 | 5.7 | 20 | 8.1 | 22 | 12.4 | 5 | 3.6 | |
| Government Services Subtotal | 172 | 24.4 | 89 | 32.7 | 154 | 16.2 | 188 | 28.6 | 70 | 13.7 | 42 | 17.0 | 29 | 16.4 | 22 | 16.1 | |
| Private Sector Services: | | | | | | | | | | | | | | | | | |
| Drug stores | 344 | 48.7 | 98 | 36.0 | 508 | 53.4 | 322 | 49.0 | 304 | 59.5 | 179 | 52.4 | 104 | 58.8 | 69 | 50.4 | |
| Indigenous healers | 67 | 9.5 | 29 | 10.7 | 115 | 12.1 | 46 | 7.0 | 66 | 12.9 | 27 | 11.0 | 20 | 11.4 | 22 | 16.1 | |
| Private physicians | 51 | 7.2 | 28 | 10.3 | 77 | 8.1 | 47 | 7.2 | 35 | 6.9 | 11 | 4.5 | 16 | 9.0 | 6 | 4.4 | |
| Others | 33 | 4.7 | 16 | 5.9 | 63 | 6.6 | 33 | 5.0 | 16 | 3.1 | 25 | 10.2 | 5 | 2.8 | 8 | 5.8 | |
| Private Sector Services Subtotal | 495 | 70.1 | 171 | 62.4 | 763 | 80.1 | 448 | 68.5 | 421 | 82.4 | 192 | 78.0 | 145 | 81.9 | 105 | 76.6 | |
| No Care | 39 | 5.5 | 12 | 4.4 | 35 | 3.7 | 21 | 3.2 | 20 | 3.9 | 12 | 4.9 | 3 | 1.7 | 10 | 7.3 | |
| Total | 706 | 100.0 | 272 | 100.0 | 952 | 100.0 | 657 | 100.0 | 511 | 100.0 | 246 | 100.0 | 177 | 100.0 | 137 | 100.0 | |

^a Health post volunteers were trained by the Project only in E₁ and E₂; the evaluation design called for no training of HPVs in C₁ and C₂ until after final data collection was completed. However, C₂ in the adjacent Lamphoon Province village health volunteers were trained after 1977 when the MOPH launched the national primary health care scheme.

^b In baseline surveys, "government health centers" included "district medical and health centers" which have since been renamed "district hospitals" and are so listed in the follow-up survey data. Therefore, these two categories are combined in the follow-up data for comparison with baseline data.

^c The category "hospitals" in the baseline data included both the government provincial hospital and a few small private hospitals, although district hospitals had not yet been so named and were therefore not included in this category. The categories "Provincial Hospital" and "Private Hospital" in the follow-up data are combined in one category for comparison with the "hospital" category in the baseline data; however, private hospital usage by the rural populace is minimal, ranging between 0.74 and 2.2% only.

Source: LHDP Community Health Surveys.

of rural health services only grew slightly. The C₂ control area reflected a pattern similar to Project areas: Provincial Hospital use declined 8.8%, and use of rural facilities increased. Health post volunteer services made up almost a third of government-sponsored care provided to ill persons.

The increased utilization of government-supported sources of medical care was accompanied by decreases in use of some private sector providers. In the E₁ Project area, sharply decreased use of drug stores was the main factor responsible for the decline in private sector service utilization; use of other private healers increased. In the E₂ area, use of all types of private sector providers decreased. Drug store use declined in both control areas, accounting for much of the decrease in private sector service utilization.

About one-third of the ill persons who sought medical care were treated by more than one provider. In both the baseline and follow-up surveys, there was a clear difference between the provider who was chosen first and those chosen subsequently. First, although about 50% of ill people went to a drug store as the first source of treatment, only 10% to 20% went to a drug store when they use a second practitioner. Use of government-supported providers -- particularly health centers district hospitals, and the Provincial Hospital -- increased sharply when second-choices are considered. In Project areas, the proportion of ill people who used government-supported sources increased substantially in the follow-up period, but use of these providers was even higher when second-source providers are considered.

These community health survey findings suggest that people with minor ailments largely go to drug stores to buy medicine for self treatment. If the illness does not improve, about one-third of those ill seek a second source of care; they are also much less likely to go to a drug store, but instead choose government and some private sources at increasing rates. The results also seem congruent with other studies indicating that ill people go to drug stores most frequently when the illness is minor, but seek government and modern private sector providers when they perceive the illness to be more serious.

The surveys depended on recall for illnesses that occurred in the previous two weeks therefore, results are affected by the recall ability of respondents, the population sampled, and the season during which the survey was conducted as there can be substantial seasonal variations. Another measure of illness care service coverage is to determine the estimated number of illness episodes for full one-year period and to count the total number of illness care contacts for the same period, dividing the latter by the former. When this was done for the E_1 , E_2 , and C_1 areas, the areas within Lampang Province, the results were summarized as presented in Table 25.

Table 25

Proportion of Estimated Illness Episodes Covered by
Government-Provided Illness Care Services
in Project Areas During Baseline
and Follow-up Years

| | Area | %Population | Using Service | % Increase/Decrease |
|---|-----------|-------------|---------------|---------------------|
| | | Baseline | Follow-up | |
| General population illness care service provided by government health service for estimated episodes in past year | E_1 | 26.2% | 55.8% | + 29.6% |
| | E_2 | 18.1% | 34.0% | + 15.9% |
| | E_1+E_2 | 19.0% | 36.5% | + 17.5% |
| | C_1 | 12.6% | 21.1 | + 8.5% |

Of the estimated illness episodes in the E_1 and E_2 areas, 56% and 34% respectively were "covered" by illness care services in Lampang in 1979, a substantial increase over the baseline levels. The change was less apparent, although still representing increased utilization, in the control area. Although there is some variation in the level of increased utilization of government health services, the general findings and the shifts in service providers indicated in these data substantiate the survey data presented earlier.

The overall increase in the utilization of government-supported illness care services is primarily due to increased selection of Project-trained health post volunteers and wechakorn paraphysicians, increased availability of rural health facilities and, to a limited extent, the additional health workers provided by the Ministry of Public Health.

Summary of Results

Several major trends have been observed in the rural population's use of illness care services.

- The rural ill have most frequently gone to drug stores as a first source of care; 20% or less have gone to government sources. When a second source of care is used, it is more likely to be government provider.
- In the follow-up surveys, the proportion of ill people in project areas who chose government-supported providers increased over 50%, whereas, in control areas, the increase averaged under 20%. The increase in utilization in project areas was mostly due to (1) the addition of project-trained health post volunteers, and (2) increasing use of rural health facilities (which had increased in number, and which had wechakorn present), and decreasing use of the Provincial Hospital.
- Poor people, who generally experienced the highest illness rates, also used government-supported providers least among all economic groups, and used the drug store at the highest rates in all baseline surveys. Follow-up data in Project areas indicated that the poor were served by government-support providers at rates which had increased to levels comparable with other economic groups. Similar changes did not occur in control areas.
- Utilization of health post volunteers in all areas where they had been trained (including the C₂ control area) accounted for about 5% of medical care services received by the rural population. HPV services were used equally by people of poor and middle-level economic status, but not at all by the prosperous.

GENERAL CONCLUSIONS AND IMPLICATIONS

The overall experience in Lampang substantiates the validity of the project's major strategy and approach to achieve high coverage -- the development of health manpower from resources in each village and the existing provincial health care system. A high level of coverage was achieved in terms of the availability of health manpower at the levels which formerly had a gap -- the village, subdistrict and district levels. Increased utilization of health services was primarily achieved through the contributions of community health volunteers, community health paraprofessionals, and the Community Health Department of the Provincial Hospital, particularly in terms of provision of medical care and family planning services.

Although some improvements were made in the provision of health promotion and disease prevention services, the major improvements were found to be in the provision of illness care and family planning services. There are at least three factors that may account for these findings: (1) there is a greater demand for illness care services and for family planning services by consumers, (2) illness care and family planning were emphasized more than health promotion and disease prevention services in the training programs, and (3) the provincial health management, supervision and support of the new health workers did not emphasize health promotion and disease prevention as much as illness care and family planning, or where management, supervision and support was lacking the new health workers followed the emphasis given in their training. For example, despite the Ministry's emphasis on immunizations, Lampang has experienced a chronic problem of supply of vaccines and supplies needed to conduct an expanded program of immunizations. This was a major factor in the low levels of immunization coverage of the target group children. Were supplies available, were proper emphasis given in training, and were immunizations emphasized in the supervision and support of the new health workers a much higher rate of coverage, most likely, could have been achieved.

Beyond the written and verbalized policies of government health services, budgetary and manpower allocations are a more concrete expression of actual policies and program emphasis. It becomes clearer, then, that the emphasis of government spending and overall manpower development is still on medical care services more than health promotion services or disease prevention services. The Government, properly, responds to public demand: the public demand is for medical care and family planning services. The ability of the Lampang system to meet this demand has

increased the credibility of the system as reflected by increasing rates of utilization of these services. Given the system's new credibility and given the potential of the health manpower now available in Lampang, substantial improvements can be made in the provision of health promotion and disease prevention services, if (1) the supervision and management systems of the provincial health office emphasize these services, if (2) the supplies needed are made consistently available, and if (3) these services are emphasized in on-the-job training and in new training programs for replacement of volunteers and personnel lost by attrition. The Project intervention areas have already demonstrated a broader coverage of children with preventive health services than in control areas, but greater emphasis on disease prevention and health promotion services is still needed.

The emphasis on medical care and family planning need not be decreased because it is responding to the perceived needs and the demand for services of the population served. However, building on the new credibility of the health services system which has resulted from the improved coverage of the population with these services, greater emphasis should be placed on high-priority programs with greater potential for impact on the population's health and environmental conditions. The project documented that Lampang, like most other provinces in Thailand, has a widespread (although not severe) problem of malnutrition among children. Extensive nutrition improvement programs -- with the major role being taken by community health volunteers -- should be undertaken. Water supply and waste disposal should also be given high priority, again with the major role being taken by community health volunteers and village committees. The pilot program undertaken in Hang Chat for improved wells for household water supplies has promising results and is being promoted in other areas of the Province. Pilot programs for nutrition improvement have not been so promising, largely because they were designed to remain dependent on government health service personnel and did not give a major role to community health volunteers. Further study and advances are needed in these programs and in other high-priority programs before impact on the health status of the population can be seen.

While the general validity of the Lampang approaches to rural health care is substantial, greater efforts are now needed in programming high-priority health promotion and disease prevention activities. Building on the established role and the high performance of community health volunteers in the areas of illness care and family planning service delivery, community health volunteers should be encouraged

and technically guided to promote and conduct local nutrition improvement programs, water supply programs, human waste disposal and other health promotion programs. Rural health service personnel should be given the supplies, materials, technical supervision and encouragement to expand immunizations and other disease prevention activities.

The trends in health care utilization in Lampang are most promising. A very substantial increase in the total volume of services was observed, primarily as a result of the contributions of village health volunteers and wechakorn paraprofessionals. The Community Health Department's mobile clinic made a significant contribution to provision of family planning and other health and medical services in remote rural areas. Beyond the overall increase in the total volume of services, there has been a shift in utilization of services away from the Provincial Hospital towards the rural health facilities at the district, subdistrict and village levels. Where services have been made available, they have been utilized. In control areas, the shift was in the opposite direction towards the Provincial Hospital. This effect of Project interventions -- greater utilization of services at the rural periphery -- is desired by both the consumers and the providers of health services. The trend has begun, and it implies that greater attention must be given to strengthening logistics of the health system to provide services at the rural periphery. This means more emphasis needs to be given to the problem of supplying the rural health centers, of supervising rural health center personnel, of improving management practices and the information system needed to support the greatly expanded volume of health services in rural areas.

COST-EFFECTIVENESS OF THE HEALTH SYSTEM

OVERVIEW

During the Lampang Project operations, the numbers of facilities and manpower, along with the range of services and geographic coverage, have increased substantially. Part of this change was a result of Project activities, and a part resulted from implementation of the development plan of the Ministry of Public Health. This led to a modified framework for health service delivery which was intact and functioning as the Project completed its field implementation in 1979. The overall output of services also sharply increased, in part due to the increased number of government facilities available, and in part due to the introduction of new service providers such as wechakorn in government health facilities and health volunteers in rural villages.

When the internal functioning of the individual components of the health delivery system are scrutinized more closely, relatively little change in both service output and the pattern of the service delivery is apparent. This is not surprising as the number of facilities has increased sharply and a number of major health facility activities are now shared with village health volunteers. When the volunteer services associated with all government facilities are allocated to those facilities, the overall performance, or service output, at every facility level is more impressive, and the overall service output of the total system is much enhanced.

Moreover, there has been an increasingly greater proportion of services provided at the rural periphery of the system during the period of project implementation. Although the services provided by the Provincial Hospital have increased sharply, the majority of Hospital utilization is by people living in districts close to the Hospital, and villagers living at a greater distance from the Hospital appear to have sought services closer to their homes. As the total output of rural health facilities and community health volunteers has increased, the Hospital's proportion of total health services has dropped. With the introduction of wechakorn paraphysicians, and with the addition of community health volunteers, government facilities are more attractive to consumers, as they are now offering a better range of services and

medicines, at facilities (or health posts) more conveniently located and staffed by more competent workers. The health volunteers provide simple services, but they are conveniently close to the villagers' homes, making the volunteers readily accessible and close to the consumers of their services.

Medical Care

On reviewing the distribution of service contacts and the distribution time spent by health workers in rural facilities, a striking feature is the predominance of medical care as the major activity in all facilities, well over 50% of all service contacts, and of all direct service time spent by health workers, is devoted to providing medical care. In terms of the potential number of users, medical care need is probably greatest in the rural areas. However, the Community Health Survey has indicated that less than 30% of the rural population utilized government health services when ill (and less than 20% of ill people go to government rural health facilities -- district hospitals, subdistrict health centers, and midwifery centers as their first choice). Yet the majority of health worker time is devoted to a small proportion of those in need. It should be noted that there was a decline in total service time devoted to medical care in many facilities during the post-intervention period. However, with the addition of wechakorn to most health facilities, medical care continued to be the predominant activity.

Family Planning

Family planning has, in recent years, been the second most important activity, in terms of service contacts and service time spent by health workers. Government-supported providers (including HPV's) served about 85% of all women currently practicing family planning, making the government the major provider of family planning services. In all rural facility levels, however, an overall decrease in the proportion of time spent in family planning services, as well as in the average number of service contacts, was observed. Since most family planning contacts in rural health facilities are oral contraceptive distribution contacts, this decline in the service load at health facilities generally reflects the sharing of contraceptive distribution with health post volunteers. Volunteer service statistics confirm their major role in oral contraceptive distribution, and the Community Health Survey indicated that 20% to 30% of oral contraceptive users got their supplies from the local health post volunteer.

Maternal Services

Maternal services continued to be the third major focus of health service delivery in the provincial health care delivery system. The Provincial Hospital is a major provider of maternal services. The number of deliveries in the Provincial Hospital has sharply increased during the course of Project implementation, as has the number of prenatal visits to the hospital. The Community Health Survey also indicates that the Provincial Hospital accounts for between 30% and 40% of all deliveries in the province. About one-third of all deliveries are performed by traditional birth attendants, and under one-third are done by wechakorn and other staff of rural health facilities. Also, the proportion of pregnant women who received at least one prenatal examination greatly increased.

There was a major decline in the number of MCH contacts at district hospitals, but a slight increase in such contacts at the subdistrict and midwifery center levels. At the same time, there was also a sharp increase in the amount of direct service time spent on maternal and child health at all facility levels, except the subdistrict health center. In general, with declining fertility levels, the demand on the time of service personnel -- particularly midwives -- who have traditionally been responsible for women's services may also be declining. Renewed emphasis could be given to more frequent prenatal care, and to post-natal services, which have been less frequently utilized.

Communicable Disease Control and Sanitation

Communicable disease control (predominantly immunizations) and environmental sanitation (primarily water supply and waste disposal) received renewed interest during the period of project implementation. A sharp increase in the amount of service time spent on CDC and environmental sanitation was apparent at all rural health facility levels in the post-intervention period. However, the number of service contacts of this type did not follow the same pattern, most likely a result of the nonpersonal nature of sanitation work. The Community Health Survey also reflected an improvement in household water supply and sanitation conditions in the implementation areas, and a general increase in levels of immunization among preschool children.

Nutrition Services

A major thrust for improving child nutrition services in the provincial rural health care delivery system during the period of Project implementation has been the village-level Child Nutrition Centers. These centers are designed to provide

day-care and pre-school educational activities for children between the ages of 30 months and 6 years, along with some nutrition supplementation and health education. Monitoring the children's height, weight and general health status is also done on a routine basis. Other activities provided through government health facilities include: nutrition education for mothers, treatment of seriously undernourished children at all facility levels, and nutrition surveillance activities on a pilot basis.

During the Task Analysis surveys at rural health facilities, very few direct nutrition services and no CNC activities were observed, despite the fact that many of the health facilities have a child nutrition center attached. This was the result of the relative independence of the child nutrition centers, which have their own locally-hired attendants, who receive only occasional supervision by the government midwife. Therefore, although the survey data show very little activity in the area of nutrition, rural health workers are actually involved in CNC's, and a sizeable number of pre-school children do receive services at Child Nutrition Centers. Nevertheless, the number of children who were registered in Child Nutrition Centers throughout the Province was only a very small proportion of all pre-school children -- less than 10%. The majority of children who attend CNC's are not those who have severe nutritional problems. Nor are the children attending the child nutrition centers normally from the poorest families where severe malnutrition is most serious, as there is normally a B10 (\$0.43) or more monthly payment required. Moreover, those children who are less than 30 months old and who have serious malnutrition problems would not normally be eligible for attendance at the Child Nutrition Center.

Although the overall service output, and delivery of services in several specific categories have progressed significantly during the period of project operations, there still remains considerable potential to further expand activities in areas currently under-emphasized. A major feature which also stands out when reviewing the internal operations of rural facilities is the large proportion of total work time that is spent non-productively. In general, the larger the facility and the larger number of staff, the larger is the proportion of work time classified as non-productive. The proportion of time classified as non-productive did decrease in the post-intervention period (accompanied by an increase in proportion of time devoted to direct service delivery), but still remained quite large. Also, the proportion of time devoted to field work, which included most of the community health-type activities, has only received a very small proportion of total health worker time, and has decreased in the post-intervention period. Overall, there appears to be sufficient slack time available to further expand health worker activity into program areas of high priority.

There appears to be only a moderate modification in the pattern of performance of health workers and facilities in the post-intervention system. The presence of the wechakorn may have accentuated the focus on medical care in most facilities, but it has also freed other workers to become more involved in community health promotion and preventive health activities. The village health volunteers have expanded the reach of the service system, and have made simple care for illness and family planning services available close to villagers' homes. But the modified system has not sufficiently emphasized all areas where needs may be greatest -- nutrition, child health, and water supply and sanitation. The modified system tends to reemphasize medical care, which ultimately has less influence on health status; although medical care services build credibility in eyes of rural villagers, this credibility has not been used by health workers to further promote disease prevention and health promotion activities sufficiently.

It seems clear that where the system has been modified and has focussed on specific program areas, such as medical care, family planning, and maternal and child health, considerable progress has occurred. If a similar reorientation of the system to remaining problems of high priority were made, similar progress in resolving these problems would be expected.

Health Care Costs

Overall government and Ministry of Public Health expenditures on health have more than doubled in the years the Lampang Project was in operation, as have national per capita expenditures on health. However, much of this increase was a result of inflation, which has run from 9% to almost 20% annually during the period. Therefore the real increase in expenditures on health is probably nearer to 20% or 25%, still a substantial amount. At the provincial level, overall expenditures and per capita expenditures on health have shown similar trends. It is clear that the costs of operating the whole system and each of its individual components have increased dramatically, and will probably continue to do so.

A review of the Ministry of Public Health budget as a whole, as well as the costs of the provincial health service structure, show that the major MOPH budgetary emphasis is on medical or curative care. About 70% of the provincial budget is devoted to providing medical services, -- mostly the Provincial Hospital. Even in the facilities more traditionally responsible for preventive services -- the sub-district health centers and midwifery centers -- the major activity, and the largest proportion of costs, are devoted to medical care.

Along with medical care, however, many workers are now doing more community health work, and the family planning structure has been extended through the volunteer network. But even among health post volunteers, simple medical care remains their major activity. In a sense, the Lampang Project has only slightly deflected the bias of the entire system toward medical care. Medical care is the activity that generates the most prestige, it is personally satisfying to the provider; it can bring financial rewards, and it is the service that rural villagers perceive as needed and seek out most actively. In contrast, providing preventive services is less satisfying to health workers, and such services are not perceived as important by many rural villagers.

Costs by Service Type

Because personnel and other costs grew sharply at each facility level during the period of project operations, and because there were generally no commensurate increases in average service output within each facility type, costs for services provided within rural facilities generally increased. Even when post-intervention service output data are standardized with pre-intervention cost data, there is still a slight increase in cost per service. At first glance, this result may seem unexpected, but it does not reflect the actual change in the pattern of service delivery and costs. The low-cost character of the health volunteer network has an important influence on the cost of rural health services. Although volunteers provide mostly medical care and family planning services, adding their output to each facility with which they are affiliated adds only very marginal costs and reduces the cost per service contact. Therefore services at rural health facilities, when combined with the low-cost service output of volunteers under their responsibility, are more cost-effective. This is not true for all service categories. Some categories did not show the overall decrease in cost per service contact. However, the crucial factor in the general decrease in service costs is the volunteer contribution.

On the other hand, sharing of work with volunteers -- particularly in the area of family planning, has contributed to a reduced work load at some government health facilities, and has therefore led to increased slack time, associated with increased costs for services provided at that facility. Consequently, when a sharing of specific health activities with volunteers is planned and implemented, new activities must be planned to take up the slack created. Increased support and supervision of volunteers, and stimulation of other critical community health programs could be one means of filling the slack time created.

Cost Implications

The Lampang Project differed from many other pilot research or demonstration health projects in that the existing provincial health care delivery structure was used as a base for service delivery, and that the "Project" modified, expanded and revitalized this system. But the basic rural health facility and health worker network was, and has continued to be, run and financed by the Ministry of Public Health. The costs of service delivery, even during the course of Project implementation, have been borne by the resources available within the provincial health care system. The great majority of outside donor funds were devoted to planning, managing, and evaluating the Project. The nature of most of these costs incurred were start-up or non-recurring costs. Included in the broad categories of Project-related expenditures were:

- (1) Funds spent on planning curricula for the wechakorn, for the village volunteers, and other types of manpower; for writing training materials and implementing the training programs. (Such preparatory expenditures are not unique to the Lampang Project. The Ministry of Public Health, similarly, in its preparation for training primary health care and other workers, invested much effort and funds into planning curricula, writing training materials and implementing training programs), Roughly about 25% of the total Project budget funds went to various training functions.
- (2) Planning and management of Project approaches and personnel, (which included costs of administering Project funds, staff and equipment), accounted for a major portion of the outside Project budget. Such expenses would not be required normally in other areas, as no outside personnel or funds would be present. Most management supervision functions associated with health care delivery would be assumed by the provincial health office and its staff, as has already been done in other provinces.
- (3) A major area in which Project funds were invested was Project evaluation. Evaluation accounted for well over 30% of the total outside Project funds, and was a need specific only to the Project. Except, perhaps, the costs of monitoring volunteer performance, virtually all evaluation costs are considered non-replicable, in that no such extensions activity would be required in other

provinces undertaking similar types of rural health care activities. It is possible that the Ministry may wish to test and evaluate its own approaches, but the costs of the basic evaluation system used in Lampang would not be repeated.

The point must be emphasized that the costs specific to the Lampang Project were mostly non-replicable start-up, overhead, and evaluation costs, and little of the outside donor funds was applied to rural health service delivery. Analysis of operational costs showed an overall increase in the funds spent on service delivery, but generally as a result of increased Ministry allocations for health care.

RURAL HEALTH SYSTEM PERFORMANCE

The Task Analysis Survey is the major source of performance data concerned with district hospitals, subdistrict health centers, and midwifery centers. Baseline and follow-up surveys were conducted in a sample of facilities of each type in eight experimental and two control districts. The aim of the surveys was to gather performance data on each facility type both before Project modifications were operating, and after they were introduced. A large number of facilities of each type in the study areas were selected for observation (in some areas, all facilities were included).

Survey observers recorded the amount of time each health worker spent providing direct services, doing supportive work associated with services, doing field work, and time that was spent non-productively. As workers provided services, the services were classified into pre-designated categories, including medical care, maternal and child health care, family planning services, and nutrition services. Not only did the observers measure the amount of time spent by health workers in each type of service category, they also counted the number of service contacts.

Distribution of Working Time

Table 26 shows the proportionate distribution of total working time in district hospitals (Part A), subdistrict health centers (Part B), and midwifery centers (Part C), respectively, during the pre-intervention and post-intervention periods of observation.

Several features of the distribution stand out. First, the proportion of total working time that all workers at each service level were devoting to direct service delivery was small. While district hospital physicians and wechakorn utilized about 30% of their time for direct service provision, all other categories of workers in all rural health facilities spent well under 20% of their time providing direct services.

In the pre-intervention observations, only about 10% of total working time (slightly less than one hour daily) was spent in direct service activities by workers at the district hospital and subdistrict health center level. At the midwifery center level, direct service activities accounted for slightly more than 18% of the working day.

In the post-intervention observations, the proportion of total working time devoted to direct service activity increased substantially in both the district hospital and subdistrict health centers, but decreased slightly in the midwifery centers. However, even with the general improvement in the post-intervention period, at no facility level did the percentage of time devoted to direct services reach 20%.

Table 26

Percent of Total Working Time Spent in Direct Service, Indirect Service, Field Work, and Non-Productive Activities, by Worker Category. Pre- and Post-Intervention

A. District Hospitals

| Activity | Worker Category | | | | | | | | | |
|--------------------|--------------------|-------|------------|-------|------------|----------|-------------|-------|----------|-------|
| | All Workers | MD | Wecha-korn | Nurse | Nurse Aide | Mid-Wife | Sani-tarian | Other | Den-tist | |
| Pre-Inter-vention | Direct Service | 10.4 | 9.6 | - | 7.1 | 0.5 | 10.5 | 4.2 | 18.2 | - |
| | Indirect Service | 20.9 | 47.8 | - | 10.7 | 15.0 | 19.9 | 15.4 | 27.0 | - |
| | Field Work | 0.2 | - | - | - | - | - | 1.1 | - | - |
| | Non-Productive | 68.5 | 42.7 | - | 82.2 | 84.5 | 69.6 | 79.2 | 54.8 | - |
| | Total ^a | 99.0 | 98.1 | - | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | - |
| Post-Inter-vention | Direct Service | 14.4 | 30.0 | 26.4 | 11.9 | 17.7 | 9.2 | 7.8 | 8.4 | 11.7 |
| | Indirect Service | 28.4 | 25.1 | 37.4 | 34.6 | 16.3 | 26.8 | 36.0 | 34.2 | 22.8 |
| | Field Work | 4.4 | 1.5 | 5.9 | 3.7 | 0.7 | 7.2 | 30.8 | 1.4 | 2.4 |
| | Non-Productive | 52.8 | 43.4 | 30.3 | 49.8 | 65.2 | 56.8 | 25.4 | 56.0 | 63.1 |
| | Total ^a | 100.0 | 100.0 | 100.0 | 100.0 | 99.9 | 100.0 | 100.0 | 100.0 | 100.0 |

B. Subdistrict Health Centers

| Activity | | Worker Category | | | | | | |
|----------------------------|--------------------|-----------------|------------|-------|------------|---------|-------------|-------|
| | | All Workers | Wecha-korn | Nurse | Nurse Aide | Midwife | Sani-tarian | Other |
| Pre- Inter- vention | Direct Service | 9.1 | - | 10.1 | 13.9 | 11.6 | 6.7 | 2.2 |
| | Indirect Service | 29.8 | - | 19.4 | 51.1 | 32.7 | 29.9 | 5.8 |
| | Field Work | 13.7 | - | 35.4 | 6.9 | 13.8 | 15.3 | 5.8 |
| | Non-Productive | 47.4 | - | 35.1 | 28.1 | 41.9 | 48.0 | 86.2 |
| | Total ^a | 100.0 | - | 100.0 | 100.0 | 100.0 | 99.0 | 100.0 |
| Post- Inter- vention | Direct Service | 13.5 | 14.5 | - | 9.0 | 12.9 | 17.2 | - |
| | Indirect Service | 34.7 | 32.0 | - | 29.9 | 34.0 | 48.0 | - |
| | Field Work | 5.9 | 6.3 | - | 1.0 | 6.3 | 9.9 | - |
| | Non-Productive | 45.9 | 47.2 | - | 60.1 | 46.8 | 24.9 | - |
| | Total ^a | 100.0 | 100.0 | - | 100.0 | 100.0 | 100.0 | - |

C. Midwifery Centers

| Activity | | Worker Category |
|-----------------------|--------------------|----------------------|
| | | Midwife ^b |
| Pre- Intervention | Direct Service | 18.2 |
| | Indirect Service | 41.6 |
| | Field Work | 17.3 |
| | Non-Productive | 22.9 |
| | Total ^a | 100.0 |
| Post- Intervention | Direct Service | 13.3 |
| | Indirect Service | 50.7 |
| | Field Work | 8.9 |
| | Non-Productive | 27.1 |
| | Total ^a | 100.0 |

^a Totals may be more or less than 100.0% due to rounding

^b There is normally only a single worker, the midwife.

If time spent in indirect services, which includes all of the supportive services (patient records, reports, preparation of drugs and materials), is combined with direct service time, the proportion of total work time devoted to the combined functions, when averaged for all workers at each facility type, showed an important increase between the pre- and post-intervention periods. At each facility level, the proportion of time spent in direct and indirect services by the individual worker categories varied during each observation period and between the pre- and post-intervention periods. For example, the proportion of time that the district hospital physician spent in direct service activities changed from 9.6% to 30% in the post-intervention period. Likewise, the proportion of direct service time for nurses and nurse aides increased sharply in the post-intervention period. Also, during the post-intervention survey, wechakorn paraphysicians contributed a large proportion of their time to direct service activities.

In the post-intervention survey of subdistrict health centers, the 50% increase in the proportion of time devoted to direct services was divided roughly equally among the wechakorn, midwives and sanitarians. At the midwifery centers, there was a 27% decrease in the amount of time spent in direct services (although the change in time spent in both direct and indirect services combined increased slightly).

The proportion of total work time devoted to field work, including such activities as home visits, health volunteer support, and sanitation, is a second feature of interest. In general, the proportion of time spent in field work at each service level was small. There was almost no time devoted to field work activities by personnel of the district hospital in the pre-intervention period, but this changed somewhat in the follow-up period, increasing to 4.4%. However, in the subdistrict health centers and midwifery centers, it appeared to decrease.

The third finding which stands out in Table 26 is the proportion of time which was classified as non-productive. This is time spent in the health facility awaiting patients or time spent outside of the facility for which no accounting was given. In the district hospital, although the proportion of total unproductive time decreased from 68.5% in the pre-implementation period to 52.8% in the follow-up period, the fact remains that on the average, over 50% of the work day for most health workers is not utilized productively. This may be, in part, a result of the large and increasing staff numbers at the district hospital in relation to the service load. At the subdistrict health centers, although the proportion of time classified as non-productive decreased only slightly between the pre-intervention and post-intervention observations, it remained relatively high, at almost 46% of work time, despite a considerable increase in direct and indirect service time.

The decrease in time devoted to field work appears to be the major factor accounting for the lack of change in non-productive time.

In midwifery centers, the pattern was somewhat different. The proportion of non-productive time, initially under 30%, increased between the pre- and post-intervention period. However, midwives staffing midwifery centers appear to be more productively employed than many of their counterparts at subdistrict health centers and district hospitals.

Distribution of Direct Service Time

Table 27 illustrates the effects of adding wechakorn to the rural health services. The most dramatic change at the district hospital concerned sanitarians and midwives. Sanitarians devoted 94.3% of their direct service time to medical care before interventions and only 61.2% of their direct service time to medical care after Project interventions. The time sanitarians devoted to communicable diseases and sanitation increased sharply, from less than 1% to 25%, of their direct service time. Midwives spent more time in family planning and MCH activities in the post-intervention period. Except for midwives, medical care services account for most direct service time at the district hospital.

Table 27

Percentage of Service Time Spent in Different Service Categories During Pre-Intervention and Post-Intervention Surveys

A. District Hospital

| Service Category | | % of Direct Service Time for Each Worker Category | | | | | | | | |
|-------------------|---------------------------|---|-------|------------|-------|------------|----------|-------------|-------------|-------|
| | | All Workers | MD | Wecha-korn | Nurse | Nurse Aide | Mid-wife | Sani-tarian | Dental Aide | Other |
| Pre-Intervention | Medical Care | 84.9 | 100.0 | - | 39.2 | 100.0 | 73.6 | 94.3 | - | 98.0 |
| | CDC/Sanitation | 0.5 | - | - | 1.8 | - | 0.7 | - | - | 0.2 |
| | MCH | 5.4 | - | - | 19.0 | - | 9.3 | 1.7 | - | 1.4 |
| | FP | 9.0 | - | - | 39.2 | - | 15.9 | 4.0 | - | 0.5 |
| | Nutrition | 0.2 | - | - | 0.7 | - | 0.5 | - | - | - |
| | All Services ^a | 10.43 | 9.57 | - | 7.11 | 0.52 | 10.51 | 4.21 | - | 18.23 |
| Post-Intervention | Medical Care | 73.2 | 91.4 | 82.1 | 57.6 | 83.4 | 11.8 | 61.2 | 97.8 | 75.6 |
| | CDC/Sanitation | 4.6 | 2.2 | 4.7 | 4.6 | 4.2 | 8.8 | 25.0 | 0.2 | 1.4 |
| | MCH | 12.0 | 3.2 | 12.6 | 22.3 | 7.3 | 33.2 | 4.7 | 2.0 | 9.0 |
| | FP | 9.6 | 3.2 | 0.6 | 13.4 | 5.1 | 46.2 | 9.1 | - | 12.1 |
| | Nutrition | 0.6 | - | - | 2.1 | - | - | - | - | 1.8 |
| | All Services | 14.42 | 30.01 | 26.45 | 11.97 | 17.73 | 9.19 | 7.80 | 11.73 | 8.41 |

B. Subdistrict Health Center

| Service Category | | % of Direct Service Time for Worker Category | | | | | | |
|----------------------------|---------------------------|--|-----------|-------|------------|---------|-------------|-------|
| | | All Workers | Wechakorn | Nurse | Nurse Aide | Midwife | Sani-tarian | Other |
| Pre- Inter- vention | Medical Care | 55.0 | - | 52.0 | 53.7 | 49.7 | 71.3 | 36.9 |
| | CDC/Sanitation | 5.0 | - | 7.1 | 3.1 | 4.5 | 1.2 | 56.7 |
| | MCH | 14.8 | - | 19.8 | 15.3 | 20.0 | 1.9 | 4.1 |
| | FP | 23.9 | - | 21.1 | 27.9 | 24.8 | 22.4 | 2.3 |
| | Nutrition | 1.3 | - | - | - | 1.0 | 3.1 | - |
| | All Services ^a | 9.14 | - | 10.12 | 13.88 | 11.60 | 6.73 | 2.17 |
| Post- Inter- vention | Medical Care | 58.2 | 69.7 | - | 64.0 | 57.9 | 33.6 | - |
| | CDC/Sanitation | 19.7 | 10.7 | - | 4.0 | 11.2 | 55.8 | - |
| | MCH | 11.5 | 10.4 | - | 20.1 | 16.6 | 2.3 | - |
| | FP | 8.1 | 7.0 | - | 11.4 | 12.8 | 2.5 | - |
| | Nutrition | 2.5 | 2.2 | - | 0.4 | 1.5 | 5.8 | - |
| | All Services | 13.53 | 14.54 | - | 9.00 | 12.93 | 17.24 | - |

C. Midwifery Center

| Service Category | | % of Direct Service Time for Work Category |
|-----------------------|---------------------------|--|
| | | Midwife |
| Pre- Intervention | Medical Care | 66.0 |
| | CDC/Sanitation | 1.4 |
| | MCH | 11.0 |
| | FP | 21.3 |
| | Nutrition | 0.3 |
| | All Services ^a | |
| Post- Intervention | Medical Care | 55.3 |
| | CDC/Sanitation | 6.6 |
| | MCH | 21.8 |
| | FP | 14.3 |
| | Nutrition | 2.0 |
| | All Services | 13.30 |

^a All services refers to percent of total working time devoted to direct services of all types.

fact, the proportion of time devoted to medical care actually increased at this level between the pre- and post-intervention observations. Not only did the overall proportion of medical care time for all workers increase, but it increased for all of the individual workers except sanitarians. Almost 70% of the wechakorn service time was devoted to medical care, and the proportion of time spent in medical care by midwives and nurse aides also increased. The proportion decreased only for the sanitarian, who had devoted over 70% of his service time to medical care during the baseline period. Coupled with a decrease in time devoted to medical care was a concurrent sharp increase in sanitarians communicable disease and sanitation activities. The general decline in the proportion of time spent in maternal and child health, and the sharp drop in the portion of time spent in family planning activities reflect the sharing of routine oral contraceptive distribution with the health post volunteers during the post-intervention period.

In midwifery centers, the proportion of time spent providing medical care was roughly similar to that in the subdistrict health centers. However, although the medical care proportion decreased about 16% between the pre- and post-intervention observations, even then it remained above 50% of total service time. The proportion of time spent in maternal and child health doubled. Time spent on communicable disease control and sanitation activities greatly increased from a small base; but, as in the subdistrict health center, there was a sharp decrease in time devoted to family planning (about a 33% decline). The decrease in family planning time is most likely associated with the large-scale transfer of pill distribution activities to the health post volunteer. In all service facilities, a minimal amount of time was spent on nutrition activities. Although there was some improvement in the post-intervention period, at no facility did the proportion of time devoted to nutrition services reach 5%.

Service Contacts

The distribution of time devoted to different service categories provides only a partial picture of the pattern of health care delivery. Observations were made of health worker performance at various service levels, and the number of service contacts in each major service category was counted.

The distribution of service contacts by category of service shown in Table 28 roughly parallels the distribution of direct service time at each of the service facility levels. Medical care and family planning both the pre-intervention and post-intervention observation periods comprise a majority of the service contacts. In the latter period they account for almost 80% of all service contacts at the district

hospital, 73% of contacts at the subdistrict health centers, and over 72% of contacts at the midwifery centers. Medical care contacts in the district hospital and sub-district health centers increased sharply, but they increased only slightly at mid-wifery centers. The average number of family planning contacts decreased sharply at the district hospital and midwifery centers, and remained relatively unchanged at the subdistrict health centers.

Another important trend apparent in Table 28 is an overall decrease in total service contacts per week between the baseline and follow-up observations: a decrease of 17.4% at district hospitals; 2.3% at subdistrict health centers; and 6.5% at mid-wifery center. This may appear to conflict with the apparent trends in service statistics totals (at least in the E_1 and E_2 districts) that suggest a broad increase in both medical care and family planning service contacts. Since these two categories normally constitute 60% to 80% of all service contacts in rural areas, a general increase in the average weekly service output at rural facilities might be expected. In fact, the apparent increase in average weekly medical care service contacts at each facility level corresponds closely with service statistics, which show an increase in medical care contacts at each level.

Table 28
Average Number of Service Contacts Per Week by Facility Type

| Service Category | Average Number of Contacts per Facility/Week | | | | | | | | | | | |
|------------------|--|-------|-------------------|-------|---------------------------|-------|-------------------|-------|------------------|-------|-------------------|-------|
| | District Hospital | | | | Subdistrict Health Center | | | | Midwifery Center | | | |
| | Pre-Intervention | | Post-Intervention | | Pre-Intervention | | Post-Intervention | | Pre-Intervention | | Post-Intervention | |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| Medical Care | 116.7 | 43.4 | 130.7 | 58.8 | 28.9 | 39.5 | 40.4 | 56.5 | 20.3 | 42.5 | 21.2 | 47.5 |
| CDC/Sanitation | 19.0 | 7.1 | 21.0 | 9.5 | 22.6 | 30.9 | 9.0 | 12.6 | 3.7 | 7.8 | 3.3 | 7.4 |
| MCH | 44.5 | 16.5 | 23.7 | 10.7 | 7.1 | 9.7 | 8.5 | 11.9 | 7.2 | 15.1 | 7.7 | 17.3 |
| Family Planning | 85.0 | 31.6 | 46.0 | 20.7 | 12.1 | 16.5 | 12.6 | 17.6 | 16.5 | 34.6 | 11.1 | 24.9 |
| Nutrition | 4.0 | 1.5 | 0.8 | 0.4 | 2.5 | 3.4 | 1.0 | 1.4 | * | - | 1.3 | 2.9 |
| All contacts | 269.2 | 100.0 | 222.2 | 100.0 | 73.2 | 100.0 | 71.5 | 100.0 | 47.7 | 100.0 | 44.6 | 100.0 |

* Less than 0.05.

Source: Project Task Analysis

On the other hand, family planning service statistics show an increase when they include the service contacts of health post volunteers. However, volunteer family planning services would not appear in Task Analysis data generated by observations at rural health facilities. Therefore the Task Analysis data does not represent the total number of rural family planning contacts served by government-supported providers. The decrease in the average family planning contacts of govern-

ment-supported providers is probably due to their sharing of responsibility for distribution of oral contraceptives with the volunteers.

The slight net decrease in the average number of services provided at each service unit is partially a result of the increase in the number of service facilities. For example, the number of district hospitals has doubled; the number of sub-district health centers has also doubled. The total number of health facilities increased by more than 50% between the pre- and post-intervention period. The other factor most likely responsible for the relative lack of change in average service output at each facility is the sharing of services with community health volunteers. This is particularly apparent for family planning.

Summary

Despite whatever new appeal the rural health facilities may have stimulated through improved and integrated health services, coupled with the presence of community volunteers as motivators, the net output per center has decreased slightly.

The data presented in the preceding tables, together with utilization results, suggest that rural health facilities are adequately meeting the population's need for medical care, for family planning services, and for some maternal services, such as delivery care. However, given the much smaller proportion of time devoted to direct services concerned with nutrition, sanitation, and communicable disease control, along with the small portion of time spent in field work, it seems clear that these important aspects of community health programs have not received the emphasis they deserve. Although the activity in Child Nutrition Centers is not reflected in the Task Analysis data, it still appears that the general level of community nutrition activity is quite low in relation to the magnitude of the problem. The lack of change in preschool child nutrition status may be one indicator of the need for broader-based community nutrition activities that will focus on the needs of undernourished children.

The major emphasis at all rural health facility levels is still on medical care, which, with family planning services, accounts for the great majority of both health worker service time and service contacts. The addition of the wechakorn paraphysician at each service level has strengthened this emphasis on medical care, and the data reflect what the wechakorn have themselves expressed: medical care is their most important activity. Forty to fifty percent of available working time is not used productively at every facility level except at midwifery centers (where 25% of work time is spent unproductively). Health workers, or any other workers, cannot be

expected to be fully engaged 100% of the working hours. However, the large proportion of working time that is slack time means there is still considerable time available that could be devoted to activities currently underemphasized: community-based nutrition, immunizations, water supply and sanitation. Emphasis on these programs would improve the balance of services at each facility level, and it would strengthen the services that are required to serve apparent unmet needs in the community.

COMMUNITY HEALTH VOLUNTEERS' PERFORMANCE DATA

The major routine activities of health post volunteers are medical care for minor ailments and oral contraceptive distribution. Data compiled from volunteer reports along with their records of referrals provide an adequate picture of these activities. Community health volunteers, particularly the health post volunteers, have made a large contribution to increased medical care and family planning services. Reports on their activities show numerous medical care and oral contraceptive distribution contacts which, as can be seen on Table 29, grew steadily to comprise a large and significant portion of all government rural health service contacts in the final year of Project implementation. The content of volunteer service contacts is generally

Table 29

HPV Medical Care and Family Planning Contacts^a, 1979

| Area | No. of Government Facilities | No. of HPV's | Annual No. HPV Medical Care Contacts | Annual No. HPV FP contacts | Av. No. Medical Care Contacts/HPV/Yr. (% of those referred) | Av. FP Contacts/HPV/Year | Av. Contacts Facility/Week | |
|---------------------------------|------------------------------|--------------|--------------------------------------|----------------------------|---|--------------------------|----------------------------|------|
| | | | | | | | MC | FP |
| E ₁ | 10 | 75 | 16,283 | 12,489 | 217.1 (2.3) | 166.5 | 31.3 | 24.0 |
| E ₂ ^b | 59 | 381 | 74,528 | 46,220 | 195.6 (6.2) | 121.3 | 24.2 | 15.1 |
| E ₁ + E ₂ | 69 | 467 | 90,811 | 58,709 | 194.5 (3.9) | 125.7 | 25.3 | 16.4 |
| All Districts ^c | | 663 | 140,293 | 91,310 | 211.6 (2.6) | 137.7 | 28.1 | 18.3 |

^a All data have been adjusted for under-reporting.

^b No HPV data available for 1979 in Serm Ngam (36 V's), one district of E₂. This district has therefore been deleted from the calculations, as has the control district, Mae Tah (124 V's).

^c Average figures differ slightly from those in Monograph 2 because data are adjusted for under-reporting, and Ngao District, served by Community-Based Family Planning volunteers, is included here.

not comparable to contacts at rural health service facilities. Nevertheless, they may care for many villagers who might have gone to health centers or other sources unnecessarily, or might have treated themselves. On the other hand, volunteer distribution of oral contraceptives (only follow-up cycles) is a simple task which is comparable to the same service provided at other facilities. Thus, a simple but important service normally provided by government rural health facilities, has partially been transferred to health post volunteers.

Table 30 shows the magnitude of health post volunteer and child nutrition center service contacts in relation to other service components. After adding the volunteer contribution, the total contacts associated with the district hospital have changed very little between pre- and post-intervention observations. The addition of the volunteer service contacts to subdistrict health centers and midwifery centers significantly increases the service output at each of these levels in the post-intervention period. Further addition of the CNC contacts greatly increases service output at each level.

Table 30

Estimated Number of Services Per Week, by Facility Level Including Health Volunteers

| | Pre- and Post-Intervention Periods | | | | | | | |
|-------------------------------------|------------------------------------|-----------|---------------------------|-----------|------------------|-----------|-------------------|-----------|
| | Service Contacts by Facility | | | | | | | |
| | District Hospital | | Subdistrict Health Center | | Midwifery Center | | HPV's | CNC's |
| | Pre-Int. | Post-Int. | Pre-Int. | Post-Int. | Pre-Int. | Post-Int. | Pre-Int. | Post-Int. |
| Medical Care | 116.7 | 130.7 | 28.9 | 40.4 | 20.3 | 21.2 | 28.1 | - |
| CDC/Sanitation | 19.0 | 21.0 | 22.6 | 9.0 | 3.7 | 3.3 | - | - |
| MCH | 44.5 | 23.7 | 7.1 | 8.5 | 7.2 | 7.7 | - | - |
| FP | 85.0 | 46.0 | 12.1 | 12.6 | 16.5 | 11.1 | 18.3 | - |
| Nutrition | 4.0 | 0.8 | 2.5 | 1.0 | - ^a | 1.3 | - | 91.6 |
| Total | 269.2 | 222.2 | 73.2 | 71.5 | 47.7 | 44.6 | 45.4 ^b | 91.6 |
| Av. HPV Contacts/ Facility | - | +45.4 | - | +45.4 | - | +45.4 | | |
| Adjusted Total | 269.2 | 267.5 | 73.2 | 116.9 | 47.7 | 90.0 | | |
| Av. CNC Contacts/ Facility | NA | +91.6 | NA | +91.6 | NA | +91.6 | | |
| Adjusted Total Contacts/Facility | 269.2 | 359.2 | 73.2 | 208.5 | 47.7 | 181.6 | | |

^a Less than 0.5

^b Smaller than total because of a few combined visits.

Table 30 further integrates the sets of service data available and provides an overview of total service output by the different components of the provincial health care delivery system. Provincial Hospital data derived from annual service statistics are included in Table 31.

It is clear that there has been a major increase in overall output of the government-supported provincial health care delivery system, as well as for each of its components. There has been a substantial increase in the output of rural health service facilities, and the Provincial Hospital's proportion of total services has decreased proportionately. A large part of the increase in service output of rural health facilities is the result of two factors:

- (1) The number of facilities increased between the pre- and post-intervention periods; and
- (2) The addition of community health volunteer and Child Nutrition Center services greatly expanded the output.

Table 31

Estimated Total Service Contacts for Government Provincial Health Care System Pre- and Post-Intervention

| Service Facility and Provider | Average Contacts/Week | | No. Rural Facilities | | Estimated Total Weekly Contacts | |
|----------------------------------|-----------------------|-------------------|------------------------------|-----------|---------------------------------|-------------|
| | Pre-Int. | Post-Int. | Pre-Int. (est.) ^a | Post-Int. | Pre-Int. | Post-Int. |
| District Hospital | 269.2 | 222.2 | 4 | 7 | 1,076.8 | 1,555.4 |
| Subdistrict HC | 73.2 | 71.5 | 46 | 70 | 3,367.2 | 5,005.0 |
| Midwifery Center | 47.7 | 44.6 | 37 | 30 | 1,764.9 | 1,338.0 |
| HPV | - | 45.4 ^b | - | 107 | - | 4,857.8 |
| Child Nutrition Center | NA | 91.6 | NA | 107 | NA | 9,799.1 |
| All Rural | 390.1 | 383.7 | - | - | 6,208.9 | 22,582.2 |
| Provincial Hospital ^c | 3,565.4 | 3,740.9 | 1 | 1 | 3,565.4 | 3,740.9 |
| Total/Week | | | | | 9,774.3 | 26,323.1 |
| Total/Year | | | | | 508,263.6 | 1,368,801.0 |

^a 1977 is the pre-intervention year.

^b Average of all HPV contacts ÷ 96 facilities -- all facilities except in Mae Tah (no HPV's) and Serm Ngam (no HPV reports).

^c Only outpatients.

There has been a broad increase in the total services provided by the conventional MOPH rural health care facilities. Another component of expanded service output has been the community health volunteer and Child Nutrition Center activities, which have supplemented the services of other facilities. At the same time, Community Health Survey data indicate a sharp increase in the population's contact with the delivery system through service utilization. Coverage of the target populations with special needs -- women of reproductive age and preschool children -- has also increased, though not quite to the extent planned. Therefore, in terms of the overall service output of the delivery system, and in terms of its ability to reach the groups given special emphasis, there has been considerable progress during the Project years. Figures 8 and 9 graphically summarize these changes.

Figure 8 roughly outlines the change in service output by the various components -- both new and old -- of the health delivery system. The estimated number of total service contacts has increased almost 69%. The large expansion of rural-level health service capacity, including the village health volunteers, should be noted. Figure 9 shows the change in overall output by type of service provided, with the largest increases coming in medical care, family planning and maternal and child health services.

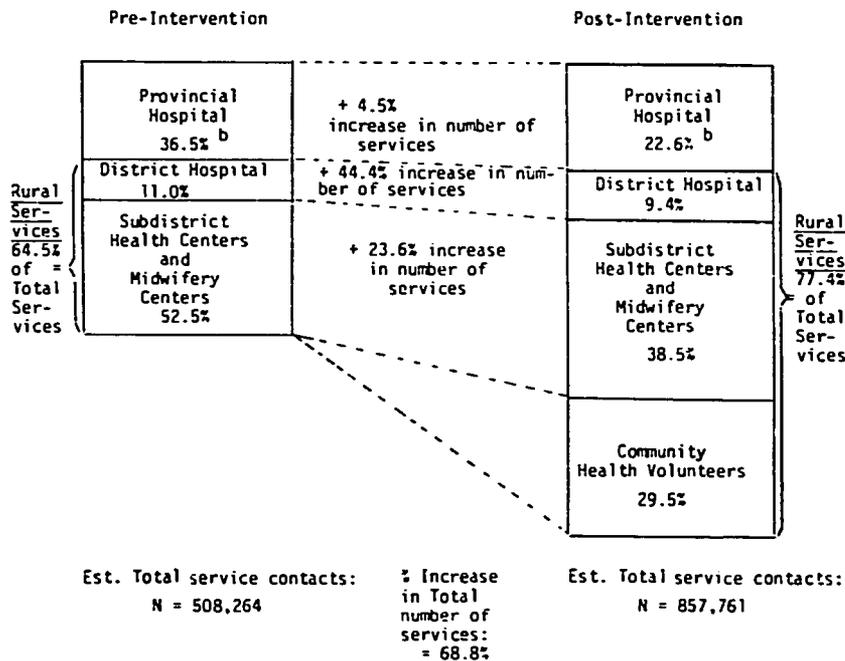
RURAL HEALTH SYSTEM COST DATA

The Provincial Hospital, the largest single facility in the province, is the most expensive of all rural health facilities. In turn, the district hospital budget overshadows those of the more moderately financed subdistrict health centers and midwifery centers. Table 32 shows that the average budget available to each system component increased by at least 50% during the period of Project implementation.

The proportion of total operating costs allocated for salaries has increased in every service level except the Provincial Hospital, with the largest increases coming at the subdistrict and midwifery center levels. (This results from generally larger overall budget increases at the Provincial and district hospitals which kept pace with personnel cost increases. At the subdistrict health center and midwifery center levels, increasing personnel costs surpassed the rate of increase in overall facility budgets.) The second most important cost item at all facility levels is expendables: consumable drugs and supplies related to service delivery. Personnel and expendables costs account for over 90% of all costs at rural facilities, and for well over 50% of all costs in the Provincial Hospital.

Figure 8

Change in Annual Service Output^a by Service Level in Pre-Intervention and Post-Intervention Years



^a Does not include CNC contacts, as complete Child Nutrition Center data unavailable for the pre-intervention period.

^b Refers to that facility's % of total services; e.g., the Provincial Hospital provided 36.5% of all services in the pre-intervention period. But although the number of hospital services increased 4.5%, the Provincial Hospital's % of total services in the post-intervention period dropped to 22.6% because of the larger increase in service output by other facilities and providers.

Figure 9

Change in Distribution of Service Contacts by Category of Service from Pre-Intervention to Post-Intervention Years

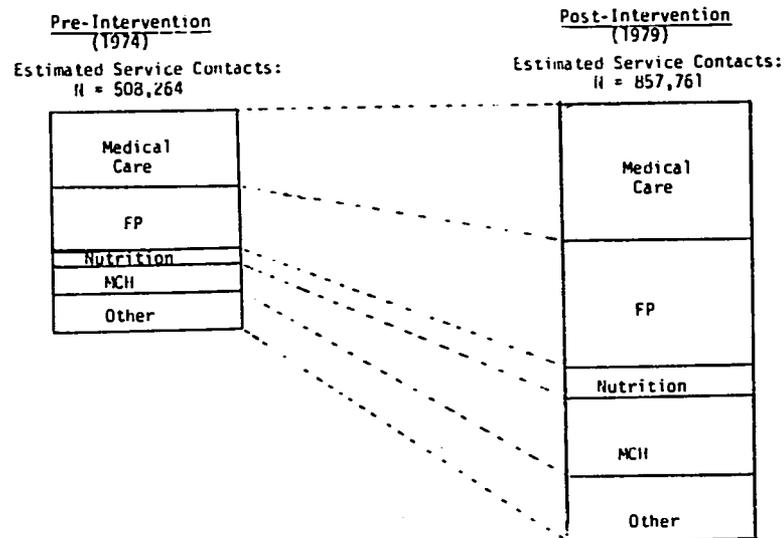


Table 32

Average Annual Costs for Component Facilities of
the Lampang Provincial Health Care Delivery System
(20 baht = 1 US dollar)

| Facility | Annual Costs (in Baht) | | |
|----------------------------------|------------------------|------------|------------|
| | 1975 | 1977 | 1979 |
| Provincial Hospital ^a | 13,040,700 | 20,606,705 | 40,717,976 |
| District Hospital | NA | 564,462 | 843,258 |
| Subdistrict Health Center | 61,449 | 77,187 | 95,091 |
| Midwifery Center | 29,166 | 47,035 | 65,799 |

^a Does not include capital depreciation costs or construction costs.

Source: Project Cost Analysis Survey

Cost of Volunteer Services

The major service categories of the health post volunteer for which data are available are medical care and family planning (pill distribution only). In the case of medical care services by volunteers, no direct cost to the health center responsible for the volunteers is involved except that a small portion of the work time of the wechakorn, midwife, or sanitarian in rural facilities is spent in supporting volunteers. There is an average of about $\text{฿}1.24$ per contact paid for volunteer medical care services, but this is borne by the consumer and is not reflected in government facility costs. The cost of family planning services, on the other hand, is more directly linked to the government health facilities. All oral contraceptive pill cycles are provided by the government facility which has responsibility for the volunteers, be it a district hospital, subdistrict health center, or midwifery center.

The estimated number of volunteer family planning contacts in the areas covered by the facilities surveyed in the Task Analysis was 45,766. For each contact, the volunteers distributed an average of 1.1 pill cycles. Cost-accounting in the Task Analysis valued one cycle of pills at 8 baht, so that each family planning contact required 8.8 baht for expendables. Therefore, the total cost of pills distributed by HPV's in 1979 was $\text{฿} 402,741$ ($45,766 \times \text{฿} 8.8$).

The cost of a HPV-Provided Medical Care Service is ₦ 1.83 (\$0.08) and the cost of a HPV-Provided Family Planning Service is ₦ 9.79 (\$0.43) only. There are no salary costs for volunteers. Other additional costs that might be incorporated could be pro-rated costs of pre-service training and annual costs of refresher training. But these would be very small on a per-unit-service basis.

Measurement of Service Costs Before and After Project Interventions

The data shown in Tables 33 and 34 suggest substantial increases in the cost per service contact of every type in the post-intervention period. The apparent increase in cost is a result of inflation, large salary increases, and changes in staffing patterns and the efficiency of service delivery. Changes in the pattern of service delivery are, in part, a result of sharing medical care and contraceptive distribution of rural health facilities with health volunteers. The unit service costs in Table 33 however, do not reflect the contribution of health volunteers associated with each service facility, nor do they incorporate the nutrition services provided by Child Nutrition Centers (both of which are under government health worker supervision).

The effects of sharp provincial health budgetary increases, together with inflation, serve to complicate comparison of costs between the pre- and post-intervention periods. To more clearly distinguish the effect of changing service delivery and working patterns on service costs, post-intervention service data have been standardized on pre-intervention service costs, as shown in Table 35. Although the standardized costs for most service categories show an increase in the post-intervention period, the increase is generally more moderate than those shown in Table 34. Wherever an increase in average number of services in each category has occurred, a decrease in cost per service results.

Integrating Volunteer Services

In cost computations, the services provided by health volunteers should be combined with the services in each facility. Since most costs of supplying and supporting volunteers are already a part of the annual expenditures of each health facility, the addition of volunteer services (medical care and family planning) tends to reduce the cost per service contact. Table 10 showed the estimated average weekly number of volunteer medical care and family planning contacts associated with each facility. The weekly service contacts in each category were then multi-

Table 33

Estimated Annual Total Costs by Facility Type and Function
(All figures in Thai baht currency, where U.S.1 = ฿20)

Part A. District Hospitals

| | Pre-Intervention | | | | | | Post-Intervention | | | | | |
|------------------|------------------|--------|--------|---------|-----|---------|-------------------|--------|--------|--------|--------|---------|
| | MC | CDC/S | MCH | FP | Nut | Total | MC | CDC/S | MCH | FP | Nut | Total |
| Capital | 10,881 | 11,610 | 11,976 | 18,636 | - | 61,103 | 36,463 | 4,701 | 5,192 | 9,034 | 41 | 55,431 |
| Maintenance | 2,655 | 1,632 | 1,684 | 2,620 | - | 8,591 | 8,955 | 1,713 | 1,408 | 2,477 | 11 | 14,564 |
| Expendables | 117,347 | 2,682 | 1,788 | 101,701 | - | 223,518 | 254,035 | 34,085 | 8,533 | 33,360 | 7,698 | 337,711 |
| Salaries | | | | | | | | | | | | |
| - Direct | 28,460 | 185 | 2,124 | 3,836 | 82 | 34,687 | 51,496 | 2,907 | 7,424 | 5,774 | 316 | 67,917 |
| - Indirect | 72,812 | 296 | 3,581 | 6,495 | 148 | 83,332 | 78,637 | 6,476 | 17,054 | 14,725 | 993 | 117,885 |
| - Field | - | - | - | - | - | 649 | - | - | - | - | - | 18,515 |
| - Non-Productive | 125,853 | 598 | 7,090 | 12,838 | 287 | 146,666 | 146,574 | 10,568 | 27,570 | 23,089 | 1,474 | 209,275 |
| Total | 366,008 | 17,003 | 28,243 | 146,126 | 517 | 550,546 | 576,160 | 60,450 | 67,181 | 88,459 | 10,533 | 821,298 |

Part B. Subdistrict Health Centers

| | Pre-Intervention | | | | | | Post-Intervention | | | | | |
|------------------|------------------|-------|-------|--------|-----|--------|-------------------|--------|-------|--------|-------|--------|
| | MC | CDC/S | MCH | FP | Nut | Total | MC | CDC/S | MCH | FP | Nut | Total |
| Capital | 1,517 | 1,076 | 2,415 | 1,988 | 128 | 7,124 | 3,990 | 459 | 1,125 | 1,227 | 57 | 6,858 |
| Maintenance | 359 | 294 | 551 | 427 | 38 | 1,669 | 744 | 89 | 197 | 252 | 11 | 1,293 |
| Expendables | 1,786 | 701 | 407 | 19,328 | 384 | 22,606 | 8,783 | 686 | 1,769 | 21,216 | 2,101 | 34,555 |
| Salaries | | | | | | | | | | | | |
| - Direct | 1,841 | 169 | 506 | 802 | 45 | 3,363 | 5,639 | 1,909 | 1,097 | 767 | 249 | 9,661 |
| - Indirect | 6,136 | 527 | 1,464 | 2,566 | 165 | 10,858 | 14,087 | 5,015 | 2,805 | 1,996 | 635 | 24,538 |
| - Field | - | - | - | - | - | 5,065 | - | - | - | - | - | 4,291 |
| - Non-Productive | 6,838 | 597 | 1,689 | 2,886 | 180 | 12,190 | 8,167 | 2,866 | 1,615 | 1,144 | 366 | 14,158 |
| Total | 18,477 | 3,364 | 7,032 | 27,997 | 940 | 62,875 | 41,410 | 11,024 | 8,608 | 26,602 | 3,419 | 95,354 |

Part C. Midwifery Centers

| | Pre-Intervention | | | | | | Post-Intervention | | | | | |
|------------------|------------------|-------|-------|--------|-----|--------|-------------------|-------|-------|--------|-------|--------|
| | MC | CDC/S | MCH | FP | Nut | Total | MC | CDC/S | MCH | FP | Nut | Total |
| Capital | 775 | 501 | 1,130 | 1,870 | 4 | 4,280 | 2,300 | 248 | 395 | 997 | 47 | 3,987 |
| Maintenance | 290 | 202 | 489 | 703 | 2 | 1,686 | 536 | 60 | 59 | 234 | 9 | 898 |
| Expendables | 1,956 | 786 | 437 | 18,650 | 0 | 21,839 | 5,161 | 2,848 | 1,152 | 16,411 | 3,757 | 29,329 |
| Salaries | | | | | | | | | | | | |
| - Direct | 1,977 | 43 | 329 | 364 | 10 | 2,723 | 1,997 | 233 | 791 | 518 | 74 | 3,613 |
| - Indirect | 4,520 | 97 | 752 | 1,456 | 23 | 6,848 | 7,623 | 918 | 3,010 | 1,968 | 282 | 13,801 |
| - Field | - | - | - | - | - | 2,841 | - | - | - | - | - | 2,413 |
| - Non-Productive | 5,530 | 119 | 920 | 1,549 | 28 | 8,146 | 4,078 | 488 | 1,611 | 1,054 | 151 | 7,382 |
| Total | 15,058 | 1,748 | 4,057 | 24,592 | 67 | 48,363 | 21,695 | 4,795 | 7,018 | 21,182 | 4,320 | 61,423 |

Table 34
Estimated Cost Per Service Contact by Facility Type and Function
 (All figures are in baht currency, where U.S.1 = B20)

Part A. District Hospitals

| | Pre-Intervention | | | | | | Post-Intervention | | | | | |
|--------------------|------------------|-------|-------|-------|------|--------|-------------------|-------|-------|-------|--------|--------|
| | MC | CDC/S | MCH | FP | Nut | Total | MC | CDC/S | MCH | FP | Nut | Total |
| No. Serv. Contacts | 6,070 | 988 | 2,314 | 4,420 | 208 | 14,000 | 6,796 | 1,092 | 1,23 | 2,392 | 43 | 11,554 |
| Capital Cost | 3.11 | 11.75 | 5.18 | 4.22 | - | 4.36 | 5.37 | 4.30 | 4.22 | 3.78 | 0.95 | 4.80 |
| Maintenance | 0.44 | 1.65 | 0.73 | 0.59 | - | 0.61 | 1.32 | 1.57 | 1.14 | 1.04 | 0.26 | 1.26 |
| Expendables | 19.33 | 2.71 | 0.77 | 23.01 | - | 15.97 | 37.38 | 31.21 | 6.93 | 13.95 | 179.02 | 29.23 |
| Salaries | 4.69 | 0.19 | 0.92 | 0.87 | 0.39 | 2.48 | 7.58 | 2.66 | 6.03 | 2.41 | 7.35 | 5.88 |
| - Direct | 12.00 | 0.30 | 1.55 | 1.47 | 0.71 | 5.95 | 11.57 | 5.93 | 13.85 | 6.16 | 23.09 | 10.20 |
| - Indirect | 20.73 | 0.61 | 3.06 | 2.90 | 1.38 | 10.48 | 21.57 | 9.69 | 22.40 | 9.64 | 34.28 | 18.11 |
| - Non-Productive | | | | | | | | | | | | |
| Total | 60.30 | 17.21 | 12.21 | 33.06 | 2.48 | 39.85 | 84.79 | 55.36 | 54.57 | 36.98 | 244.95 | 71.08 |

Part B. Subdistrict Health Centers

| | Pre-Intervention | | | | | | Post-Intervention | | | | | |
|--------------------|------------------|-------|-------|-------|------|-------|-------------------|-------|-------|-------|-------|-------|
| | MC | CDC/S | MCH | FP | Nut | Total | MC | CDC/S | MCH | FP | Nut | Total |
| No. Serv. Contacts | 1,836 | 1,177 | 369 | 629 | 732 | 4,143 | 2,098 | 467 | 442 | 658 | 49 | 3,714 |
| Capital Cost | 0.83 | 0.91 | 6.54 | 3.16 | 0.97 | 1.72 | 1.90 | 0.98 | 2.55 | 1.86 | 1.16 | 1.85 |
| Maintenance | 0.20 | 0.25 | 1.49 | 0.68 | 0.29 | 0.40 | 0.35 | 0.19 | 0.45 | 0.38 | 0.22 | 0.35 |
| Expendable | 0.97 | 0.60 | 1.10 | 30.72 | 2.92 | 5.46 | 4.19 | 1.47 | 4.00 | 32.24 | 42.88 | 9.30 |
| Salaries | 1.00 | 0.14 | 1.37 | 1.27 | 0.34 | 0.81 | 2.69 | 4.09 | 2.48 | 1.17 | 5.08 | 2.60 |
| - Direct | 3.34 | 0.45 | 3.97 | 4.08 | 1.25 | 2.62 | 6.71 | 10.74 | 6.35 | 3.03 | 12.96 | 6.61 |
| - Indirect | 3.73 | 0.51 | 4.58 | 4.59 | 1.37 | 2.94 | 3.89 | 6.14 | 3.65 | 1.75 | 7.48 | 3.81 |
| - Non-Productive | | | | | | | | | | | | |
| Total | 10.07 | 2.86 | 19.05 | 44.50 | 7.14 | 13.95 | 19.73 | 23.61 | 19.48 | 40.43 | 69.78 | 25.67 |

Part C. Midwifery Centers

| | Pre-Intervention | | | | | | Post-Intervention | | | | | |
|--------------------|------------------|-------|-------|-------|-------|-------|-------------------|-------|-------|-------|-------|-------|
| | MC | CDC/S | MCH | FP | Nut | Total | MC | CDC/S | MCH | FP | Nut | Total |
| No. Serv. Contacts | 1,754 | 194 | 374 | 856 | 2 | 3,181 | 1,104 | 172 | 400 | 577 | 66 | 2,319 |
| Capital Cost | 0.44 | 2.58 | 3.02 | 2.18 | 2.33 | 1.34 | 2.08 | 1.44 | 0.99 | 1.73 | 0.71 | 1.72 |
| Maintenance | 0.16 | 1.04 | 1.31 | 0.82 | 1.16 | 0.53 | 0.49 | 0.35 | 0.15 | 0.41 | 0.14 | 0.39 |
| Expendable | 1.12 | 4.05 | 1.17 | 21.78 | 0 | 6.87 | 4.67 | 16.56 | 2.88 | 28.44 | 56.92 | 12.65 |
| Salaries | 1.13 | 0.22 | 0.88 | 0.43 | 5.81 | 0.86 | 1.81 | 1.35 | 1.98 | 0.90 | 1.12 | 1.56 |
| - Direct | 2.58 | 0.50 | 2.01 | 1.70 | 13.37 | 2.15 | 6.91 | 5.34 | 7.52 | 3.41 | 4.27 | 5.95 |
| - Indirect | 3.15 | 0.61 | 2.46 | 1.81 | 16.28 | 2.56 | 3.69 | 2.84 | 4.02 | 1.82 | 2.29 | 3.18 |
| - Non-Productive | | | | | | | | | | | | |
| Total | 8.58 | 9.00 | 10.85 | 28.72 | 38.95 | 14.31 | 19.65 | 27.88 | 17.54 | 36.71 | 65.45 | 26.49 |

Table 35

Cost per Service: Post-Intervention Service Contacts
Standardized on Pre-Intervention Costs (in Baht)

| | | Service Category | | | | | |
|-------------------|---|------------------|---------|---------|----------|--------|--------------|
| | | MC | CDC/S | MCH | FP | Nut. | All Services |
| District Hospital | Post-Intervention annual service contacts | 1,796 | 1,092 | 1,231 | 2,392 | 43 | 11,554 |
| | Pre-Intervention annual expenditures | ฿356,125 | ฿16,834 | ฿46,259 | ฿144,727 | ฿481 | ฿564,462 |
| | Cost/service | ฿52.40 | ฿15.42 | ฿37.62 | ฿60.50 | ฿11.11 | ฿48.85 |
| | Pre-Intervention Cost/service | ฿60.30 | ฿17.21 | ฿12.21 | ฿33.06 | ฿2.48 | ฿39.85 |
| Health Center | Post-Intervention annual service contacts | 2,098 | 467 | 442 | 658 | 49 | 3,714 |
| | Pre-Intervention annual expenditures | ฿18,190 | ฿2,371 | ฿6,919 | ฿29,156 | ฿871 | ฿57,507 |
| | Cost/service | 8.67 | 5.08 | 15.65 | 44.32 | 17.63 | 15.48 |
| | Pre-Intervention Cost/service | ฿10.07 | ฿2.86 | ฿19.05 | ฿44.50 | ฿7.14 | ฿13.95 |
| Midwifery Center | Post-Intervention annual service contacts | 1,104 | 172 | 400 | 577 | 66 | 2,319 |
| | Pre-Intervention annual expenditures | ฿15,003 | ฿1,835 | ฿4,600 | ฿25,093 | ฿95 | ฿46,626 |
| | Cost/service | ฿13.59 | ฿10.64 | ฿11.51 | ฿43.45 | ฿1.45 | ฿20.11 |
| | Pre-Intervention Cost/service | ฿8.58 | ฿9.00 | ฿10.85 | ฿28.72 | ฿38.95 | ฿14.31 |

plied by 52 and added to the annual service contacts of the same type (e.g., medical care and family planning) at each facility level. For family planning contacts there is a difference in the content of a volunteer contact and a rural health facility contact. On the average, each volunteer distributes 1.1 oral contraceptive packs per contact, whereas the government facility, on the average, distributes 1.68 cycles per contact. Therefore, before volunteer family planning contacts were added to each health facility total, they were divided by the factor $\frac{1.68}{1.1} = 1.53$ to make the volunteer pill contacts equivalent to those at health facilities.

By first adding the health post volunteer service contribution to each facility's output, there are pronounced effects on the average cost per medical care and family planning contact. Table 36 shows the cost per contact after volunteer services have been incorporated. The volunteer service output associated with each

Table 36

Estimated Average Cost per Service Contact
(Adjusted to Include Volunteer Services)
Pre- and Post-Intervention Periods

(20 Baht = 1US\$)

| Facility | | Cost per Contact by Service Category (Baht) | | | | | All Services |
|----------------------------|------------------|---|--------|--------|--------|---------|--------------|
| | | MC | CDC/S | MCH | FP | Nut | |
| Pre- Inter- vention | Dist. Hospital | ฿60.30 | ฿17.21 | ฿12.21 | ฿33.06 | ฿2.48 | ฿39.85 |
| | Subdist. HC | 10.07 | 2.86 | 19.05 | 44.50 | 7.14 | 13.45 |
| | Midwifery Center | 8.58 | 9.00 | 10.85 | 28.72 | 39.95 | 14.31 |
| Post- Inter- vention | Dist. Hospital | ฿69.78 | ฿55.36 | ฿54.57 | ฿29.35 | ฿244.95 | ฿60.22 |
| | Subdist. HC | 11.63 | 23.61 | 19.48 | 20.78 | 69.78 | 16.46 |
| | Midwifery Center | 8.46 | 27.88 | 17.54 | 17.66 | 65.45 | 13.95 |

facility level has served to hold costs per medical care contact fairly stable (despite sharply rising total facilities costs), and has led to a decrease in the unit cost of family planning services.

Incorporating Child Nutrition Centers (CNC)

The service data for Child Nutrition Centers, shown in Tables 10 and 11, must likewise be integrated. Adjustments are necessary to analyze CNC costs. Costs for Child Nutrition Center operations are normally borne by village families who pay a small monthly charge to have their children attend. However, nutrition supplements are provided to CNC's by the local government rural health facility which is responsible for the CNC. The cost of nutrition supplements is already included in the cost analysis "expendables" category at each facility. In addition, each CNC has an attendant who receives ฿400 per month (some receive it from the Ministry of Public Health, others from the local contributions). These salary costs must also be added to nutrition service costs. CNC attendant salary costs for 1979 were as follows:

| | |
|-------------------------------------|-----------|
| Annual attendant salary | ฿ 4,800 |
| Total CNC facility years in Lampang | x 76.17 |
| Total salary expenditure in 1979 | ฿365,616 |
| Total rural facilities | + 107 |
| Average annual cost/rural facility | ฿3,416.97 |

When averages for both volunteer and Child Nutrition Center contacts have been added to each facility's service output, the result is a dramatic drop in average cost per nutrition service, as well as in the average cost of all service contacts, as seen in Table 37. Care must be taken in comparing pre- and post-intervention

Table 37
Estimated Cost per Service Contact
(Adjusted to Include Volunteer and CNC Services)
Pre- and Post-Intervention Periods

| Facility | | Cost per Contact by Service Category (Baht) | | | | | |
|----------------------------|------------------|---|--------|---------|---------|--------|--------------|
| | | MC | CDC/S | MCH | FP | Nut. | All Services |
| Pre- Inter- vention | Dist. Hospital | ฿60.30 | ฿17.21 | ฿ 12.21 | ฿ 33.06 | ฿ 2.48 | ฿ 39.85 |
| | Subdist. HC | 10.07 | 2.86 | 19.05 | 44.50 | 7.14 | 13.45 |
| | Midwifery Center | 8.58 | 9.00 | 10.85 | 28.72 | 39.95 | 14.31 |
| Post- Inter- vention | Dist. Hospital | ฿69.78 | ฿55.36 | ฿ 54.57 | ฿ 29.35 | ฿ 2.90 | ฿ 44.63 |
| | Subdist. HC | 11.63 | 23.61 | 19.48 | 20.78 | 1.42 | 9.03 |
| | Midwifery Center | 8.46 | 27.88 | 17.54 | 17.66 | 1.60 | 6.70 |

nutrition costs, as CNC service data for the pre-intervention period were not available. (This would have made pre-intervention nutrition costs slightly less than Tables 36 and 37 show. Moreover, the total CNC service contacts are the result of a small number of children attending the centers repeatedly.)

SUMMARY OF MAJOR FINDINGS

The analysis of system performance and costs has revealed a number of important results, the most important of which are:

- (1) While the average service output of individual health facilities has not generally increased, the total service output of the provincial health care delivery system increased greatly. The increase was a result of two major factors: the expanded number of rural health personnel and facilities, and the substantial contribution of community health volunteers.
- (2) The proportion of total health services provided by rural health facilities and providers has increased, and the provincial hospital's proportionate share of all health services has decreased.
- (3) Medical care remains the predominant activity, in terms of volume of service contacts and worker time spent at all service levels.
- (4) The health post volunteers have established a major role in providing simple medical care services and in oral contraceptive distribution.

- (5) Although some community health programs, such as nutrition and sanitation, showed moderate improvement during Project implementation, efforts in many other health promotion and disease prevention programs need intensified attention.
- (6) The unit costs of delivering family planning and medical care services decreased as a result of the substantial contribution of health post volunteers. However, the overall costs of health care have sharply increased at the national and provincial levels; likewise, the costs per service contact of all types increased.

IMPACT ON THE POPULATION AND ENVIRONMENT

A basic assumption of the Project design was that by improving health coverage of and service delivery to the target groups -- with emphasis on family planning, maternal and child health, and nutrition services -- a measurable improvement in the health status of the target groups would result. It is recognized that health status, fertility and infant mortality are strongly influenced by a variety of social and economic factors. Discerning the extent to which health services have had an impact on these factors is a complex task. In Lamphang there were several major problems associated with measuring impact on health status:

- (1) The data available for measuring impact were often too incomplete or qualitatively inadequate to be used to definitively measure change. This problem has been dealt with by drawing on several independent data sources wherever possible.
- (2) The span of time during which Project-related approaches had been operating before evaluation may have been too short to permit significant changes to occur. In only one district were Project approaches in operation for more than three years. In most other districts they operated for two years or less. Therefore, it may be somewhat unrealistic to expect dramatic changes in health-status indicators during such a brief intervention period.
- (3) At the beginning of the Project, it appeared that important changes in some health-status measures, such as decreasing fertility, were already under way. It may be difficult to unequivocally attribute such observed changes in health status to Project inputs. On the other hand, it may be that a lack of change in some key health status indicators, such as child nutritional status, may be directly related to weaknesses in the depth and scope of Project activities.

The Lamphang Project has faced the common dilemma of matching well-documented service output results (indirect evidence of impact) against more fragmentary but direct evidence of health and fertility change. Previous monographs have demonstrated

the Project's impact on service availability, health facility and personnel performance and costs, and on utilization of health services by the rural population. These output results, coupled with Community Health Survey and vital statistics data, may suggest potential or putative change in health-status indicators resulting, in part, from Project activity.

FERTILITY CHANGE

Changes in Marital Status

The number of married women age 15 to 44 years has an important influence on fertility. As an initial step in reviewing fertility changes, the current marital status of sample women in both baseline and follow-up survey rounds was compared. Table 38 summarizes current marital status data. The proportion of women "currently" married dropped significantly in all areas between baseline (BL) and follow-up (FU)

Table 38

Number and Proportion of Women Age 15-44
Currently Married,^a by Age Group and by Area

| Area Survey | E ₁ | | E ₂ | | C ₁ | | C ₂ | |
|---|----------------|------|----------------|------|----------------|------|----------------|------|
| | BL | FU | BL | FU | BL | FU | BL | FU |
| All ages | 55.2 | 48.9 | 57.8 | 52.9 | 61.2 | 57.7 | 55.8 | 41.9 |
| 15-19 | 11.3 | 9.4 | 12.7 | 9.4 | 16.8 | 13.8 | 7.2 | 8.5 |
| 20-24 | 55.2 | 43.6 | 54.5 | 39.3 | 61.1 | 47.7 | 57.9 | 32.1 |
| 25-29 | 82.1 | 71.5 | 78.9 | 76.8 | 79.6 | 82.2 | 84.6 | 65.1 |
| 30-34 | 92.6 | 89.4 | 87.9 | 81.8 | 85.5 | 83.3 | 87.7 | 84.8 |
| 35-39 | 88.8 | 84.3 | 89.8 | 87.8 | 90.1 | 89.0 | 90.8 | 72.2 |
| 40-44 | 86.6 | 85.7 | 83.5 | 86.4 | 88.1 | 79.7 | 95.3 | 81.6 |
| Number of currently married women in sample | 1058 | 466 | 1783 | 811 | 838 | 379 | 371 | 127 |
| Number of Women sampled aged 15-44 years | 1915 | 953 | 3083 | 871 | 1370 | 657 | 665 | 303 |
| Percent change BL to FU | -11.4% | | -8.5% | | -5.7% | | -24.9% | |

^a Four years elapsed between baseline (1975) and follow-up (1979) surveys in E₁, C₁, and C₂, while there were only two years between baseline (1977) and follow-up (1979) data for the E₂ districts. Source: Community Health Survey

surveys. The percent change in both Project operational areas was greater than in the C₁ control district in Lampang, but considerably less than in the control district outside of Lampang. The substantial decline in proportions married and the very low levels may suggest that migration occurred.

Pregnancy Status

Table 39 summarizes the change in the proportion of "currently" married women who were pregnant at the time of baseline and follow-up surveys. The proportion pregnant in the E₁ area increased slightly, while in the E₂ districts there was an 11% decrease. Both control areas showed very large increases. However, the percent of married women "currently" pregnant in all areas was considerably less than the proportion found by the national Contraceptive Prevalence Survey, conducted in late 1978. The Project survey data on pregnancy should be used with caution, as the sample numbers involved, particularly in the follow-up rounds, are quite small.

Table 39
Proportion of Currently Married Women Who Were Pregnant at the
Time of Baseline and Follow-up Surveys

| Area | % of Women Currently Pregnant | | |
|-----------------------------------|-------------------------------|-----------|----------------|
| | Baseline | Follow-up | Percent Change |
| E ₁ (BL-1975, FU-1979) | 6.7 | 6.9 | +3.0 |
| E ₂ (BL-1977, FU-1979) | 7.3 | 6.5 | -11.0 |
| C ₁ (BL-1975, FU-1979) | 4.5 | 7.1 | +57.8 |
| C ₂ (BL-1975, FU-1979) | 4.0 | 7.1 | +77.5 |
| CPS (1978) | | 10.1 | |

CPS = Thailand Contraceptive Prevalence Survey, 1978.

Family Planning Practice

As discussed in Monograph 8, Project survey data in the baseline rounds indicated very high levels of contraceptive use by married women of childbearing age. Moreover, the follow-up Community Health Survey conducted at the end of Project field implementation showed increased contraceptive practice in all areas showed considerable increases in the level of "current" contraceptive practice, although the control areas showed the most substantial change. All areas except the seven E₂ districts demonstrated levels

Table 40
Contraceptive Practice of Currently Married
Women, Aged 15-44

| Age Group | Currently Practicing Contraception | | | | | | | |
|-------------------------|------------------------------------|------|----------------|------|----------------|------|----------------|------|
| | E ₁ | | E ₂ | | C ₁ | | C ₂ | |
| | BL | FU | BL | FU | BL | FU | BL | FU |
| 15-44 years | 56.0 | 64.4 | 50.8 | 53.8 | 50.7 | 62.5 | 58.0 | 73.2 |
| 15-24 years | 40.0 | 57.6 | 38.6 | 45.1 | 37.2 | 41.6 | 45.2 | 63.0 |
| 25-44 years | 61.1 | 66.9 | 55.2 | 56.0 | 56.1 | 67.9 | 61.5 | 76.0 |
| % Change for ages 15-44 | +15.0 | | +5.9 | | +23.3 | | +26.2 | |
| % Change for ages 15-24 | +44.0 | | +16.8 | | +11.8 | | +39.4 | |
| % Change for ages 25-44 | +9.5 | | +1.4 | | +19.3 | | +25.2 | |

of practice higher than found in the Contraceptive Prevalence Survey in the northern region for roughly the same time period. In all areas except the C₁ district, the sharpest increase in contraceptive practice was in the 15-24 age group, where fertility is heavily concentrated. (It should be noted that Mae Tha, the C₂ control district, is an unusual area with respect to fertility and family planning. Mae Tha is part of Lampoon Province, an area which appears to have among the lowest birth rates and highest levels of contraceptive practice in Thailand.)

Crude Birth Rate

Provincial vital registration data for the period of Project implementation (1974-1979) show the trends in birth rates for the province summarized in Table 41. The number of births registered annually declined by 9.6%, whereas the population grew by only 3.1%. The birth registration data indicate a decline in the crude birth rate of 12.3% in the period 1974-1979. However, the substantial under-reporting of births, and the questionable reliability of the total population figures produced by the provincial vital registration office, make the data useful only for showing general trends in fertility. Although the law specifies that the residence of the child and not the place where delivery occurred be entered on the registration certificate, it appears that this practice is not always followed.

Table 41

Registered Births and Estimated Crude Birth Rates for Lampung Province, 1974-1979

| | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|------------------------------------|---------|---------|---------|---------|---------|---------|
| No. registered births | 13,343 | 12,414 | 12,267 | 12,068 | 12,025 | 12,061 |
| Population | 636,580 | 643,001 | 643,260 | 648,639 | 652,528 | 659,433 |
| Est. Crude Birth Rate ^a | 20.96 | 19.31 | 19.07 | 18.61 | 18.43 | 18.39 |

^a Births/1000 midyear population. Population was end of year, rather than mid-year figure

Note: An under-reporting rate of 30% was observed in the National Population Sample Survey, 1974-1975.

in recent years, as the number of births at the Provincial Hospital has increased, there has been a major, but unlikely, increase in births registered for Lampung town. For example, although Lampung town has less than 7% of the total provincial population, over 38% of births in 1979 were registered in the town. This suggests that many births of children from outlying districts which occurred in the hospital were simply recorded as town births. As a result, the district breakdown of birth data from the provincial vital registration office is inadequate to make crude birth rate comparisons among districts.

Fertility Rates

Using data generated by the pregnancy history component of the Community Health Survey, baseline and follow-up fertility rates were estimated. The changes in the general marital fertility rates -- the number of children born to 1000 currently married women aged 15 to 44 -- are shown in Table 42. To produce sample sizes sufficient to calculate rates, three-year average rates were used. General marital fertility dropped substantially in all areas, but the greatest declines were in the two control areas. The decline in the C₂ control area was, however, over 50% larger than in any other area.

Table 42
Estimated General Fertility Rates^a Currently
Married Women Aged 15-44

| | | General Marital Fertility Rate | % Change |
|------------------|-----------|-----------------------------------|----------|
| E ₁ | 1972-1974 | 137 | |
| | 1976-1978 | 116 | -15.3 |
| E ₂ | 1974-1976 | 144 | |
| | 1976-1978 | 111 | -22.9 |
| C ₁ | 1972-1974 | 131 | |
| | 1976-1978 | 99 | -24.4 |
| C ₂ | 1972-1974 | 127 | |
| | 1976-1978 | 81 | -36.2 |
| COS (North) 1978 | | 127 | -- |

^a GFR = The number of children born per 1000 currently married women.

Table 43 shows the change in age-specific marital fertility rates -- the annual number of births per 1000 married women in each age group -- and the total fertility rates -- the summation of the annual age specific rates over the childbearing life of 1000 women (assuming the same age specific rates are constant).

The average number of children born to married women provides some supplementary evidence concerning changes in fertility, as shown in Table 44. Using the pregnancy history data for all ever-married women aged 15-44 who have ever been married, the average number of children born decreased markedly between the baseline and follow-up surveys. Since most older women in the sample have completed their families, the reduction in the average number of children ever born may reflect the recent decline in fertility of the younger women. As with the other fertility measures, the decline in the average number of children ever born has not been confined to only Project implementation areas.

Table 43
 Estimated Marital Age-Specific and Total
 Fertility Rates by Area

| Area | Age-Specific Marital Fertility Rates | | | | | | Total Fertility Rate | % Change |
|--------------------------|--------------------------------------|-------|-------|-------|-------|-------|----------------------|----------|
| | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | | |
| E ₁ BL (1974) | 121 | 269 | 177 | 126 | 98 | 67 | 4,290 | -15.3 |
| | FU (1976-78) | 178 | 232 | 152 | 79 | 53 | 3,635 | |
| E ₂ BL (1976) | 274 | 280 | 142 | 81 | 65 | 22 | 4,320 | -24.7 |
| | FU (1976-78) | 65 | 276 | 153 | 70 | 56 | 3,255 | |
| C ₁ BL (1976) | 134 | 242 | 188 | 71 | 101 | 30 | 3,830 | -30.8 |
| | FU (1976-78) | 167 | 170 | 148 | 95 | 33 | 2,650 | |
| C ₂ BL (1976) | 188 | 181 | 182 | 91 | 80 | 58 | 4,205 | -39.5 |
| | FU (1976-78) | 100 | 137 | 83 | 95 | 51 | 2,545 | |
| SOFT | 70 | 220 | 220 | 180 | 170 | 80 | 4,550 | -20.2 |
| CPS (1978) | 50 | 200 | 190 | 130 | 100 | 40 | 3,630 | |

Table 44

Average Number of Children Ever Born
 to Ever-Married Women, and Children Still
 Living, Baseline and Follow-up Surveys

| | Area | | | | | | | | Chiang Mai 1977 |
|---|-------------------|------|----------------|------|----------------|------|----------------|------|--------------------|
| | E ₁ | | E ₂ | | C ₁ | | C ₂ | | |
| | BL | FU | BL | FU | BL | FU | BL | FU | |
| Children ever born to ever married women aged 15-44 | 3.72 ^a | 2.95 | 2.98 | 2.75 | 3.25 | 2.87 | 3.50 | 2.91 | 2.66 |
| % Change | -20.7 | | -7.7 | | -11.7 | | -16.9 | | |

^a Estimate based on adding 30% to allow for underreporting.

Fertility Trends

All evidence presented in the previous sections produces a composite picture of declining fertility in Lampang. There appears to have been a definite decrease in the proportion of women "currently" married in most of the childbearing age groups; there has been a concurrent increase in the proportion of married women "currently" practicing contraception, particularly in the age groups in which childbearing is concentrated. Use of this type of measure has generated considerable controversy, and its limitations are recognized. However, it is used not on its own, but as an additional item in assembling a composite picture of fertility change. Virtually all other fertility measures strongly suggest that fertility was relatively low and declining when the Lampang Project began, and that it has continued to decline during the period of Project operations. This decline is similar (though somewhat more pronounced) to trends occurring in other areas of Thailand, in the region, and in neighboring provinces.

The impact on fertility that might be attributed to the Lampang Project appears to be minimal. That this might be the case was generally recognized early in the Project, when baseline fertility measures appeared to be low and declining. The fertility decline has been facilitated by a strong, expanding national family planning project that began in 1970 which was already serving large numbers of rural women in both Project and control areas when the Project began. The trends in family planning and fertility in Project operational districts were quite similar to those occurring in the control districts. In fact, the Mae Tha control district (C₂) outside of Lampang is a part of Lamphoon Province, which has experienced some of the lowest fertility rates and most extensive contraceptive practice in Thailand.

Although the Lampang Project did initiate new family planning activities, such as the mobile vasectomy team, volunteer distribution of oral contraceptives by village volunteers, and expansion of IUD and Depo-Provera services by wechakorn paraphysicians, the activities were supplementary to an already active government program. Consequently, no clear impact on fertility can be discerned in the Project implementation areas.

MATERNAL AND CHILD HEALTH

The data on service utilization collected during the Project Community Health Survey have indicated increased health service coverage of the Project's main target groups, childbearing-age women and preschool children. Furthermore, when utilization of specific target subgroups is examined, the improvement in coverage for high-risk groups, such as pregnant women, is quite impressive, as indicated by Table 45. Some of the improvements in service delivery are confined to Project operational areas, while others also occurred in the control areas.

Table 45

Estimated Number of Pregnancies Ending in
Stillbirth, Miscarriage, or Abortion per 1000 Pregnancies,
for Women Aged 15-44

| Area | Pregnancy Loss/1000 Pregnancies | | | |
|---------------------------|---------------------------------|------------------------------|-----------------------|-----------------|
| | No. Pregnancies BL | (1972-74) ^a BL | No. Pregnancies FU | (1977-79) FU |
| Project Intervention Area | 1,073 | 82.9% | 371 | 62.0% |
| Control Area | 503 | 61.6% | 127 | 86.6% |

^a 1973-1974 for the E₂ area

Infant and Child Mortality

Measuring changes in infant mortality (the number of children who died before reaching one year of age per 1000 live births) proved to be much more difficult than expected. Deaths are highly underreported in the provincial vital registration system, and the proportion of underreporting is highest for infant and child deaths. This makes vital registration data generally useless.

Data concerning infant mortality and child loss were generated by the Community Health Survey, but as with fertility data, the numbers of events are quite small, the problems of potential sample error are great, and the problem of mothers forgetting infant deaths is equally important. Table 46 summarizes the Community Health Survey data on infant mortality, which have been pooled by Project and control area and averaged over three years to reduce sampling variability. If the rate of underreporting infant deaths in the pregnancy history is assumed to be at least 25% (although it

is likely to be closer to 40% or 50%), the rates in the baseline period would be comparable to rates of 90%-100% estimated for the northern region (1974-1975) by the National Statistics Office. Although there appears to be a decrease in infant mortality in Project areas and an increase in the control areas, these data, because of the small sample numbers -- particularly in the follow-up period -- must be interpreted with care.

Table 46

Estimated Infant Mortality Rates (IMR)^a

| Area | No. Births BL | (1972-74) BL IMR | No. Births FU | (1977-79) FU IMR |
|---------------------------|------------------|---------------------|------------------|---------------------|
| Project Intervention Area | 984 | 52.8 | 348 | 34.5 |
| Control Areas | 471 | 61.6 | 116 | 51.7 |
| Chiengmai ^b | | 69 ^c | | 53 ^d |

^a IMR = No. Infant Deaths/1000 Livebirths

^c 1968-1972

^b Shevasunt and Hogan, p.33.

^d 1973-1976

Given the weaknesses of vital registration data discussed above, direct measurement of infant mortality has not been possible. However, an indirect estimate of infant mortality can be derived from the pregnancy history analysis. The pregnancy history recorded all children born to women aged 15-44, as well as the number of those children still living. This data is summarized in Table 46.

Infant and child mortality appears to be a common problem among those sampled. In every area, an average of between 11% and 14% of the children ever born to these women had died by the time of the baseline interviews. In the follow-up period, the average proportion of children who died had declined to between 9% and 12% of all children ever born. The follow-up data appear roughly comparable to data for Chiengmai in 1976-1977, although the number of children ever born in this latter area is lower than in any area where Project data were collected.

The change in the average number and proportion of children who died between the baseline and follow-up period may be, in part, a result of declining mortality for children born in most recent years. However, the amount of decline is greatest in the two control areas, and there is little change in the Project's E₂ district (where less than two years separated baseline and follow-up data collection).

Child Nutrition

Table 47 indicates the nutritional status of children under the age of six years. When measured against the National Academy of Sciences standard, the data indicates that over 25% of the children in the Project and control areas are in most serious categories -- second and third degree undernutrition. Moreover, for the group as a whole there was a slight, but not significant, improvement in nutritional status in the follow-up period. There was, however, a notable improvement in the nutritional

Table 47

Nutritional Status for Children Under Age 6
(Gomez Classification, NAS and Thai Standards)

| Age Group/ Area | Baseline % | | | | Follow-up % (all areas 1979) | | | |
|--------------------------------------|------------|--------|----------------|--------------------------------|------------------------------|--------|----------------|---------------------------------|
| | n | Normal | 1 ^o | 2 ^o +3 ^o | n | Normal | 1 ^o | 2 ^o + 3 ^o |
| <u>NAS Standard</u> ^a | | | | | | | | |
| E ₂ 0-12 mos | 107 | 61.7 | 25.2 | 13.1 | 38 | 81.6 | 10.5 | 7.9 |
| 6-12 mos | 121 | 37.2 | 47.9 | 14.8 | 37 | 56.8 | 32.4 | 10.8 |
| 12-24 mos | 243 | 20.6 | 56.0 | 23.4 | 68 | 20.6 | 57.4 | 22.0 |
| 24-72 mos | 1,127 | 12.9 | 58.5 | 28.7 | 410 | 14.6 | 56.8 | 28.5 |
| Total | 1,598 | 19.1 | 55.1 | 25.8 | 553 | 22.8 | 52.1 | 25.1 |
| <u>Thai Standard</u> ^b | | | | | | | | |
| E ₂ Age 60 mos or less | 1,328 | 45.4 | 44.1 | 10.5 | 451 | 48.8 | 43.7 | 7.6 |
| E ₁ Age 60 mos or less | 2,885 | 37.3 | 43.9 | 18.9 | 295 | 42.9 | 44.4 | 12.7 |
| C ₁ Age 60 mos or less | NA | NA | NA | NA | 197 | 48.0 | 41.5 | 10.5 |
| C ₂ Age 60 mos or less | NA | NA | NA | NA | 153 | 47.1 | 43.1 | 9.8 |

^a Standard used was 50% percentile of the National Academy of Science (USA) standard. Baseline data are for 1977.

^b Thai Ministry of Public Health standard, which is only available up to 60 months of age.

^c Baseline data are provincial nutritional surveillance data, collected by health workers using a market scale.

status of children under 12 months of age. The proportion of children in the second and third degree categories, the most serious levels of undernutrition, decreased 5.2% from 13.1% to 7.9%. The lack of change in the overall nutritional status of pre-school children in the E₂ area is not surprising as only two years elapsed between the baseline and follow-up measures.

When the nutritional status of children aged 60 months or younger was measured against the Thai standard (constructed from a nationwide sample of Thai children), the results were somewhat different. Decreases in the levels of second and third degree undernutrition were substantial in both the E₁ and E₂ Project areas. There was a 27.6% decrease in the E₂ area and a 32.3% decrease in the E₁ area. The change in the E₁ area may appear greater than actual, due to inaccurate age estimates used for the baseline surveillance data. Older ages were recorded for children than were actually the case, which resulted in more children being placed in undernourished categories than should have been. Change in both control areas cannot be assessed because of the unavailability of baseline data. One can only state that the proportions of severely undernourished children in each control area are roughly the same as those in the Project intervention areas. However, without baseline data it cannot be ascertained whether or not levels of undernutrition changed over time in the control areas as they did in E₁ and E₂.

The apparent decrease in serious undernutrition in the E₂ area, as measured by the Thai standard, is somewhat surprising for two reasons. First, the period of time between baseline and follow-up nutrition surveys was quite short -- slightly over two years -- and significant change might be considered unexpected. Secondly, Lampang Project approaches were not fully operational in the E₂ districts until early 1979. Although the number of nutrition centers did increase, the coverage of preschool children by the centers did not reach 10% in any area before 1979. It is possible that the village nutritional surveillance activities, coupled with the presence of village volunteers who have been trained to recognize the importance of nutritional problems, may have helped to stimulate families' recognition and prevention of nutritional problems. In the E₁ district, where nutrition activities were more intense over a five-year period, the combination of conventional nutrition approaches (CNC's) and project-supported activities may also have influenced the improvement in nutritional status. Though the nutritional status of preschool children has improved, whether it was a result of project related activities or of other factors in the environment cannot be clearly established.

ENVIRONMENTAL HEALTH CONDITIONS

A number of conditions in the rural villager's immediate household environment may have important and direct effects on family health. Such factors as the availability and quality of water, treatment of drinking water, and availability of excreta disposal systems affect a family's exposure to some of the most common sources of illness and death: diarrhea and other gastrointestinal problems, typhoid fever, cholera, and parasitic infestations. For example, an unprotected well or untreated drinking water may be a direct source of a number of gastrointestinal infections. Puddles of waste water permitted to accumulate around the household compound become breeding places for flies and mosquitoes which are responsible for the spread of a variety of diseases. Likewise, the unavailability of a privy for excreta disposal increases the potential for spread of agents that cause diarrhea and parasitic diseases. Improving these conditions can have a direct impact on health. For example, Project survey data indicate that 85% to over 95% of all people ill with symptoms of diarrhea or gastrointestinal infection were concentrated in households with untreated drinking water, whereas less than 15% of those who treated their drinking water suffered from such conditions. Changes in the environmental conditions that are associated with these health problems contribute to changes in the health status of the population.

The project's Community Health Survey included questions concerning each household's source of water; whether drinking water was treated before use; how waste water was disposed of; and whether a privy for excreta disposal was present. The responses to these questions are summarized in Table 48. There appears to have been substantial improvement in every condition measured for the E_1 and E_2 project areas. Conditions measured in the C_1 control area within Lampang appear to have improved for waste water and excreta disposal, but conditions have changed little or have declined for the other categories. Conditions in the C_2 control area, on the other hand, show a general improvement in household conditions which roughly matches the change in the E_1 and E_2 areas.

Some of the change may be directly attributable to Project activity; for example, in the E_1 area, a well improvement program begun in 1979, adding well covers and pumps to available wells and utilizing the support of village health volunteers, may explain the increase in covered wells in that area. Programs to improve the environmental condition are a routine responsibility of government rural health facilities in all areas. Improvements observed are no doubt related, in part, to the efforts of health workers in both the Project and control areas. In Project areas, as well as in the E_2 control area, the contribution of village health volunteers to the community-based program to improve environmental conditions may also account for the generally higher achievement in these areas.

Table 48
Household Environmental Conditions

| Environmental Condition | | Percent of Baseline Households ^a | Percent of Follow-up Households ^b | % Increase/Decrease |
|---|----------------|---|--|---------------------|
| 1) Have covered (protected) well ^c | E ₁ | 10.3 | 16.9 | +6.6 |
| | E ₂ | 11.8 | 15.8 | +4.0 |
| | C ₁ | 17.6 | 16.8 | -0.8 |
| | C ₂ | 22.0 | 27.0 | +5.0 |
| 2) Use well water for drinking | E ₁ | 98.0 | 97.8 | -0.2 |
| | E ₂ | 73.4 | 77.5 | +4.1 |
| | C ₁ | 79.2 | 71.0 | -8.2 |
| | C ₂ | 94.0 | 92.6 | -1.4 |
| 3) Drinking water improved (by boiling, filtering, etc.) | E ₁ | 10.2 | 13.6 | +3.4 |
| | E ₂ | 15.8 | 18.7 | +2.9 |
| | C ₁ | 8.3 | 5.7 | -2.6 |
| | C ₂ | 7.8 | 13.3 | +5.5 |
| 4) System of waste water disposal present (drainage, etc.) | E ₁ | 38.0 | 49.3 | +11.3 |
| | E ₂ | 27.2 | 54.5 | +27.3 |
| | C ₁ | 33.2 | 34.9 | +1.7 |
| | C ₂ | 47.0 | 64.1 | +17.1 |
| 5) Excreta disposal (privy) present | E ₁ | 44.0 | 55.9 | +11.9 |
| | E ₂ | 61.3 | 71.1 | +9.8 |
| | C ₁ | 51.3 | 62.1 | +10.8 |
| | C ₂ | 41.3 | 55.1 | +13.8 |

^a Baseline total households: E₁ = 1,539; E₂ = 2,600; C₁ = 1,060; C₂ = 526

^b Follow-up total households: E₁ = 759; E₂ = 1,291; C₁ = 530; C₂ = 256

^c Most households have wells (or access to one nearby), but few have a cover and pump.

CONCLUSIONS AND IMPLICATIONS

Project staff have repeatedly pondered three major questions: Did the Lampang Project improve service coverage of the target group of mothers and children? Did the Project delivery system do a better job of serving the health needs of the target groups than was done in control areas? Can the service delivery achievements of the Project be clearly related to changes measured in the health of the population? These questions are generally subsumed in the crucial question currently being widely discussed in the international health community: Did the health interventions of the Lampang Project make a difference?

Clear answers to this question have world-wide importance in decision-making concerning alternative investments in health versus other social and economic development programs, and in discerning which health interventions have shown a proven capability to improve a population's health. Answers to the question are of equal consequence in Thailand, as the government has undertaken a major expansion and modification of the existing health care delivery system using approaches that in many ways resemble those used in Lampang.

It would have been gratifying to be able to report dramatic improvements in the Lampang population's health status which clearly resulted from Project-related activities, and which contrasted with non-Project areas. Of equal importance, it would have been useful to be able to identify which Project interventions were linked to specific impacts on health. After a review of the findings presented in this monograph, it appears difficult to discern health status changes that were not already under way when the Project began and to differentiate between observed changes in health status in Project areas that differ from changes in control areas.

A variety of fertility measures have been presented in an attempt to overcome specific weaknesses of each individual measure and to construct a composite picture of fertility change. Most of these measures indicate that in Lampang, as in other parts of Thailand, fertility has declined rapidly in recent years, a decline facilitated by changing marriage rates and widespread practice of contraception. This, in itself, might be expected to affect the health of both mothers and children. Although there is some indication that infant and child mortality may be declining, they still appear to remain at relatively high levels, both in Project and control areas served. Data concerning child nutritional status may provide a partial explanation. Although some improvement in child nutritional status is evident (though the data are not always consistent), the proportion of children found to be seriously undernourished still remained high during the follow-up surveys in both Project and

control areas. Moreover, although environmental conditions generally improved in the Project areas, the fact remains that a large percentage of the population is not adequately protected by safe water supply and sanitation systems. The continued risk of illness from poor water and sanitation remains high.

Many resources and much effort have been spent to evaluate the Lampang Project results. A wide array of useful information and findings has been assembled concerning changes in the organization and operation of the modified health care delivery system and in the training and functioning of health workers within that system; the efficacy of utilizing nonphysician practitioners and village health volunteers in health service delivery; changes in the costs of health delivery, and the impact of Project-inspired changes on those costs; and, most important, the nature and pattern of response of the rural people to the changes introduced on their behalf.

The findings documented and presented here will be reviewed carefully by health leaders in Thailand at all levels as similar, large-scale activities rapidly expand throughout Thailand. Many outside of Thailand who have followed the Project's progress will also seek lessons from the Project's findings which they might apply to their own programs. It may be disappointing to many who have been awaiting an answer to the question: "Did the Lampang Project make a difference in the population's health status?" to find that the response remains ambiguous. This is also a disappointment to those who have been associated with the Project and who have spent time and effort in building the Lampang system and in making it operate effectively.

The results compel health workers to recognize that their efforts are only part of the range of social and economic factors that interplay to affect the population's health. Such a view may seem to undervalue the importance of the contribution that most health professionals believe effective health care can make. Given the detailed documentation concerning the health care system and what its workers have done over the years of the Lampang Project about the extent to which the population's health needs were served, a careful review suggests that programs could have been strengthened and shaped to more effectively reach those most in need, such as with nutrition programming. When one learns as much from what has not been accomplished as from what has been achieved, and when appropriate program adjustments in the system are made, one may see more clearly that health interventions can make a difference.

FEASIBILITY OF IMPLEMENTING THE LAMPANG
SYSTEM'S KEY FEATURES NATIONWIDE

The social and administrative feasibility of replication can be assessed, to a degree, within the confines of the Province of Lampang. The sequential nature of the Project's implementation by launching the key features first in a single district (Hang Chat) over a two-year period was, in effect, aimed at testing the social and administrative feasibility of extending the system further within the Province. Refinements in key features and approaches were made as deemed necessary or appropriate, and they were then implemented, as modified, in other areas of Lampang. The social feasibility of this "replication" within Lampang was largely determined by the level of acceptance of the improved services by potential consumers. The administrative feasibility was determined, to an extent, by the acceptance of the Project's key features by administrators and health professionals, and by the capacity of the Provincial administration to manage and administer the greatly extended and expanded health delivery system.

However, to fully assess both the administrative and financial feasibility of replicating the Project's key features nationwide, an extensive review of the Ministry of Public Health's policies, plans and resources was required. This was conducted with the full cooperation of the Minister of Public Health and the Under-Secretary of State for Public Health, and it was accomplished through instrumental input of MOPH leaders in the Office of the Under-Secretary of State for Public Health, the Office of Primary Health Care, the Division of Training, the Division of Rural Health, and the Division of Planning. The authors are grateful for this continued cooperation and acknowledge the collaboration that continues to exist in the Lampang Health Development Project effort to provide a highly relevant experiential basis for future Ministry of Public Health planning.

Social Feasibility of Replication

The social feasibility of replication relates to the level of awareness among the community of the utility, that is, the social value, of the innovations. In the case of health care delivery systems, there must first be a perceived need and demand) for the services that the health care system offers. This assumes a certain level of social awareness of the need, otherwise it would require creating a social awareness through such approaches as social marketing and innovative types of health education which can place a social (and personal) value on the services offered. In health care delivery systems, more often than not, the social demand for services relates to medical care services for relief from conditions causing pain, suffering, and limitations on physical or mental functions, while the professionally oriented may favor disease prevention and health promotion services. But it will be the social demand for services that influences more directly the actual levels of utilization of services offered. This points up an obvious advantage of integrated health services: while consumers come to receive curative services for relief from pain and suffering, they can benefit further by accepting other services such as immunizations, family planning, nutrition education, and so on, for which they may not come otherwise. The ultimate measurement of social acceptability is actual utilization of the services offered.

Social feasibility of replication can also be measured through surveys of public awareness (knowledge), attitudes, and actual acceptance, as well as consumer surveys to ascertain the levels and reasons for the acceptability of key features.

To the extent that the health delivery system involves community participation, such as the training of community health volunteers and the mobilization of village health committees, the social feasibility of replication can be indicated by sustained levels of community health volunteer participation and continued involvement of the community after the initial enthusiasm has subsided. Another factor influencing the social feasibility of replicating features involving community participation is the application of appropriate methods and techniques for use by community members with limited education and training -- the use of "appropriate technology" as it were.

Administrative Feasibility of Replication

At the national level, consideration of the feasibility of "replication" of a demonstration project or, more specifically, of the major elements and key features of the Project, is generally focussed more on the financial and administrative feasibility of replication. Administrative feasibility is taken to mean

the ease with which the key features of the Project can be incorporated into the existing administrative system of the country and, specifically, the administration of the health care system. To assess the administrative feasibility of replication would require extensive interviews with high-level administrators and influential leaders, as well as mid-level managers, with careful assessment of their attitudes and accepted practices relevant to the project elements under consideration. Experience has illustrated many times over that the more change required of an established system, the more difficult -- and the less feasible -- it will be to introduce the innovations. Many describe this phenomenon as "bureaucratic or administrative inertia". The ultimate indicator of the administrative feasibility of replication is acceptance of the innovations by the administration to the extent that it becomes institutionalized, applied and accepted throughout the system.

Financial Feasibility of Replication

Financial feasibility, in simple terms, refers to the ability of the government to replicate the features of the system nationwide at a "low cost". The term "low cost" is taken to mean that the cost per unit of service delivered is lower than in the previous system, that is, that the system is operating more efficiently, more cost-effectively. In practical terms, the system is able to deliver more effective services (in both quality and volume) to more people in need of the services at a cost that is lower per unit of service than before. Such concepts are discussed in depth in Monograph 9, and will be discussed further in the following chapters. However, it is important to recognize at this juncture that the overall costs for extending services to more people, although lower in cost per service unit, will in fact be more expensive in absolute terms (with or without inflationary increases in costs). Further, it must be recognized that the ultimate indicator of the financial feasibility of replication is the actual financial commitment of the government to pay for (or to finance) the costs of replication.

Other Factors Affecting Replicability

The Lampong Health Development Project began operations in late 1974. The full implementation of the Project's key features was not completed until late 1979. And the evaluation activity, including an assessment of the financial, social and administrative feasibility of replication, was not completed until 1981. Yet many of the Project's key features were accepted and "replicated" -- implemented nationwide -- as early as 1977, long before the final results of the project could be known. What factors were operating to facilitate the Ministry of Public Health's (and other RTG agencies') assessment of the Project (and of other projects still in the implementation phase), that the Ministry began planning for nationwide implementation of many of the Project's key features as early as 1977?

The Under-Secretary of State for Public Health and the Deputy Under-Secretary offered important observations in making their assessment of notable characteristics of the Project's development, planning and implementation that quite likely have a bearing on the acceptance of the Project's key features and on their replication throughout the rest of the country:

"The Project was established and directed by the Thai Ministry of Public Health, the official RTG authority that would be responsible for nationwide implementation if the approaches and key features were found to be worthy of "replication".

"Project leaders developed and maintained a broad base of involvement of Ministry of Public Health leaders and other Royal Thai Government officials in all phases of project development, planning, implementation, and evaluation.

"The Project welcomed and maintained a continuing dialogue on Project approaches and progress with both Thai and international health agencies by providing project information through periodic progress reports, organizing annual reviews, and by conducting special workshops and seminars for review and refinement of project approaches and key features.

"The Lampang Health Development Project was viewed from the beginning as a Thai project: project planning and planners were predominantly Thai, project implementation and implementors were predominantly Thai, and project leadership and decision-makers were predominantly Thai.

"Project administrative, managerial, and technical assistance... was characterized by a spirit of genuine mutualism and collegial collaboration. Technical assistance was not limited to one institution, but involved a number of international organizations, U.S. and Thai institutions and agencies. Project leaders recognized that the project was dealing with a universal problem of how to achieve "health for all", and that this problem was best approached through broad collaboration and solid commitment, based on a spirit of mutualism and learning together." (Tuchinda P. and Ningsanond P., 1981.)

Clearly, other factors were also operating which facilitated the acceptance of Project approaches and nationwide implementation of many of the Project's key features. One of the most important was the increasing levels of awareness among government health leaders -- and political leaders -- of the necessity to rapidly extend health and other social services to the majority of the Thai population for obvious social development benefits and political stability of the nation. Following the political turmoil in Thailand during the early 1970's, there was a growing sense of immediacy to provide health and other social benefits more equitably throughout the nation and the apparent cost-effective approaches of the Lampang Project evidently had great appeal. Additionally, the "primary health care" movement found

broad acceptance among international health and development circles which may have facilitated acceptance by Thai leaders of similar features of the project. The most important factor, however, may have been the emerging political will to facilitate rapid social and health development equitably across the entire nation.

SOCIAL FEASIBILITY OF REPLICATION

The major indicators of social feasibility of nationwide implementation of Project key features are (1) increased rates of utilization (or acceptance) of health services in Lamphang as measured by service statistics and community surveys, (2) increased selection of government health services as a first choice when medical and health care is sought as determined from community health surveys, (3) improved perceptions concerning government health care providers and health services as determined by consumer surveys, and (4) sustained villager participation in rural health care, as evidenced by high levels of performance and low levels of attrition of community health volunteers, and by increased levels of community participation in high-priority local health programs.

Utilization of Government Health Services

Public acceptance of government health services in Project areas, as measured by actual utilization of services, has increased since the earliest days of Project implementation and is continuing to increase. The greatest proportion of increase is at the periphery of the health care system, in the health centers and village health post services.

The acceptance of child health services in the various Project areas, represented by increased coverage of all children under age 6 years with health services, is quite striking. The proportion of all children under age 6 who accepted child health services increased 35.4% in E_1 from 30.1% in the baseline survey (BL) to the follow-up (FU) survey figure of 65.5%; increased 17.9% in E_2 , from 42.4% (BL) to 60.3% (FU); increased slightly (7.6%) in C_2 from 43.4% (BL) to 50.0% (FU); but decreased 3.2% in C_1 , from 42.7% (BL) to 39.5% (FU).

In a similar fashion, coverage of deliveries by trained attendants increased more in Project areas E_1 and E_2 than in C_1 and C_2 during the years observed. The increasing proportions of deliveries were attended by trained personnel of the Project. The coverage by trained personnel of deliveries in area E_1 increased 44.1% from 44% (BL) to 88.1% (FU); increased 36.5% in area E_2 from 41.8% (BL) to 78.3% (FU). In Area C_1 , the coverage of deliveries by trained personnel changed 10.6%, from 31.0% (BL) to 42.5% (FU); and it increased 14.9% in C_2 from 30.9% (BL) to 45.8% (FU).

The acceptance of prenatal care services by pregnant women was already substantial in all areas, ranging from 54.6% in E_1 to 40.2% in C_2 ; it increased further in all areas, to a high of 75.3% in C_1 and to the lowest level of 62.5% in C_2 . Interestingly, although the highest levels of coverage were in E_1 (70.3%), E_2 (66.4%), and C_1 (75.3%), the greatest rates of increase were observed in the C_1 and C_2 areas, 41.5% and 55.4% respectively. While the results appear somewhat mixed, possibly due to sampling error, there is clearly a definite increase in acceptance of prenatal care services in all areas.

The increased acceptance of postnatal care services in areas E_1 and E_2 , 8.3% and 3.8% respectively, is trailed by lower increases in levels of acceptance of postnatal care services in C_1 and C_2 , 2.2% and 1.2% respectively.

While the proportion of married women practicing family planning was already quite high when project operations began, ranging from 50.7% in C_1 to 59.8% in C_2 there was increased acceptance in all areas during the periods observed. The FP service coverage of married women increased 14.5% in E_1 , from 56.1% to 70.6%; increased 2.1% in E_2 from 53.7% to 55.8%; increased 14.5% in C_1 from 50.7% to 65.2%; and increased 30.3% in C_2 from 59.8% to 75.6%.

The overall acceptance by women 15-44 years of age of government health services for women increased 8.5% in the E_1 area from 36.2% to 44.7%; increased 14.9% in the E_2 area from 30.1% to 45.0%; increased only slightly (2.1%) in C_1 from 40.7% to 42.8%; and increased 13.5% in C_2 from 30.1% to 43.6%.

The proportion of estimated illness episodes covered by government health services increased 29.6%, from 26.2% to 55.8% in E_1 , increased 15.9% from 18.1% to 34.0% in E_2 ; and increased 8.5% from 12.6% to 21.1% in the control area C_1 during the period observed.

The number of general illness care service contacts increased 125.7% in the E_1 area over five years; increased 96.6% in the E_2 area over three years; but increased only 70.2% over the four years observed in the C_1 control areas.

Overall, there is a general but clear impression of increased acceptance of government health services which is most marked in areas E_1 and E_2 for most types of services. In the E_1 area, which had Project interventions in place over the longest period, the rate of increased acceptance of services is most pronounced, more than doubling in three of the seven types of health services measured, while the rates of increase in C_1 and C_2 tended to be less than 50% and were negative for some services. Four of the seven types of services measured in the E_1 area were accepted

by more than 50% of the respective populations, and acceptance of three of the seven types of services measured in E_1 reached or surpassed the Project's target of 66%.

Consumers' Preferences in Seeking Health Care

The data on acceptance of government health services for illness care presented in the previous section were derived from health service statistics at the Provincial Health Office and represent actual service contacts for illness care with respect to the estimated number of illness episodes. The governmental health service provided may have been the first choice of the consumer, or he/she may have come to governmental health facilities only after consulting other private sector providers. To gain more insight on the acceptability and acceptance of government health services to actual consumers of illness care services, the Community Health Survey enquired of those who recently had been ill what was their first choice of provider for receiving illness care services. The increasing acceptance of governmental health care services and the decreasing use of private sector providers is quite apparent.

The actual acceptance of government health service providers as a first choice of source of health care by consumers when ill has clearly increased in all Project areas within Lampang Province. The greatest increase has been observed in the E_1 and E_2 areas. There has been a corresponding decrease in selection of private sector providers as a first choice of consumers who seek illness care services in areas E_1 , E_2 , and C_1 , but there was a slight increase in use of private sector providers as a first choice in the C_2 area.

Consumers' Perceptions of Government Health Services

Various surveys conducted in Project areas of Lampang have indicated a reasonably high level of consumer satisfaction with government health services. One survey conducted in 1979 revealed that of 288 respondents in the survey, 95% had used government health services and 5% had not. Of the 95% that had used government health services, 96% expressed satisfaction, 2% were indifferent, and 2% were not satisfied. Of the 96% who expressed satisfaction, 15% were "very satisfied" and 81% were "satisfied". Of those who were "very satisfied", the reasons given for their satisfaction were distributed as follows: good treatment - 23%, good advice - 22%, good physical examination - 20%, good human relations - 27%, and frequent home visit - 8%. Of those who were "not satisfied", the reasons given for their dissatisfaction were distributed as follows: expensive - 64%, incompetency - 12%, poor human relations - 12%, and no advice given - 12%.

With particular reference to the medical and health services provided by the wechakorn paraprofessionals serving in rural health facilities (health centers, midwifery centers, and district hospitals), consumers of wechakorn services reported the following: 26% felt wechakorn services were "very useful", 62% felt their services were "useful", 7% felt their services were "not useful", and 5% were "not sure".

When consumers of wechakorn dental health services were surveyed, high levels of satisfaction were reported. Of the 193 persons surveyed who had already use wechakorn dental health services, 91% were "satisfied", 2% were "not satisfied" and 7% were indifferent or did not respond.

Some perceptions of consumers regarding government health services in Lampung are summarized in Table 49.

Table 49
Consumers' Perceptions of Government Health Services in Lampung

| Consumer Perceptions and Suggestion for Improvements | E ₁ | E ₂ | C ₁ |
|--|----------------|----------------|----------------|
| No improvement required | 41.6 | 42.7 | 9.2 |
| There should be more personnel | 13.7 | 9.7 | 17.1 |
| Office hours should be adjusted | 8.4 | 4.0 | 9.0 |
| Medical equipment should be improved | 1.3 | 3.6 | 0.6 |
| Drugs and medical supplies not adequate | 2.8 | 3.0 | 2.6 |
| Fee adjustment needed | 0.6 | 5.1 | 0 |
| Building improvement needed | 2.2 | 3.5 | 2.2 |
| Personnel competence should be improved | 0.2 | 2.0 | 0 |
| Public relation and officials' manner need improvement | 0.9 | 1.0 | 0 |
| No answer | 28.5 | 25.6 | 60.1 |
| Total percent | 100.0 | 100.0 | 100.0 |
| Total number | 466 | 1,969 | 509 |

Attrition of Health Post Volunteers

As indicated in Table 50, the overall rate of attrition of health post volunteers in ten districts of Lampang during the five years observed has been only 17.5%. Those who did drop out have been replaced through new training programs. When attrition rates are calculated on the basis of the number of years of service, they range from 13.2% for two years service in E_2 to 19.2% for three years service in E_2 , to 15.7% for five years service in E_1 . There had been no attrition at all for the first year of service by health post volunteers in the E_3 area. Some suggest that the sustained contribution of health post volunteers relates to the increased social status enjoyed by the volunteers, to the increased "merit" earned (a not inconsequential factor in a Buddhist society), and, possibly for some, to the positive effects of the volunteerism role on their major occupation (eg., shopkeepers who may sell more products when villagers come for health services).

The high levels of performance of health post volunteers in the provision of village-based health services, particularly family planning and illness care services, and the sustained performance of health post volunteers as evidenced by these relatively low rates of attrition over the five years observed do, indeed, reflect a high level of social acceptance of these services and, therefore, social feasibility for replication.

Table 50

Health Post Volunteer Attrition Rates in Lampang,
1975-1979

| Length of Volunteer Service | Number of Districts | Number HPVs Trained | No. HPVs Actually Working 12/79 | % Attrition |
|-----------------------------|---------------------|---------------------|---------------------------------|-------------|
| 5 years | 1 (E_1) | 89 | 75 | 15.7 |
| 3 years | 3 (E_2) | 255 | 206 | 19.2 |
| 2 years | 4 (E_2) | 243 | 211 | 13.2 |
| 1 years | 2 (E_3) | 162 | 162 | 0 |
| Overall for 5 years | 10 | 749 | 618 | 17.5 |

Source: Provincial Health Office and Lampang Project records

In an effort to more carefully assess consumers' perceptions of government health services, and specifically to permit consumers to assess government health services and to offer suggestions for improvements, the task and cost analysis conducted by NIDA surveyed 2,944 consumers of government health services in Project areas E₁, E₂, and C₁ in 1979. Of those surveyed in E₁, 41.6% were satisfied enough to say that no improvements were needed. As shown in Table 51, of those surveyed in E₂, 42.7% were satisfied and felt no improvements were needed. But in the C₁ area, only 9.2% felt no improvements were needed, 60.1% did not answer, and 31.5% offered suggestions for improvements.

Table 51

Consumers' Perceptions of Government Health Services in the Six Districts of E₂, 1976-1979

| Suggestion | District Hospital | | Health Center | | Midwifery Center | | Total | |
|---|-------------------|-------------------|--------------------|--------------------|-------------------|-------------------|--------------------|--------------------|
| | 1976 | 1979 | 1976 | 1979 | 1976 | 1979 | 1976 | 1979 |
| | % | % | % | % | % | % | % | % |
| No improvement required | 8.37 | 54.88 | 7.68 | 38.76 | 9.26 | 35.75 | 8.10 | 42.66 |
| There should be more personnel | 3.77 | 12.71 | 15.03 | 9.18 | 11.40 | 6.42 | 13.19 | 9.63 |
| Office hours should be adjusted | 2.09 | 2.95 | 0.50 | 4.59 | 1.49 | 3.91 | 0.87 | 4.01 |
| Medical equipment should be improved | 4.60 | 6.63 | 3.37 | 2.90 | 4.13 | 1.12 | 3.65 | 3.61 |
| Drug and medical supplies not adequate | 2.93 | 0.18 | 5.52 | 4.78 | 6.78 | 1.68 | 5.58 | 2.95 |
| Fee needs adjustment | 4.60 | 7.37 | 1.88 | 4.87 | 2.64 | 2.23 | 2.30 | 5.08 |
| Building needs improvement | 8.79 | 2.95 | 14.81 | 3.65 | 20.99 | 3.63 | 15.67 | 3.45 |
| Personnel competence should be improved | 0.42 | 2.21 | 0.61 | 2.25 | 1.49 | 0.84 | 0.79 | 1.98 |
| Officials' manner and public relations need improvement | 16.32 | 1.66 | 11.05 | 0.94 | 10.25 | 0.28 | 11.31 | 1.02 |
| No answer | 48.12 | 8.47 | 39.56 | 17.88 | 31.57 | 44.13 | 38.51 | 25.60 |
| Total | 100.00 (n=239) | 100.00 (n=543) | 100.00 (n=1810) | 100.00 (n=1068) | 100.00 (n=605) | 100.00 (n=358) | 100.00 (n=2654) | 100.00 (n=1969) |

Sustained Community Participation in Rural Health Care

Beyond the sustained performance of health post volunteers, Project observers have noted the increasing levels of community and private sector participation in high-priority health programs. Substantial community and private sector involvement has developed in relation to the nutrition program, with particular reference to the construction of 161 new Child Nutrition Centers, increasing the number from 11 in 1975 to 172 in 1980. In conjunction with the nutrition program, many communities developed demonstration gardens, fish ponds, and poultry and pig-raising projects. In some areas, substantial improvements in water sources were made through community participation. The participation of traditional birth attendants, drug sellers, and other indigenous providers also reflects social acceptance and indicates the social feasibility of replication of these features nationwide.

ADMINISTRATIVE FEASIBILITY OF REPLICATION

The administrative feasibility of replication of the Lampang Project's key features is already a fact, as the key features have been adopted or appropriately adapted for nationwide implementation. The major factors in the administrative feasibility of replication concerned the acceptance of the Project's key features by administrators and planners, measures to institutionalize these key features and to give them a legal and administrative basis for nationwide implementation, and the formulation of national policies and plans for nationwide implementation. This chapter documents and tracks the process of acceptance, adoption and adaptation of the Project's key features for nationwide implementation, including the formulation of a national policy and plan for nationwide implementation.

Acceptance of Key Features by Administrators and Planners

Throughout the planning and implementation of the Lampang Project, broad-based MOPH and other RTG agency involvement was maintained. This occurred through such mechanisms as the Lampang Project Policy Committee; participation by senior Project staff of the Lampang Project in key MOPH committees, conferences, workshops and seminars on relevant subjects; field trip orientations for and discussions with MOPH officials, as well as with visitors to the Project from other RTG agencies and educational institutions; and, not least important, broadly attended Annual Reviews of the Lampang Project in which MOPH leaders and personnel participated with representatives of international and bilateral assistance agencies from within and outside of Thailand. These were important mechanisms for sharing Project progress

and achievement, for evolving possible solutions to problems, and for facilitating acceptance by administrators. A continuing dialogue was maintained informally at high MOPH and RTG levels by senior Project leaders concerning the key features and strategy of the Project to review achievements and problems as they occurred, and to provide relevant information directly to key MOPH leaders responsible for planning, implementing and managing the national governmental health care system. These processes for communicating relevant Project experience certainly had a greater impact on national planning than did the intended process of Project evaluation.

The 1975 and 1976 Annual Reviews of the Lampang Project (as well as subsequent Annual Reviews) were well attended by officials and key personnel of the MOPH and other RTG agencies. Provincial Health Officers and other provincial level officials from most other provinces in Thailand participated and shared experience gained in Lampang and other areas.

In 1977 the MOPH requested that the Lampang Project participate with MOPH leaders in the planning and implementation of a National Seminar on Primary Health Care which was subsequently conducted in Chiang Mai, Thailand, from September 6 to 9, 1977. The Lampang Project responded with technical, administrative, financial and logistical support for the seminar, which provided an important opportunity to disseminate Project results and to foster national replication of the Project's key features which had been identified as primary health care approaches of direct relevance to the objectives of the seminar.

The outcome of the 1977 First National Seminar on Primary Health Care was instrumental in promoting primary health care as a key strategy for improving rural health services, in facilitating a continuing dialogue on these approaches, in sharing field experience, and in feeding this experience and the results of the seminar into the national health planning process. The seminar participants specifically recommended that: (1) the government set forth a clear-cut policy concerning primary health care in order to create effective coordination between various public and private agencies, (2) a planning and coordinating committee comprised of concerned public and private sector representatives be established, (3) government resources be rendered to various public and private agencies operating PHC activities, (4) principles of community development be used in PHC activities, (5) systems and methods of operation be established to provide support and facilitate communities' self-help activities, (6) coordination be established between various health institutions and PHC personnel and that cooperative efforts be fostered with charitable institutions and international organizations, (7)

public and private institutions be motivated to better appreciate the importance of these approaches, especially among MOPH service personnel, to fully support PHC services, (8) agreement on a referral system be clarified among village volunteers, midwifery centers and health centers, (9) mobile medical units expand services to include health promotion, disease prevention, and support for PHC, and (10) additional PHC seminars be conducted to share experience gained and to discuss problems of administration, implementation, and coordination. The First National Seminar on Primary Health Care was followed by a Second National Seminar on Primary Health Care about a year later which was again supported by WHO, UNICEF, the MOPH and the Lampang Health Development Project.

During the same period that the primary health care features of the Lampang Project were being considered and eventually accepted by administrators and planners, other key features of the Project were winning varying levels of acceptance and were being adopted and/or adapted for broader application. The concept of integrated health services was already well accepted and the provincial health administrations of each province had already concurred, at least in general terms. However, some of the methods for implementing integrated health services that were tested in Lampang received great interest from administrators and planners and eventually were adopted for nationwide implementation. One of these was the development in the Provincial Hospital of a Department of Community Medicine, described in detail in Monograph 4 of Volume II. Departments of Community Medicine in provincial hospitals are now being implemented nationwide. A streamlined provincial health information system was developed in Lampang that included data collection and reporting for the purpose of monitoring activity of village health volunteers, and this is now being developed further for nationwide implementation. Similarly, the emphasis on community participation and private sector involvement has been included in the formulation of plans for the primary health care program.

One feature of the Lampang Project that was accepted in principle, but was adapted substantially for nationwide implementation, was that of wechakorn paraprofessionals. The apparent reasons for the adaptations concerned the views of some physicians in the MOPH and the Thai Medical Society that, while it would be acceptable to permit nurses to become nurse practitioners and to provide medical services, it was not so acceptable for nurse aides, midwives and sanitarians to be trained to provide such medical services. After the political and budgetary factors were considered, the nurse practitioner training was accepted by the MOPH and the NESDB, but training nurses' aides, midwives and

sanitarians to the same extent as nurse practitioners or wechakorn paraprofessionals was not fully accepted. There were other reasons for this decision which were elaborated by the Civil Service Commission and the Bureau of the Budget and primarily concerned the financial feasibility of replication of the wechakorn paraprofessional training program. Pay increases and/or promotions are generally granted to personnel who undergo additional training of one year or more. The wechakorn training program was a full year and graduates of the program received salary increases and additional benefits following the training.

Winning BOB and CSC support for increasing salary and benefits for wechakorn in Lampang was a process that took over two years, reflecting the reluctance of these administrators and planners to implement the program nationwide because of the effects that this would have on their budgets. Also, with a training program that takes a full year to complete, there is substantial loss of service time at former rural health assignments, which requires reassignment of personnel to cover those facilities. On the national level, new personnel would probably be required; this would have serious budgetary implications. After a dialogue that lasted over a year among administrators and planners of the MOPH, BOB, CSC, and NESDB, the decision (or compromise) made was to implement training in medical care for health workers at rural health centers -- including midwives, sanitarians, and nurse aides -- but the training program would be a short course of 3 to 6 months. This would not require troublesome budgetary reallocations, and yet it could promote the development and improvement of clinical care services in rural health facilities. If the training program was found to be too short to meet the demand for clinical care services, then retraining could be conducted by provincial health authorities.

Formulation of Policy and Plan for Nationwide Implementation

The Ministry of Public Health formulated a policy on primary health care and launched the national Primary Health Care Program in 1977, the first year of Thailand's Fourth Five-Year National Economic and Social Development Plan. The general objectives of the national Primary Health Care Program were stated as follows:

- (1) to expand the coverage of health services, particularly among underserved rural populations, as quickly as possible, and to help the people to help themselves,
- (2) to utilize community resources and to encourage community participation in order to solve individual health problems and eventually to establish self-help program at the village level,
- (3) to promote the dissemination of health informa-

tion to local people, as well as to integrate all the data that will reflect the needs and health problems of communities, (4) to make basic health services available, accessible and acceptable to the people, and (5) to decrease malpractice, especially in medical care.

In September 1978, Thailand participated in the International Conference on Primary Health Care, sponsored by WHO and UNICEF and conducted in Alma Ata, USSR. Following this conference, the Ministry of Public Health formulated recommendations and a policy statement that was then submitted to the Cabinet of the Royal Thai Government for consideration. "On March 23, 1979, the Cabinet approved the principle of primary health care as a National Health Development Policy and supported the allocation of resources and administrative mechanisms to ensure the achievement of program objectives." (Tuchinda, 1979/November).

In November 1979, the Royal Thai Government approved primary health care as the Twentieth Program of the Fourth National Social and Economic Development Plan for 1977-1981 (Desawadi, 1980). Given the Government mandate to proceed rapidly in the implementation of primary health care, the MOPH established an Office of Primary Health Care within the Office of the Under-Secretary, and appointed Dr. Pricha Desawasdi, Field Director of the Lampang Health Development Project, as Director of the Office of Primary Health Care.

FINANCIAL FEASIBILITY OF REPLICATION:
THAILAND'S NATIONAL SOCIAL AND HEALTH DEVELOPMENT
POLICIES AND PLANS FOR 1977-1981 AND FOR 1982-1986

"Thailand's action plan on health development is already in harmony with 'health for all by the year 2000'. Programs have been undertaken within the framework of Primary Health Care which concentrate on basic manpower development with emphasis on wider coverage of the rural population, comprising primarily village health volunteers and communicators, supplemented by local healers, traditional birth attendants and traditional practitioners. By the end of this year (1981) the program is expected to cover 22,400 villages -- or 50% of Thailand's rural population. By 1986, all rural villages will be covered, and 12,000 local health supervisors will have been trained.

"Apart from a national health development network, key health-related sectors are included in multi-focus planning and coordinating bodies...Medical schools, the Medical Council, and training institutions for medical auxiliaries have cooperated in re-orienting their curricula to include Primary Health Care concepts and approaches." (Tuchinda, 1981/July.)

A major indicator of the administrative feasibility of replicating the key features of the Lampang Project is the formulation of a national policy and plan that incorporates these key features, as appropriately adapted to the national situation. The ultimate indicator of the financial feasibility of replication is, in very practical terms, the actual financing and implementation of these elements of the national policy and plan. This chapter documents the progress made in national implementation of the MOPH policy and plan, focussing on the elements that have been adopted or adapted from key features of the Lampang Project. The costs of some of these elements of the national plan are reviewed and, in real terms, their actual financial feasibility of replication is documented.

During the period 1977-1979, the Ministry of Public Health invited several Lampang Project senior staff to participate in various policy formulation, planning and implementation activities, with particular reference to the National Primary Health Care Program: the training and support of village health volunteers and health communicators, the training of nurse practitioners, the training of sub-district health personnel in clinical care, district-level health services management training, and village-oriented health programs for improved water supply, nutritional surveillance and community nutrition improvement services, and the treatment and control of infant and child diarrheal disease. While documentation of all of these inputs from the Lampang Project is beyond the scope of this monograph, this chapter will document many of the contributions of the Lampang Project to national health development and the many achievements of the Ministry of Public Health in policy formulation, in health and development planning, and in national implementation of these priority programs for health development.

Integrated Health Services

"National Health Policy:

The Government will provide preventive, promotive, curative and rehabilitative health services in an integrated fashion and will emphasize services to the rural population who are severely underserved." (Ministry of Public Health, Thailand, 1980.)

The statement above comes from the Fourth Development Plan (1977-1981) and summarizes the MOPH policy on integrated preventive, promotive, curative and rehabilitative health services which was conceptualized and formulated in the early 1970's. At that time the MOPH was itself undergoing an extensive reorganization to better promote integrated health services and to streamline the line of

authority within the MOPH national health administration. Two major features were being implemented when the Lampang Project began operations in 1974: first, at the central level, the Office of the Under-Secretary of State for Public Health had been delegated line authority for the entire rural health administration (and the MOPH's various departments were therefore largely technical departments to advise and support the Office of the Under-Secretary in its responsibility and authority for rural health administration); and, at the provincial level, the newly established position of "Provincial Chief Medical Officer" brought all health facilities and manpower under a single administration, bringing to an end the two administrations that had formerly been under the Provincial Hospital Director and the Provincial Health Officer. This policy facilitated the work of the Lampang Project in its effort to functionally integrate health services in the Province through such approaches as the following: (1) creation of a Department of Community Medicine in the Provincial Hospital which initiated and still operates a rural health medical mobile unit for provision of integrated health services in remote areas, including vasectomy and other family planning services, nutrition and medical care services, immunizations, and health education; (2) training midwives, sanitarians, nurses, and nurse aides in clinical care and public health services for provision of integrated health services at all village midwifery centers, subdistrict health centers and district hospitals; (3) training community health volunteers and establishing a primary health care network in every village for provision of a limited range of integrated health services at the village level. Each of these approaches is now being promoted in Thailand's Fifth Five-Year Development Plan, for 1982-1986.

The MOPH is already implementing a plan to establish a Department of Community Health in every provincial hospital in the nation, following the pattern set by Thailand's first Department of Community Health in a Provincial Hospital which was established in Lampang by the Lampang Health Development Project in 1975. The Lampang Provincial Hospital's Department of Community Health gained wide recognition, even beyond its favorable reviews during the Lampang Project's Annual Reviews, when it launched a highly successful vasectomy program that placed Lampang highest in the nation for the number of vasectomy acceptors. The Department of Community Health also initiated and supervised rural nutritional surveillance and nutrition improvement programs, coordinated medical and health services for health post volunteers who came to the Provincial Hospital for care, coordinated hospital physician rotations to district hospitals and mobile clinics, organized educational activities for hospital clinics and wards, and conducted a number of other activities.

The National Primary Health Care Program

" In 1977, the Ministry of Public Health launched the Primary Health Care Program...In March, 1979, the Cabinet approved the principle of Primary Health Care as a National Health Development Policy...."(Tuchinda, 1979)

Given the need for the National Primary Health Care Program to be implemented with a high degree of coordination within the Ministry of Public Health and with the cooperation of various other sectors and agencies of the RTG, the Ministry of Public Health created a Division of Primary Health Care within the Office of the Under-Secretary of State for Public Health. The Office of Primary Health Care operates and coordinates the PHC program with the assistance and guidance of two standing committees at the central level, the PHC Coordinating Committee and the PHC Directing Committee.

The major role of the PHC Directing Committee is to develop strategies for implementation and to control and direct all activities concerned with coordination, planning, training, follow-up support, research and public relations of the PHC Program.

At the provincial level, a Provincial PHC Directing Committee is established for the purpose of developing operational guidelines for the specific province, formulating a Provincial plan of operations and controlling and directing the PHC activities including training, follow-up support, research, public relations, evaluation and coordination.

PHC Targets and Achievements Under the Fourth Development Plan (1977-1981)

Under the Fourth Five-Year National Economic and Social Development Plan for 1977-1981, the Ministry of Public Health launched the National Primary Health Care Program with a major effort to train village health volunteers and village health communicators in all provinces of Thailand except Bangkok, which already had adequate medical and health facilities, and Lampang, which already had the Lampang Health Development Project. The Office of Primary Health Care, therefore, was charged with responsibility for coordinating the implementation of primary health care in a total of 70 provinces.

Table 52 presents the area and population coverage targets of the National Primary Health Care Program, and Table 53 presents the training targets of the National Primary Health Care Program for the 1977-1981 period of the Fourth Five-Year National Economic and Social Development Plan.

Table 52

Area and Population Coverage Targets
of the National Primary Health Care Program
For 1977-1981

| Area and Population Coverage | 1977 | 1978 | 1979 | 1980 | 1981 |
|------------------------------|-------|-------|--------|--------|--------|
| 1) Area | | | | | |
| - Provinces | 23 | 48 | 68 | 68 | 70 |
| - Districts | 240 | 493 | 620 | 620 | 638 |
| - Subdistricts | 240 | 1,800 | 4,100 | 4,800 | 4,800 |
| - Villages | 2,000 | 7,100 | 12,200 | 17,300 | 22,400 |
| 2) Population, million | 1.6 | 5.9 | 10.1 | 14.3 | 18.5 |

Source: Primary Health Care Project, Office of the PHC Committee, Ministry of Public Health, Thailand, July 1980.

Table 53

Training Targets of the National
Primary Health Care Program
For 1977-1981

| Items | No. of Trainees | | | | | Total |
|---------------------------------|-----------------|--------|--------|--------|--------|---------|
| | 1977 | 1978 | 1979 | 1980 | 1981 | |
| 1) Central Trainers | 35 | - | - | - | - | 35 |
| 2) Provincial/District training | 463 | 634 | 320 | - | - | 1,417 |
| 3) Subdistrict training | 555 | 3,600 | 5,000 | 1,600 | - | 10,755 |
| 4) VHCs | 20,000 | 51,000 | 51,000 | 51,000 | 51,000 | 224,000 |
| 5) VHVs | 2,000 | 5,100 | 5,100 | 5,100 | 5,100 | 22,400 |

Source: Primary Health Care Project, Office of the PHC Committee, Ministry of Public Health, Thailand, July 1980.

Ministry of Public Health leaders reported in 1981 that the training targets and the area and population targets of the National Primary Health Care Program have largely been met. Before the end of 1981, nearly 50% of all villages in Thailand that are in areas outside of cities, towns, and subdistricts with health centers will be covered by trained village health volunteers and village health communicators.

The specific levels of achievement of the National Primary Health Care Program during the 1977-1981 Fourth Five-Year National Economic and Social Development Plan are presented in Table 54.

Table 54

Coverage and Training Targets and Achievements of the Primary Health Care Program, Ministry of Public Health (Fourth 5-Year Development Plan), 1977-1981

| | 1977 | | 1978 | | 1979 | | 1980 | | 1981 | | Total | |
|--|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|---------|----------|
| | Target | Achieved | Target | Achieved |
| Cumulative Area Coverage: | | | | | | | | | | | | |
| Provinces | 23 | 23 | 48 | 48 | 68 | 68 | 68 | 68 | 70 | 70 | 70 | 70 |
| Districts | 240 | 240 | 493 | 493 | 620 | 620 | 620 | 620 | 638 | 638 | 638 | 638 |
| Subdistricts | 240 | 240 | 1,800 | 1,800 | 4,100 | 4,100 | 4,800 | 4,800 | 4,800 | 4,800 | 4,800 | 4,800 |
| Villages | 2,000 | 1,912 | 7,100 | 6,870 | 12,200 | 11,735 | 17,300 | 16,409 | 22,400 | 21,509 | 22,400 | 21,509 |
| Training of: | | | | | | | | | | | | |
| MOPH Trainers | 35 | 35 | - | - | - | - | - | - | - | - | 35 | 35 |
| Provincial & Dist. Trainers | 463 | 450 | 634 | 712 | 320 | 527 | - | - | - | 62 | 1,417 | 1,751 |
| Subdistrict Trainers | 555 | 582 | 3,600 | 3,202 | 5,000 | 4,018 | 1,600 | 1,302 | - | 788 | 10,755 | 9,892 |
| Village Health Communicators | 20,000 | 17,609 | 51,000 | 47,198 | 51,000 | 48,549 | 51,000 | 50,120 | 51,000 | 50,130 | 224,000 | 213,606 |
| Village Health Volunteers | 2,000 | 1,912 | 5,100 | 4,958 | 5,100 | 4,865 | 5,100 | 4,674 | 5,100 | 5,100 | 22,400 | 21,509 |
| Cumulative Population Covered (Millions) | 1.62 | 1.54 | 5.89 | 5.70 | 10.10 | 9.71 | 14.82 | 14.06 | 18.46 | 17.73 | 18.46 | 17.73 |

Source: Office of the Primary Health Care Committee, Ministry of Public Health, Thailand, September 1981.

The achievements of the National Primary Health Care Program in its first five years of activity are quite remarkable. All 70 provinces in the program have launched training activities for development of village health volunteers and village health communicators to serve in all 638 districts of these provinces. By 1981, all 4,800 subdistricts in the 638 districts (of these 70 provinces) have VHV/VHC for some 21,509 villages with a total population of over 18 million village residents. This represents 40% of Thailand's total population and 50% of the Thai population residing outside of cities, towns, or subdistricts with health centers! This has been achieved already, and the remainder of the rural Thai population (and the urban poor) will be covered by the National Primary Health Care Program in the next five years, 1982-1986.

PHC Targets Under the Fifth Five-Year Development Plan (1982-1986)

Current plans of the MOPH and the NESDB for the Fifth Five-Year Economic and Social Development Plan, 1982- 1986, will carry the National Primary Health Care Program to every rural village and urban slum in Thailand and effectively cover a population of over 48,000,000 residents. The specific targets for implementation of the MOPH's "regular plan on PHC" during the Fifth Five-Year Development Plan are presented in Table 55.

The National Primary Health Care Program has been given a very high priority by the NESDB and by the Cabinet of the RTG. Beyond the "regular plan" and targets which are presented in Table 55, in 1980 the RTG appropriated a special budget (\$3,589,448 for two years 1982 and 1983) for the accelerated implementation of the National Primary Health Care Program in Thailand's poorest, most underserved rural villages and urban slums. The accelerated "Plan for Poor Areas" was formulated with targets established for 1982 and 1983, as presented in Table 56. The rapid implementation of the "Plan for Poor Areas" and the regular plan for implementation of Primary Health Care will jointly cover 36,100,000 population by the end of 1983, more than doubling the population covered in the first five years of the National Primary Health Care Program!

Given the excellent record of the MOPH in reaching (or nearly reaching) its PHC targets for the 1977-1981 development period, and given the high priority placed on the PHC Program in the 1982-1986 development period, as well as the special budget provided for acceleration of implementation for the poorest areas during 1982-1983, the successful implementation of the program nationwide by the end of the Fifth Five-Year Development Plan is almost certain. It would be useful at this point to assess the costs of this ten-year effort and, to the extent possible, to document the various means of financing the National Primary Health Care Program.

Table 55

Targets of the Ministry of Public Health for the Fifth
5-Year Development Plan (Regular Plan), 1982-1986

| | 1982 | 1983 | 1984 | 1985 | 1986 | Total |
|---|--------|--------|--------|--------|--------|---------|
| <u>PHC Program Area Coverage:</u> | | | | | | |
| Districts (cum.) | 638 | 638 | 638 | 638 | 638 | 638 |
| Subdistricts (cum.) | 4,800 | 4,800 | 4,800 | 4,800 | 4,800 | 4,800 |
| Villages (per year) | 4,000 | 5,000 | 5,000 | 5,000 | 5,000 | 24,000 |
| Cumulative Population Covered (incl. 17.7M covered by 1981) | 20.9 M | 24.9 M | 28.9 M | 32.9 M | 38.9 M | 38.9 M |
| Provincial and District Trainers (per year) | 355 | 355 | 355 | 355 | 355 | 1,775 |
| Subdistrict Trainers | 1,700 | 2,000 | 2,000 | 2,000 | 2,000 | 9,700 |
| Village Health Communicators | 40,000 | 50,000 | 50,000 | 50,000 | 50,000 | 240,000 |
| Village Health Volunteers | 4,000 | 5,000 | 5,000 | 5,000 | 5,000 | 24,000 |

Source: Office of the PHC Committee, Ministry of Public Health, Thailand, 1981.

Table 56

Targets of the Ministry of Public Health for the Fifth
5-Year Development Plan (Plan for Poor Areas), 1982-1986

| | 1982 | 1983 | Total |
|-----------------------------------|-------------|-------------|-------------|
| <u>PHC Program Area Coverage:</u> | | | |
| Provinces | 37 | 37 | 37 |
| Districts | 246 | 246 | 246 |
| Subdistricts | 737 | 737 | 737 |
| Villages | 7,000 | 7,000 | 14,000 |
| Impoverished Population Covered | 5.6 M | 5.6 M | 11.2 M |
| Village Health Communicators | 70,000 | 70,000 | 140,000 |
| Village Health Volunteers | 7,000 | 7,000 | 14,000 |
| Total Budgets | ฿41,278,650 | ฿41,278,650 | ฿82,557,300 |
| (Rate: \$1=฿23) | \$1,794,724 | \$1,794,724 | \$3,589,448 |

Source: Office of the PHC Committee, Ministry of Public Health, Thailand, 1981.

Costs and Financing of the National Primary Health Care Program (1977-1986)

During the Fourth Five-Year Economic and Social Development Plan period, 1977-1981, the National Primary Health Care Program of Thailand trained 21,509 village health volunteers and 213,600 village health communicators -- a total of 235,115 village-level primary health workers -- to serve in 21,509 rural villages of Thailand. This was accomplished at a direct training cost of \$2,126,955, or about \$9.04 (฿208) per volunteer trained. But this was only 37.6% of the total cost of the National Primary Health Care Program, which came to \$5,646,642 for the five-year period. On average, \$1,129,328 was spent per year in the first five years to launch and maintain the National PHC Program. These costs are summarized in Table 57.

Table 57

Costs of the National Primary Health Care Program in Thailand During the Fourth Five-Year Development Period, 1977-1981

| | 1977 | 1978 | 1979 | 1980 | 1981 | Total 1977-81 |
|--|-----------|-------------|-------------|-------------|-------------|-------------------------------|
| Number VHV Trained | 1,912 | 4,958 | 4,865 | 4,674 | 5,100 | 21,509 |
| Number VHC Trained | 17,609 | 47,198 | 48,549 | 50,120 | 50,130 | 213,606 |
| Total Number Trained/Year | 19,521 | 52,156 | 53,414 | 54,794 | 55,230 | 235,115 |
| Total Number Trained/Cumu. | 19,521 | 71,677 | 125,091 | 179,885 | 235,115 | 235,115 |
| Direct Training Costs | \$214,695 | \$244,959 | \$273,850 | \$276,500 | \$399,462 | \$2,126,955 (\$9.04/Vol.) |
| Training Program Support Costs | \$50,000 | \$244,150 | \$273,850 | \$276,500 | \$269,000 | \$1,113,500 |
| Total Training Program Costs | \$264,695 | \$769,109 | \$940,978 | \$940,978 | \$668,462 | \$3,240,455 (\$13.78/Vol.) |
| Costs of Field Support and Supplies for PHC Activities | \$339,200 | \$606,923 | \$604,064 | \$775,500 | \$380,500 | \$2,406,187 (\$10.23/Vol.) |
| VHV/VHC Training and PHC Program Costs Total for year | \$603,895 | \$1,376,032 | \$1,545,042 | \$1,072,710 | \$1,048,962 | \$5,646,641 (\$24.02/Vol.) |
| Cumulative Total | \$603,895 | \$1,979,927 | \$3,524,969 | \$4,597,679 | \$5,646,641 | \$5,646,641 (\$24.02/Vol.) |

While the average direct cost of training a volunteer was only \$9.04, the average total training cost per volunteer including training program support costs was \$13.78. Equally important for planners, however, was the average cost of supporting the primary health care activities of a volunteer at the village level. This added another \$10.23 per volunteer for the period observed, or a total average cost per volunteer of \$24.01.

Given the data presented, the annual per capita cost of the entire PHC Program in 1981, in terms of the population actually covered by the Program, is only \$0.05, or about B1.30 per capita per year.

In 1981, the estimated annual cost of supporting a volunteer (after training) primary health care worker's activity at the village level was about \$6.90/year (B158/year). The cost of training and supporting the volunteers trained in the

Table 58

Projected Costs of the National Primary Health Care Program in Thailand During the Fifth Five-Year Development Plan Period, 1982-1986

| | 1982 | 1983 | 1984 | 1985 | 1986 | Total 1982-86 |
|---|------------|------------|------------|------------|---------------------------|--------------------------------|
| Number VHV Trained | 4,000 | 5,000 | 5,000 | 5,000 | 5,000 | 24,000 |
| Number VHC Trained | 40,000 | 50,000 | 50,000 | 50,000 | 50,000 | 240,000 |
| Number Trained/Year | 44,000 | 55,000 | 55,000 | 55,000 | 55,000 | 264,000 |
| Number Trained/ Cumulative | 279,115 | 334,115 | 389,115 | 444,115 | 499,115 | 499,115 |
| Direct Training Costs | \$ 734,596 | \$ 834,596 | \$ 534,596 | \$ 534,596 | \$ 834,596 | \$ 4,072,980 (\$15.42/Vol.) |
| Training Program Support Costs | \$ 74,250 | \$ 92,813 | \$ 92,813 | \$ 92,813 | 92,813 | \$ 445,500 |
| Total Training Program Costs | \$ 808,846 | \$ 927,403 | \$ 927,403 | \$ 927,403 | \$ 927,403 (16.86/Vol) | \$ 4,518,456 (17.11/Vol.) |
| Costs of Field Support and Supplies for PHC Activities | \$ 793,535 | 693,535 | 693,535 | 693,535 | 693,535 (13.51/Vol) | 3,567,675 |
| VHV/VHC Training & PHC Program Costs -Total for year | 1,602,381 | 1,620,938 | 1,620,938 | 1,620,938 | 1,620,938 | \$ 8,086,133 (27.51/Vol.) |
| -Cumulative Total | 1,602,381 | 3,223,319 | 4,844,257 | 6,465,195 | 8,086,133 | 8,086,133 |

first five years of the MOPH's PHC Program was \$4,646,641. By the end of 1986 when 499,115 village health volunteers and village health communicators will have been trained for over 45,000 villages, the cost to the RTG to support the primary health care program will be over \$8,000,000 for the ten-year period, and will have cost over \$1,620,000 annually.

During the Fifth Five-Year (1982-1986) Development Plan period the National PHC Program of the MOPH will train another 24,000 village health volunteers and 240,000 village health communicators to serve in 24,000 more villages. This will be accomplished under the MOPH's "Regular Plan". The budget for this plan is summarized in Table 58. It is observed that the amount budgeted per trainee for training is \$15.42 during 1981-1986, compared with \$9.04 during the last five-year development period (1977-1981). Similarly, the additional cost of supporting the training program under the new plan is \$17.11 per volunteer, compared to the earlier cost of \$13.78 per volunteer. While the average five-year cost of supporting one volunteer was \$10.23 (or an estimated \$6.90 per year per volunteer) during the 1977-1981 period, the amount budgeted for the 1982-1986 period is \$13.51 per volunteer.

The total cost of the ten-year (1977-1986) National Primary Health Care Program in Thailand is \$13,732,773 (\$5,646,642 for FY77-81 + \$8,086,131 for FY82-86). Of this amount, only 45.14% (\$6,199,935) will be spent on the direct costs of training village health volunteers and village health communicators, and only 11.35% (\$1,559,000) will be spent on support costs of the training program, for a total cost of training of some 56.50% (\$7,758,911) of the total cost. The overall ten-year cost of supporting PHC field activities is \$5,973,802, or 43.50% of the total cost of the ten-year program. The annual cost of support for the PHC Program in 1986 will be about \$693,535, or about \$12.60 (฿290) per volunteer per year, representing 42.78% of the total budget for the PHC Program. Maintenance of the overall PHC Program is expected to run between \$1,600,000 and \$2,000,000 per year, or more, depending on the level of activity generated and supported by the program.

When the ten-year PHC program costs and projected costs are combined, the average cost per volunteer trained and supported comes to \$27.51. This is a very low cost if the volunteer is indeed adequately supported so that he/she can effectively serve his/her village neighbors. Adequate levels of support and technical guidance need to be continuously monitored in order for the National Primary Health Care Program to achieve its aims and to have impact on the health of the population it aims to serve.

Table 59 provides an overview of the sources of funding by which the Royal Thai Government financed the implementation of the National Primary Health Care Project during the years 1977-1981. The Royal Thai Government allocated \$1,255,522 from the Thai National Budget during this period, and negotiated a development loan which provided another \$1,000,000 from the U.S. Agency for International Development to cover some program costs for the training of village health communicators and village health volunteers. Therefore, the Royal Thai Government assumed financial responsibility for \$2,255,522 of the total \$5,646,642, or 39.94% of the total cost. Some \$3,391,120, or 60.06%, was provided as grants to the RTG, \$2,659,580 from U.N.I.C.E.F. and \$731,540 from the World Health Organization. In the Fifth Five-Year Development Plan period, 1982-1986, the Royal Thai Government will accelerate implementation of the village health volunteer scheme to cover impoverished areas on a priority basis, and will not require substantial external funding for the program.

Table 59
Source of Funding for Implementation of Thailand's National
Primary Health Care Program, 1977-1981

| Source | Contribution During 1977-81 | % of Total Cost |
|--|-----------------------------|-----------------|
| <u>RTG Financed:</u> | | |
| Royal Thai Government (MOPH Budget for PHC) | \$ 1,255,522 | 22.22% |
| USAID Loan | \$ 1,000,000 | 17.70% |
| Subtotal | <u>\$ 2,255,522</u> | 39.94% |
| <u>Grants:</u> | | |
| UNICEF | \$ 2,659,580 | 47.10% |
| World Health Organization | <u>\$ 731,540</u> | <u>12.96%</u> |
| Subtotal | \$ 3,391,120 | 60.06% |
| Total Costs | \$ 5,646,642 | 100.00% |

Training Midwife, Sanitarian, and Nurse Practitioners

"...to plan and build and manage a primary health care system successfully, it is vitally important to keep viewing it as a system of highly interdependent and mutually supporting parts that must be suitably linked to each other and to the surrounding social-economic-cultural milieu if the whole system is to function effectively. Regardless of how well any particular innovative feature may work in the context of a demonstration project, it cannot be expected to work equally well if plucked out separately and transplanted from the demonstration "system" to a quite different context -- unless great care is taken to adapt it properly to all the other components of the receiving system." (Coombs, 1979)

The wechakorn paraphysician training program of the Lampang Health Development Project is the key feature that underwent the greatest adaptation in the replication process. Wechakorn in Lampang were developed from existing health manpower of the Lampang Provincial Hospital and rural health facilities -- predominantly, midwives, sanitarian health workers, nurse aides and nurses. The competency-based training approach proved effective in developing paraphysician skills among these types of health workers, and the training materials and methods developed in Lampang were used by the MOPH in planning and implementing two different paraphysician training programs: (1) Nurse Practitioners (6 months to 12 months) and (2) Basic Medical Care Training for Midwives and Sanitaricians (4 months to 6 months).

The MOPH set out to train 900 nurse practitioners for deployment to district and Provincial Hospitals. The long-term goal of the MOPH is to assign at least one nurse practitioner to every district level health facility in the country, giving first priority to district level facilities without physicians.

Table 60

Training Targets and Achievements of MOPH

| Training Program | FY-78 | | FY-79 | | FY-80 | | FY-81 | | Total | |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------------------------|
| | Target | Actual | Target | Actual | Target | Actual | Target | Actual | Target | Achievement as of Sept. 1981 |
| Nurse Practitioners: (6-12 months) | 150 | 129 | 300 | 166 | 300 | 120 | 150 | 80 | 900 | 495 |
| Midwife and Sanitarian Training in Basic Medical Care (4 months) | 350 | 345 | 730 | 710 | 820 | 805 | 350 | 342 | 2,250 | 2,202 |
| Health Assistants: (4 weeks) | 41 | 36 | 270 | 272 | 192 | 193 | - | - | 500 | 501 |
| (6 weeks) | 50 | 47 | 423 | 517 | 194 | 196 | - | - | 750 | 760 |
| DDHO/Supervisors | 110 | 193 | 110 | 49 | - | - | - | - | 220 | 242 |

The MOPH training target for nurse practitioners trained under the USAID-financed Primary Health Care Expansion Project was originally set at 540 for the 20 provinces included in this development program. This target was later revised to 495, including 280 nurse practitioners trained in the one-year course (for those who had no previous public health training) and another 215 in the six-month course (for those who were already public health nurses).

The second "wechakorn-like" training course established by the MOPH was for training auxiliary midwives and sanitarians (mostly midwives) in basic medical care. For the 20-province Population Project, a training target of 2,250 trainees was set. By 1981, 2,202 had been trained. The estimated cost of training midwives (or sanitarians) in the short 4-month course in basic medical care is \$685 per trainee.

The four-month basic medical care course for auxiliary midwives and sanitarian health workers provides trainees with the knowledge and skills to provide curative services for common diseases, such as respiratory infections and diarrhea; to identify more serious conditions requiring referral; to perform some emergency care, minor surgery, and treatment of injuries and accidents, as well as clinical record keeping and training and supervision of village health volunteers and health communicators. The auxiliary midwives and sanitarian health workers at all rural health centers will be trained to provide better curative care services and to work more intensively in support of village-level health activities of the village health volunteers and health communicators. However, the increased demand for curative care sometimes limits the time they have available for village activities. Technical supervision for the medical care activities of auxiliary midwives and sanitarians is provided by the physician at the district hospital; however, physicians at district hospitals frequently find themselves too busy to provide the level and frequency of supervision needed by midwives and sanitarians.

The cost of replicating the manpower development features of the Lampang Project have been reduced under the MOPH policy and plan during the development periods of both 1977-1981 and 1982-1986. The average cost of training village health volunteers and communicators under the nationwide primary health care program is only \$13.78 for the period 1977-1981 and only \$17.11 for the period 1982-1986. Also, as indicated by Table 61, the costs of training wechakorn in Lampang stabilized at about \$2,000 per trainee, but in the national program for training midwives and sanitarians in the short 4-month basic medical care training course, the cost of training is estimated at \$685 per trainee.

Table 61

Comparative Unit Training Costs of the Lampang Health Development Project and the MOPH National Programs for Training Primary Health Workers, Nurse Practitioners, Midwives and Sanitarians in Basic Medical and Health Care

| | Lampang Project | MOPH National Program |
|---|-----------------|-----------------------|
| Health Post Volunteers, or Village Health Volunteers | \$124 |) \$16-18) |
| Health Communicators | 17 | |
| Traditional Birth Attendants | 112 | |
| Nurse <u>Wechakorn</u> (12 months), or Nurse Practitioners (6-12 months) | 2,000 | 301 |
| Midwife and Sanitarian <u>Wechakorn</u> (12 months), or Midwife and Sanitarian Basic Medical Care Training (4 months) | 2,000 | 685 |

The training costs of a demonstration project which aims to introduce new types of personnel or to expand the functions of existing categories of personnel may run substantially higher during the early "development" years than they would in nationwide replication. The Thai Ministry of Public Health has contained costs for replication of these features in a number of ways, such as (1) shortening the period of training, (2) paying lower levels of stipends to trainees, or paying no stipend or per diem (as in the nurse practitioner training program), (3) using existing government personnel to conduct training courses, and (4) developing the curricula and training materials developed in pilot or demonstration projects such as the Lampang Health Development Project. This Project had already developed and tested materials for training which were easily adaptable to the national program.

OTHER FEATURES ENHANCING THE FEASIBILITY OF REPLICATION

Community and Private Sector Participation in Health

"The concept of PHC in Thailand was developed from our experience gained in attempting to solve the health problems of the people in the rural areas who have been underserved by the government health services delivery system. A basic concept is that community participation is the key to the success of the PHC program. Community participation comprises the contribution of ideas, manpower, money and materials, to the extent that these are available within the community. Helping to develop the people of the community to be self-reliant and self-supporting, to the extent possible, is a basic concept for strengthening the overall program" (Desawasdi, P., 1981).

The national health policy for the Fourth Development Period specified five guidelines for implementation of the policy, and one of these guidelines states clearly a central strategy of the Primary Health Care Program: Encourage public participation or self-help community services through the development of village health volunteers, village health communicators, and village community organizations. The policy and plan concerning village health volunteers, communicators, and committees has been carried forward to the Fifth Five-Year Development Plan where it is given an even higher priority, now strongly endorsed and promoted by the national Cabinet and the NESDB, in addition to the MOPH.

Beyond the extensive levels of community participation in health that will result from the training of nearly 500,000 village health communicators and village health volunteers, including the establishment of a village health committee in every village, the MOPH policy and plan continues to promote the training of traditional birth attendants and other indigenous healers, including herbalists and druggists. Pilot projects are already under way to study various herbal medicines and to enlist the cooperation of herbalists and other indigenous practitioners to receive training and to participate in primary health care activities. Monks have made a formal request for training in medical care, and the Faculty of Public Health of Mahidol University has embraced an opportunity to train monks in medical care under a new pilot program.

The national health policy and plan promotes the involvement of private health care providers in the Primary Health Care Program. Traditional birth attendants, traditional practitioners, herbalists, and other indigenous health care providers

are encouraged to participate, as mentioned earlier. Additionally, the MOPH has encouraged the cooperation of druggists, applying one of the approaches developed in Lampang. Depending on local conditions and health leadership, the private sector has played varying roles in the provision of funds, manpower, supplies and/or equipment for water and sanitation programs, village health volunteer support programs, and nutrition improvement programs.

The National Health Development Network

Beyond the specified key features of the Lampang Health Development Project, a number of notable approaches were implemented by the Project in its rural health development effort. One of these approaches was based on the concept that more could be achieved by collaboration between universities and the MOPH than could be achieved by working independently, even if towards the same goal. The Lampang Project established a close collaborative framework between the MOPH and Chiang Mai University, between the MOPH and the NIDA, and between the MOPH and a number of other universities within and outside of Thailand. Medical educators from universities participated in the training program for wachakorn, along with MOPH personnel, and evaluation specialists from both Chiang Mai University and NIDA participated together in the evaluation and monitoring activity of the Project. The technical expertise of university personnel enriched the MOPH activities, and the field experience gained in this collaborative effort enriched the education and training programs of the universities. Beyond this, the historical duplication of effort and inappropriate use of limited resources that resulted from the MOPH and universities operating independently could be overcome by collaborative efforts to work towards common goals, while at the same time benefiting the special interest of each.

During the Fifth Five-Year Economic and Social Development Plan period, 1982-1986, the National Economic and Social Development Board is creating the Social Development Network Center at NESDB for the purpose of developing closer collaboration between universities and agencies of the RTG. Under the Social Development Network Center, various ministries involved with social development will collaborate closely on common programs. The key ministries are the Ministry of Health, Ministry of Education, Ministry of Agriculture and Cooperatives, and Ministry of Interior (Community Development, and Local Administration). The NESDB, Bureau of the Budget, and Civil Service Commission will also participate in the work of the Social Development Network Center.

The Health Development Network is being created under the NESDB Social Development Network Center which will effect a close collaborative relationship between the Bureau of State Universities and the Ministry of Public Health, and will effectively coordinate joint, collaborative efforts, such as the training of nurse practitioners, for example. The major areas for collaboration between the MOPH and the Bureau of State Universities will be Health Services and Manpower Development, including strengthening of health services, manpower education and training, continuing education, and health services research.

PLANNING FOR HEALTH FOR ALL:
HEALTH SYSTEM IMPLICATIONS OF REPLICATION

"Health for all doesn't mean that in the year 2000 nobody will be sick or disabled, nor does it mean that in the year 2000, doctors and nurses will provide medical repairs for everybody in the world... It does mean that health begins at home, in schools, and in working place. It does mean that the people will use better approaches than they do now for preventing diseases and alleviating unavoidable illness and disability, and better ways of growing up, growing old, and dying gracefully." (Tuchinda, July, 1981.)

The strategy and the key features of the Lampang Health Development Project were designed to meet the existing needs of the provincial health care delivery system in Lampang so that it would have the capacity to reach and serve a majority of the rural population. The key features of the Project and other components of the provincial health care system must be viewed as mutually supporting parts of the whole system, and not as separated parts which are independent of one another. Community health volunteers and health committees at the village level operate as a village-based network for primary health care services delivery which is an extension of the provincial health care delivery system, and is functionally linked to the rest of the system by crucial, mutually supportive relationships between health post volunteers, wechakorn paraphysicians, and other health workers at sub-district health centers, and between traditional birth attendants and government midwives at the nearby midwifery centers. Village health post volunteers and rural health personnel are functionally and integrally linked to the rest of the system by operating mechanisms for patient referral, supervision and technical guidance, information and reporting, procurement of materials and supplies, and other logistics of the system which provide the means to hold the system together,

to keep components of the system "on course" in terms of health programs, and to foster program effectiveness and efficiency.

In planning for possible replication elsewhere of the Lampang Project's key features, it is important to "think systems" and be cognizant of the interrelationships between the various components. Two types of interrelationships are immediately apparent: structural interrelationships, with particular reference to the infrastructure of the health system, and functional interrelationships, with particular reference to the interactions and functional links between the various components or key features of the system. To the extent that these are mutually supporting and interdependent components, one component or key feature could not be expected to perform as effectively in another system if the receiving system did not also provide for the same level of interdependent and mutually supporting relationships with other components of the system. For example, the primary health care network at the village level operates most effectively when there is a strong relationship between the village health volunteers, the wechakorn paraphysicians, and other health workers at the subdistrict health center or midwifery center. Similarly, the health center staff could not have the same effectiveness in operating community-based health services without the supporting role of community health volunteers.

When replication occurs, both structural and functional interrelationships must be taken into consideration. Too often, processes of replication provide for structural interrelationships without appropriately or adequately considering the functional interrelationships. Both are important. But functional interrelationships are particularly important in terms of effectiveness and efficiency of health programs. For instance, what could be expected, given the above example, if the primary health care network were replicated but without a mutually supporting relationship with wechakorn paraphysicians (or their equivalent) at the local health center? The wechakorn paraphysicians trained by the Lampang Project in an intensive, 12-month, competency-based training program now provide an impressive new range of services at rural health centers and they can conduct a comprehensive approach to community health services through the network of village volunteers. Wechakorn training emphasized health promotion, disease prevention, clinical care, and community health services. It is to be hoped that midwives and sanitarian health workers in other areas will be provided training opportunities to develop the same range of capabilities as wechakorn paraphysicians in terms of their clinical and health skills, judgment, understanding, and approach to community health.

Cost Implications of Replication

Cost implications of implementing the National Primary Health Care Program nationwide were taken into consideration in preparing the plan and in winning support from the Cabinet, the National Economic and Social Development Board, the Bureau of the Budget, and the Civil Service Commission. Implementation of the plan in the past four years has been impressive from the standpoint of the numbers of village volunteers trained, the government's commitment to the program, and the government allocations to the program. But the costs of expanding the system in the next five years and sustaining it cannot be based only on the lower costs experienced in the first four years.

In Lampung, the PHC activity at the village level was relatively low in the early years of implementation, but there has been a clear and consistent trend towards greater and greater utilization of the primary health care component of the provincial health care system. As seen in Figure 3 of Monograph 2, the average number of medical care and family planning contacts per health post volunteer doubled in the first two years of service, and doubled again in the next two years of service! The slope of the increasing average number of these contacts per volunteer has not yet begun to level off, and the increase in volume of HPV-provided services continues. If the experience in Lampung is any indicator of what could be experienced in the National Primary Health Care Program, one should expect substantial increases in the average volume of services provided per volunteer, meaning that the average costs per volunteer in the first years of the Program should not be -- in absolute terms -- the basis for additional budgetary allocation in later years of the Program. It is entirely conceivable, based on observations from Lampung, that the costs of supporting village volunteers will not follow a linear pattern as more and more volunteers are trained, but that the costs of supporting volunteers will follow a more exponential pattern as the demand for services increases and as each volunteer provides a greater and greater volume of services per year.

It is crucial to the success of the National Primary Health Care Program that the support needs of the village volunteers be carefully monitored, be regularly reviewed and assessed by senior MOPH leaders, and be responsively attended to as soon as possible when support needs become apparent.

Program Implications of Replication

With the volume of services provided by health post volunteers expanding each year and with the average number of contacts per volunteer doubling every two years,

some volunteers have shown signs of "overload". It must be remembered that they are, in fact, volunteers -- and most of them have other occupations that are essential to family survival. The voluntary system has worked reasonably well in Lampang with attrition levels to date remaining below 20% even after five years of voluntary service. But as the demand on volunteers' time becomes greater for providing primary health services and as they are distracted more and more from their occupations one might anticipate either (1) increase rates of attrition as volunteers face the difficult realities of survival, particularly in times of worldwide recession and double-digit inflation; or (2) the need to compensate "volunteers" for their services, so that they can continue to provide primary health services. In many countries, primary health workers do receive some type of compensation for their services. Given the realities of our times and the experience gained in Lampang, there may be a need in Thailand to develop the means for sustaining village volunteer performance through compensation of some type.

It is highly advisable for MOPH planners and provincial health managers to launch more pilot or demonstration projects on the theme of local financing of primary health care programs, whereby not only the costs of community health programs and primary health services are financed locally, but where the support of the village "volunteers" can also be provided for maintaining their role, and for sustaining their expanding volume of services.

Primary health care programs in each province should identify and develop priority village-level health programs such as local water supply programs and nutrition improvement programs. For health programs to be more effective in reaching those most in need of services and in providing the needed services more efficiently, a greater degree of technical guidance for health workers in the rural health centers and for village volunteers and village health committees is needed. In the case of Lampang, the types of programs for consideration on a priority basis could be: nutrition improvement programs; water supply programs; and health education programs concerning treatment of drinking water, maternal and child nutrition, and food selection and preparation. For health programs with a widely scattered or general target population, mass media should be used for education-information-communications activities, in addition to invoking the tremendous potential of village health communicators.

BEYOND REPLICATION: EXPANDING COLLABORATION
FOR AND CONCEPTS OF HEALTH DEVELOPMENT

The strategy and approaches tested under the Lamphang Health Development Project are already over ten years old, and the basic assumptions on which Project planning and implementation were based may, in fact, be far too narrow in scope and too short-ranged in development perspectives.

Few Project observers were surprised that little effect was detected in terms of impact of Project interventions on the population's health status, although health interventions can make a difference, sometimes, given the "right" conditions. But the linkage between "health services" and "health" may not be very direct or close, as there are other key factors which have a great influence on health status. Health status is keyed closely to levels of poverty and family income, to levels of education, and to environmental conditions (including the social and inter-personal environment, not only the physical environment).

The point is that the scope of health development extends far beyond the capabilities of health professionals alone. Planning for health development should, of course, include health professionals because of the relationship between health and health services, and between health services and health development; but the process of health development must address the more basic factors influencing health -- particularly the factor of poverty or low family (or personal) income. To overcome the problem of poverty or low income generally involves education and training, as well as other social and technical processes. Psychological factors and personal behavior have an important influence on health. Professionals from a variety of social, behavioral, political and other disciplines can play an important role in conceptualizing and planning health development efforts that attack the roots of health problems. Those involved in the process of conceptualizing new approaches will need to discard the limiting elements of their respective professions, to apply a very broad perspective, to plan innovatively, and to implement comprehensively. Although "multifocal" planning also may not be enough, these processes are clearly needed because they force one to think beyond traditional or conventional patterns.

The recent creation in Thailand of the National Health Development Network is progress in the "right" direction, and the National Health Development Network is headed by a far-thinking, perceptive, innovative and creative leader. This

is a promising development on the long road to broad-based and long-lasting health development.

The authors do not purport to know the way. They only know that the way must be found if health development and "health for all" are to become anything but slogans. The way cannot be trodden alone, for broad-based collaboration is essential. The Lampang experience has exemplified to many the advances that can be made, even in a relatively short period, when broad-based collaboration is seriously undertaken in a spirit of sharing, mutualism, innovation and learning together. Such collaboration between government agencies and universities, between the government and the private sectors, between countries, and between regions should be continued. There is little to be lost, and there is very much, indeed, that can be gained. The Lampang Project has taken a small step, and the way has become clearer. Continued and expanded collaboration may spark the needed creativity to go beyond replication and to lead the way, realistically, to health for all.

COMMUNITY HEALTH VOLUNTEERS AND PRIMARY HEALTH CARE

Broad-Based MOPH and Multisector Involvement

It was important to develop and maintain broad-based, high-level MOPH and inter-sector government involvement in planning and implementing the program. The Lampang Health Development Project Policy Committee, a multiagency governmental advisory group chaired by the Under-Secretary of State for Public Health, resolved a number of potential problems in implementation, and in maintaining the system and coordinating its expansion. Similarly, Thailand's National Primary Health Care Program will receive the attention of a multiagency, high-level government advisory and coordinating group.

Early Social Preparation at All Levels

Developing full commitment and support for the program at all levels of government was needed early in order to efficiently implement reorganization of the health care system and to effectively develop strengthened systems of management and logistics. Social preparation and organization of the government agencies and personnel involved is best undertaken early in the planning phase, and their involvement should be maintained as the program evolves during the implementation phase. In the final analysis, it is the Provincial Health Office and the local government health workers who will directly provide the support and guidance most needed by community health volunteers. Therefore, it is crucial that their orientation and active involvement begin early, that their commitment be secured, and that their roles be clearly specified.

At the district, subdistrict and village levels, orientation of local health workers, government officials, subdistrict councils and community leaders should begin well in advance of developing the village-based primary health care organization. This effect should involve planning and early implementation of the necessary support mechanisms. Once the various roles are specified for community health volunteers, village health committees, subdistrict councils, government health workers and

local officials, the process of social preparation should blend immediately into follow-up technical guidance for planned actions: establishing the village health committee, identifying candidates to be community health volunteers, selecting community health volunteers, diagnosing local health problems, and so on. Expectations raised and promises made in this process should consistently be met, or be jointly revised.

Strengthening Linkages to Government Rural Health Facilities

Initially all rural health workers, though oriented to the approach, did not understand clearly the role and utility of health post volunteers. But as the volunteer role evolved, the linkage between the volunteers and the rural health personnel was strengthened. The Project's results concerning oral contraceptive distribution is a good example of the effectiveness of this linkage.

Such linkages must be continually nurtured through regular visits, monitoring and performance, and continued initiation of community health activities in which the volunteers can take a substantive role. If the linkage between the village volunteers and the rural health workers is continually reinforced, attrition rates of volunteers can be kept at a very moderate and manageable level.

Training and Maintaining Community Health Volunteers

There is an inverse relationship between the duration of training and the need for technical guidance and supervision for achieving and maintaining high performance of community health volunteers. If training is short, technical guidance and supervision must begin early, be maintained on a regular basis, and always be helpful and positive.

Before planning the training program and developing the curricula, attention should be given to identifying major health problems, setting priorities of health programs, specifying the methods and techniques to be implemented, and clearly delineating the specific roles that will be played by various categories of community health volunteers and government health workers. For each category of trainee, the training program should specify precisely the methods, techniques and services needed to conduct local health programs of high priority.

Nearly all community health volunteers and wechakorn in Lampang have consistently expressed a strong interest in follow-up training, at least once a year to improve their knowledge and skills, and to learn new techniques and methods. Beyond the direct benefit of follow-up training for improving needed skills and knowledge and for promoting expansion of priority programs, follow-up training promotes an esprit de corps, an exchange of experience, and pride that in turn promotes improved performance.

Community Health Volunteer Performance

Community health volunteers have clearly made an important contribution to rural health care in Lampang. Health post volunteers, in particular, have expanded simple medical care contacts at the health system's rural periphery. The frequency of these contacts with the village population has helped to establish the health post volunteers' credibility in the villages, an important entree for further community health work. The contribution of health post volunteers to family planning has been substantial. HPVs now account for a majority of the family planning contacts, and about 40% of all government provided oral contraceptive distribution in the rural areas.

Responsiveness of the Government System to Increased Demand

Like the approach being implemented nationally, the Lampang approach to primary health care, began with planning from the top-down. The approach was conceived at the ministry level, articulated and put into operation by professionals at the provincial level. Inherent in planning was the need for downward support, supervision and stimulation. Large groups of community health volunteers were trained and sent back to their homes to begin work. But as the primary health care network was set in motion, positive responses of the community and increasing volunteer activity generated substantial upward pressure on the government system for increasing and ensuring continuity of downward support. Breakdowns in supply and technical support showed that some upper-level personnel had not anticipated the potential of the volunteer contribution, and were not always ready or able to respond adequately. The overall experience has shown that when a village level primary health care network is set in motion it will inevitably lead to substantially increased demands on the health care system, which must be prepared to provide adequate and timely support, supervision, encouragement, frequent technical guidance and dependable logistics to maintain volunteer activity and increase service coverage.

Cost Implications of Community Health Volunteers

A comparison of the cost of oral contraceptive distribution from health centers, and from volunteers, revealed that not only is village-level distribution more convenient for the user, but it is more cost-effective. The low cost contribution of village health volunteers should be kept in mind when governments plan programs to attack widespread health problems. For example, the immensity of the nutrition problem in Thailand is one that government health workers have found difficult to deal with on the broad scope that is required. But using the volunteer network in an attack

on the widespread problem of malnutrition in the rural areas can greatly enhance the potential of the system to effectively deal with this problem.

Private Sector Providers and Service Organizations

Private sector providers, such as druggists, indigenous healers, and physicians have generally maintained themselves somewhat separately as an alternative to the government health services. National and provincial government health leaders have recognized the importance and magnitude of the role of private sector providers who contribute to health care at all levels. Private sector providers should be made aware that government personnel view their contribution positively, and see it as a basis for seeking their cooperation on a program-specific basis.

Service organizations have played an important contributing role in programs that require resource inputs beyond the ability of the government. Service organizations have provided monetary and material support which can stimulate community contributions of additional materials, money, and -- more important -- manpower to keep the program operating at the local level.

COMMUNITY HEALTH PARAPHYSICIANS: WECHAKORN

Approach of Training

The effectiveness of the competency-based, problem oriented, modular approach to wechakorn training for imparting a broad range of knowledge and skills in a limited (one year) period of time has been clearly demonstrated in Lampang.

Ministry of Public Health training of mid-level medical care providers (nurse practitioners) or mid-level medical-health care providers (eg., wechakorn and the health center midwives and sanitarians health workers) have usefully implemented competency-based training, employed problem-oriented training modules, emphasized practical experience and learning-by-doing, and involved clinicians and other experienced health workers for both didactic and preceptorship phases of training.

Duration of Training

The wechakorn received one year of training, but this is not a fixed requirement. Wechakorn training staff, on evaluating the program, recognized that some components could be reduced, some modified and some items eliminated, permitting more flexibility in the allocation and/or contraction of the total length of training. The training program can easily be modified by dividing the training content into initial training and continuing education.

Ministry of Public Health training programs for mid-level medical and health care providers, like nurse practitioner training and "wechakorn-like" training of midwives and sanitarian health workers for rural health centers, should be long enough for trainees to acquire the knowledge and to develop the skills needed, as determined by the expected role and as acquired by competency-based training methods. The total training period need not be a full year nor continuous as it was for wechakorn. The knowledge acquired and the level of skills developed by wechakorn could alternately be accomplished in a multi-phasic training program extended over a longer period with three to four months training alternating with periods back on-the-job.

Locations of Training

To provide sufficient opportunities for utilizing the required knowledge and practicing the skills of the training program, the training center must have a large enough patient load to supply the range and numbers of health problems that are included in the various modules. This means that the training center should be a good-sized provincial hospital, with an outpatient load of several hundred per day; of equal importance, a large enough number of physicians are needed to serve as preceptors during the clinical training process. The heart of the approach to training in Lampang is guided learning-by-doing, and it therefore follows that each trainee must have sufficient exposure to clinical problems and opportunities to practice new skills under the guidance of physician-preceptors.

In summary, training programs for mid-level, health medical care providers, like wechakorn, should be multi-centered, utilizing (1) a large hospital with an adequate patient load and an adequate number of physician-preceptors, (2) a district hospital with typical rural outpatient clientele (and with a physician-preceptor), and (3) rural health centers and other rural facilities for application of knowledge gained and for skills development concerning health promotion, disease prevention, and community health programs and services.

Training of Trainers and Development of Training Materials

Implementation of competency-based, problem-oriented training programs required a strong program of trainer training for a reorientation to this type of training methodology. Those training trainers should be very familiar with the role specifications of the mid-level, medical-health provider trainees, and be assembled from experienced medical educators and practitioners, such as from faculties of medicine and other institutes, and from the Ministry of Public Health. The core staff can then

travel to various regional centers to conduct regional training of trainers. The newly-trained trainers would then be responsible to organize and conduct the mid-level health care provider training programs for their own areas.

Problem-oriented, competency-based training should make use of learning in real work situations whenever possible. Teaching aides should be developed to depict real life situations, medical and health problems, and be problem-oriented. Training materials, such as the training modules used in wechakorn training, are best developed locally -- ideally, by the instructors who will use them in the training program, as they were in Lampang. Materials produced from outside the region or country will require adaptation to make them appropriate and relevant to the local circumstances.

Recruitment and Selection of Trainees

The Lampang Project intentionally recruited and trained four types of existing health workers -- nurses, nurse aides, midwives, and sanitarian health workers. When the training experience and achievement levels of these types of trainees were compared, there were no major differences. Nurses, nurse aides, midwives and sanitarian health workers can achieve similar levels of knowledge and skills development when competency-based training is employed. However, the attitudes and motivation of various types of health workers may be different. The most active wechakorn in Lampang today are midwives and sanitarian health workers in rural health centers.

To the extent that Ministry of Public Health training programs for mid-level, medical health care providers are directed at filling the gap that exists at the subdistrict-level health centers, midwives and sanitarians should be selected as priority candidates for training.

Deployment, Supervision and Support

On completion of training, wechakorn in Lampang fell into three role categories: the provincial hospital role, the district hospital role, and the rural health center role. The most viable and useful role, and the one which provided the most satisfaction for the wechakorn themselves, was the rural health center role. This location is where the service gap was greatest, and where a range of new skills clearly added to the center's capability and credibility.

Because the support needs at the rural health center level are greatest, the wechakorn, or other similarly trained workers at health centers require a strengthened system for technical supervision, a system for patient referrals, adequate funds, and authorization to provide the expanded range of services. Every effort must be made

to secure official government recognition of the new role and capability of the rural health center worker, including a salary stipend commensurate with their skills.

In summary, before launching mid-level, medical-health care provider training programs, a clearly stated Ministry of Public Health directive should be issued that clearly specifies the roles and responsibilities of the new medical health care providers. The respective roles of both wechakorn and nurse practitioners should be given a legal basis -- and MOPH regulations should be modified to accommodate these new health care providers. This should be followed-up by appropriate planning and action by provincial health authorities to strengthen the systems of supervision, supply logistics, patient referrals, reporting and information feedback, and procurement of equipment needed by the new medical-health care providers. It is advisable to organize a formal orientation of all senior provincial and district health staff who will relate to the newly trained workers. Such, an orientation would clearly explain their new role, responsibilities, and support needs, including clearly identifying the support functions of each type of staff towards the wechakorn. Particularly at the beginning of the program when trainees are deployed, frequent visits should be made and their activities monitored closely to provide needed technical guidance and to solve problems early when they occur. To the extent possible, salaries should be increased to a level commensurate with their new training and skills.

Follow-up Training and Continued Professional Development

The wechakorn of Lampang have strongly expressed their interest in having more training in a number of fields. Additional training has been provided for dental health care, with very positive effect in terms of wechakorn morale and in terms of their performance in expanding services. Their interest in additional training reflects to a great degree, the demand for services that are being made by their rural clientele. Therefore, the appropriateness and relevance of the type of follow-up training can be ascertained easily by consulting practicing wechakorn. Many wechakorn have stated that additional training would be more of an incentive for improved performance than increased salary or other monetary gain. When asked in a recent survey what type of support they would appreciate most, the most common answers were (1) regular follow-up training and (2) regular supervision and deliveries of supplies both of these are directly related to wechakorn job performance.

Follow-up training should be planned as an integral part of the training program, the type of follow-up training and its frequency and duration should be determined by local conditions and in consultation with the medical health care providers after they have been in practice for a while. Many wechakorn in Lampang

recommend that follow-up training be conducted every six months or, at a minimum, once per year. The training period need not be long, three to five full days may suffice, depending on training methods and objectives.

Conclusion: The experience in Lampang has shown that developing a problem-oriented curriculum, operating a competency-based training program, and imparting relevant knowledge and practical skills to develop new mid-level, medical-health care practitioners can be achieved. But to sustain the workers in their new roles requires improved and increased technical supervision and support, periodic follow-up training, and adequate budgetary and reliable logistic assistance commensurate with their new roles and responsibilities. These support needs are ongoing and must be carefully planned and reliably sustained for the delivery system to have impact in improving the health of the population it aims to serve.

COMMUNITY HEALTH ROLE OF THE PROVINCIAL HOSPITAL

Development of a Community Health Orientation in the Provincial Hospital

Developing a community health role for the provincial hospital is a complex task, as it involves reorienting the medical and paramedical staff towards community health rather than patient medical care. Winning the support of the hospital administration and senior medical staff is crucial. After the provincial hospital director and other senior officials have oriented the hospital staff, the objectives of the community health program should be decided upon by the provincial hospital director, administrators, senior physicians, senior nurses and other key personnel who would be involved together with the provincial health officer and his senior staff. Once the objectives are established in as clear a fashion as possible, appropriate personnel should be appointed to head and staff responsible units. If appropriate units do not already exist, they should be established.

Community Health Department

The Community Health Department should be headed by a respected and active senior hospital physician with proven leadership and management skills, as the scope of activities will require careful coordination and leadership by the head of the unit. Most likely, the first task will be to assemble a community health staff from among hospital personnel. In Lampang the initial staff included the chief, a public health nurse and health educator, a social worker, an epidemiologist/statistician and a secretary. This mix was an appropriate core staff for establishing the department and initiating its first activities which were primarily within the

hospital. When additional staff join the department, the outreach programs can be initiated. But winning support for additional staff may first require setting a good performance record for the Community Health Department's activities in the hospital. In Lampang this included organizing educational activities for MCH and family planning clinics, inpatient education and discharge counselling; producing educational materials for outpatient clinics; improving the hospital's public address system and using it for public health education; improving environmental sanitation of the hospital; and monitoring hospital and provincial health statistics. At the same time, hospital physicians were involved in training Wechakorn paraphysicians for rural health practice, and this had a positive effect in strengthening and sustaining a community health orientation of the medical staff.

Initiating the outreach programs should begin as early as possible. If new staff are not assigned early, outreach programs can still be initiated by organizing rotations of physicians and other staff for providing services at district hospitals and for special clinics (e.g., vasectomy clinics) and other activities (e.g., nutritional surveillance) at district hospitals or in remote rural areas.

Mobile Clinic for Remote Rural Health Services

A great stimulus for outreach programs in Lampang was the mobile clinic van that was assigned to Lampang from the Family Health Division of the Ministry. The mobile clinic's first major activity was a rural vasectomy program, but the demand for medical care services, immunizations, and other family planning and nutrition services soon expanded the scope of activity to a wide range of rural health and medical services. Incentives should be developed for good performance, such as remunerations provided to medical staff (from a national vasectomy program) for the number of vasectomies performed.

The rural mobile clinics have provided valuable opportunities for training young physician, paraphysicians, and other medical and health staff. District hospital physicians, mostly recent medical graduates, received valuable training and accumulated substantial experience when the vasectomy clinics operated in their districts. Wechakorn paraphysicians assisted the physicians in performing vasectomies and in caring for medical conditions with direct supervision of physicians. While rural health personnel gain experience, the hospital physicians and staff gain a better understanding of the rural health problems and the difficult conditions under which rural health personnel must operate. The mobile clinic's activity enhanced the credibility of health personnel and facilities in the area, as well as enhanced the hospital staff's understanding of the problems and needs in the rural areas.

Coordinating Rural Patient Referral and Other Services

The Community Health Department in the Lampang Provincial Hospital assumed an important role in coordinating patient referrals from and back to rural health facilities. The Community Health Department coordinated free medical care for health post volunteers as an incentive to them for their contribution to the provincial health care system. The Community Health Department also coordinated other important services: infectious and communicable disease treatment and prevention services, well-baby clinics, prenatal clinics, social welfare services, health education, environmental sanitation in the hospital, and various outreach services for the municipality and areas around the hospital, as well as in remote rural areas. All of these programs enhanced the role of the Community Health Department and established an impressive record of performance.

Staffing, An Expanding But Unmet Need of the Community Health Department

The Community Health Department's early efforts were (1) to seek support within the hospital, (2) to make the department an officially-recognized unit, and (3) to secure permanent staff positions. Although winning acceptance of the department's status in the hospital and winning official recognition by the Ministry of Public Health were readily achieved, securing permanent positions from the Civil Service Commission was more difficult. The Community Health Department began with a staff of 5 in 1975, and by 1979 it had a staff of 18, including two physicians, two nurses, and three wechakorn paraphysicians. But expansion of programs has been constrained by limitations on personnel and budget. Additional personnel have been assigned to the department temporarily, but this is an inefficient stop-gap measure that requires repeatedly orienting new personnel only to see them leave once they have gained the needed skills and orientation.

The Ministry of Public Health has established a policy to develop Community Health Departments in all provincial hospitals in Thailand. Therefore, a top priority for Ministry and provincial health planning should be to mobilize additional budgetary resources to support the work of the Community Health Departments. Permanent staff should be appointed to the Community Health Departments as rapidly as possible. Staffing needs should be reassessed as they expand their program.

MANAGEMENT, SUPERVISION AND SUPPORT

A major lesson from the overall Lampang experience has been that greatly expanding the provincial health care system by training and deploying wechakorn parapsychians, by creating a community health role for the provincial hospital, and by training thousands of community health volunteers creates an immediate and continuing need for management, supervision and support at the periphery of the system. This can be anticipated to a great extent, and should be responsively addressed in order to provide for the greatly expanded rural health care system. Resolving the constraints on management, supervision and support is primarily in the hands of national level planners and provincial level managers.

Dealing with Resource Constraints

The large proportion of budgetary resources are still concentrated in the clinical, curative-oriented medical care facilities which are few in number, low in coverage and very high in cost. The peripheral rural health facilities are much larger in number and serve a broader proportion of the population, but are seriously underfinanced in comparison. The same inconsistency is seen in the distribution and support of health manpower.

The Lampang approach basically accepts the limited budget available for rural health care, as the approaches are low-cost in nature when compared with medical care facilities in larger towns. However, to fulfill the potential of the Lampang approach -- clinical-trained midwives and sanitarians with an orientation to community health, and the vast numbers of community health volunteers -- requires a strong system of support from the provincial level. Technical and material support are seriously needed at the health center level. The health centers must be tightly linked to the community health volunteers through a small number of selected, high-priority health programs in which the community health volunteers play a major role. However, the availability of resources, well-trained technical manpower, and technical and managerial support become weaker as one moves away from the provincial center to the rural areas. This imbalance must be overcome if the Ministry's investment in rural health care is to make the gains expected.

District Health Organization

The district hospital has technical, financial and material resources which could greatly enhance planning and implementation of programs in the district, but the district health office is officially responsible for all health centers in the district, is the focal point for performance information coming from these health centers, and is the conduit for supplies and support to them. If the capabilities in these units

were coordinated into a single functional unit, their achievements could increase markedly.

The Lampang Project and provincial health leaders have stimulated increased cooperation between the two key units of the district health organization. The District Health Services, Management Workshops stimulated increased initiatives and closer understanding between the two units, and have encouraged more cooperation between them, albeit on an informal basis. But the achievements made during the years of project operations have not been institutionalized or backed up by administrative reorganization or even administrative policy. However, the appointment of wechakorn paraphysicians as district health officers is promising.

In-Service Training and Continuing Professional Development

Continuing education and inservice training for rural health workers and community volunteers is needed to maintain the system and to build new capabilities as new programs evolve. At the provincial level, the initial training is often regarded as an end point, rather than a beginning. But training staff need to conduct specific courses for new skills development as well as follow-up on-the-job education in the field. Their approach is important. Although innovative competency-based training approaches were used in developing wechakorn paraphysicians, these approaches have not been fully infused into regular provincial health training activities. The competency-based training approach would be useful for training community health volunteers, and for in-service training of rural health personnel.

Community Health Volunteers

A primary health care network has been established in every village of Lampang and will soon be established in every village of Thailand, but its full potential for contributing to health programs and improved health status cannot be realized until the problem of supervision and support is seriously addressed and resolved. Village level volunteers need technical supervision to be effective, and they need supplies and materials. They have proven their value in providing family planning supplies and medical care, a main focus of their training. But if they are to launch priority health activities in their villages, they need appropriate technical supervision, materials and supplies. The materials and supplies might be financed by local contributions or by private sector involvement, but the technical supervision must come from provincial health care personnel. Most health workers are willing to provide the technical supervision if they have time, are supported, and are, themselves, supervised. Supervision must, by its very nature, come down the line of authority: it must start at the provincial level, extend to the district, to the subdistrict

and, finally, to the village level. The supervision and support problem will not be solved until provincial health authorities recognize its importance and establish regular mechanisms (transportation, assignments, support and, if possible, incentives) to promote and monitor supervision. Without supervision and support, the investment in community health volunteer and wechakorn paraphysician training cannot be fully realized. With good supervision, regularly practiced and effectively conducted, the investment can generate substantial gains in improved coverage, program performance, and overall health system cost-effectiveness.

MAJOR EVALUATION RESULTS AND IMPLICATIONS OF THE LAMPANG EXPERIENCE

On Accessibility and Acceptance of Health Services

The overall experience in Lampang substantiates the validity of the Project's major strategy and approach to achieve high coverage -- the development of health manpower from resources in each village and the existing provincial health care system. A high level of coverage was achieved in terms of the availability of health manpower at the levels which formerly had a gap -- the village, subdistrict and district levels. Increased utilization of health services was primarily achieved through the contributions of community health volunteers, community health paraphysicians, and the Community Health Department of the Provincial Hospital, particularly in terms of provision of medical care and family planning services.

Although some improvements were made in the provision of health promotion and disease prevention services, the major improvements were found to be in the provision of illness care and family planning services. There are at least three factors that may account for these findings: (1) there is a greater demand for illness care services and for family planning services by consumers, (2) illness care and family planning were emphasized more than health promotion and disease prevention services in the training programs, and (3) the provincial health management, supervision and support of the new health workers did not emphasize health promotion and disease prevention as much as illness care and family planning. For example, despite the Ministry's emphasis on immunizations, Lampang has experienced a chronic problem of supply of vaccines and supplies needed to conduct an expanded program of immunizations. This was major factor in the low levels of immunization coverage of the target group children. If supplies were available, if proper emphasis was given in training, and if immunizations were emphasized in the supervision and support of the new health workers a much higher rate of coverage could have been achieved.

Budgetary and manpower allocations are a more concrete expression of actual policies and program emphasis than the written and verbalized policies of government health services. It is clear that the emphasis of government spending and overall manpower development is still on illness care services more than health promotion services or disease prevention services. The Government, properly, responds to public demand and the public demand is for illness care and family planning services. The ability of the Lampang system to meet the demand for illness care and family planning has increased the credibility of the system as reflected by increasing rates of utilization of these services. Given the system's new credibility and given the potential of the health manpower now available in Lampang, substantial improvements can be made in the provision of health promotion and disease prevention services, if the supervision and management systems of the provincial health office emphasize these services; if the supplies needed are made consistently available; and if these services are emphasized in on-the-job training and in new training programs for replacement of volunteers and personnel lost by attrition. The Project intervention areas have already demonstrated a broader coverage of children with preventive health services than in control areas, but greater emphasis on disease prevention and health promotion services is still needed.

The trends in health care utilization in Lampang are most promising. A substantial increase in the total volume of services has been observed, primarily as a result of the contributions of village health volunteers and wechakorn paraphysicians. The Community Health Department's mobile clinic also demonstrated a significant contribution to provision of family planning and other health and medical services in remote rural areas. Beyond the overall increase in the total volume of services, there has been a shift in utilization of services away from the Provincial Hospital towards the rural health facilities at the district, subdistrict and village levels. Where services have been made available, they have been utilized. In control areas the shift was in the opposite direction towards the provincial hospital. This effect of project interventions -- greater utilization of services at the rural periphery -- is desired by both the consumers and the providers of health services. The trend has begun, and it implies that greater attention must be given to strengthening logistics of the health system to provide services at the rural periphery. This means more emphasis needs to be given to the problem of supplying the rural health centers, of supervising rural health center personnel, of improving the management practices and information systems needed to support the greater volume of service provision in rural areas.

Cost-effectiveness of The Health System

The analysis of health system performance and costs has revealed that the increased volume of services in Lampang resulted from the expanded number of rural health personnel and facilities and the substantial contributions of community health volunteers. However, the average service output of individual health facilities has not generally increased.

The unit costs of delivering family planning services and medical care services decreased as a result of the substantial contribution of community health volunteers. However, the overall costs of health care have sharply increased at the national and provincial levels; and, likewise, the costs per service contact of all types increased at all government health care facilities. The provision of services through the conventional approaches, therefore, can be expected to increase unless a greater role is assigned to the provision of services at the village level by community health volunteers. The improvement in cost-effective delivery of illness care services and family planning services resulted from the volume of services provided by community health volunteers. The same effect -- more cost-effective delivery of services -- can also be expected for disease prevention and health promotion services that are provided at the village level by community health volunteers. This argues strongly in favor of increasing the health promotion and disease prevention activity of community health volunteers (and village health committees) for the very practical purpose of containing sharp increases of health services of health services delivery when conventional approaches are used.

Although the unit costs of services delivered by community health volunteers appear to decrease, the overall budgetary requirements for greatly expanding service coverage in a short period could seriously overburden the financial resources of the national health care system unless substantial increases were made in future budgeting exercises, and followed by actual governmental budgetary allocations to health services. This particularly important to consider in terms of the National Primary Health Care Program which will expand to cover the entire population within the next five years. Careful monitoring of costs and cost-effectiveness by provincial health authorities should be carried out and reported to Ministry authorities for planning and programming purposes. If the national health care system is unable to respond to the need for greater budgetary allocations for health care delivery, programs for local financing of the primary health care network in each village would be highly desirable. Pilot efforts in local financing of primary health care are already underway, and these should be carefully evaluated and their results should be taken into consideration by health planners at both the national level and the provincial level.

Impact on the Population's Health Status

Although higher levels of coverage were achieved by the expanded health care delivery system, little impact was observed in terms of the health status of the population or in terms of fertility, beyond trends that were apparently already occurring when the Project began. Some improvements in environmental conditions were observed, particularly for household waste water disposal and water supply, but even these improvements were modest. These findings were not surprising in light of the fact that the services that were emphasized -- medical care and family planning -- would not be expected to have immediate effects on the population's health status. General population health status would be expected more from health promotion and disease prevention services. Nutritional status, for example, might have improved more had their been higher coverage of the target group children with nutritional services. The relatively low levels of coverage of villages with a child nutrition service could not be expected to have great impact on the total target group child population of the province. Likewise although there had been substantial improvement in water supply and waste-water disposal in some areas, the overall improvements were modest. Little changes could be detected in fertility rate decline other than the decline that was already occurring in northern Thailand as a result of already high rates of contraceptive practice.

While these results are not surprising, they do suggest important implications for future health programming. The emphasis on medical care and family planning need not be decreased because it is responding to the perceived needs and the demand for services of the population served. However, building on the new credibility of the health services system which has resulted from the improved coverage of the population with these services, greater emphasis should be placed on high-priority programs with greater potential for impact on the population's health and environmental conditions. The Project documented that Lampang, like most other provinces in Thailand, has a widespread (although not severe) problem of malnutrition among children. High priority programming of nutrition improvement programs -- with the major role being taken by community health volunteers -- should be undertaken. Water supply and waste disposal should also be given high priority, again with the major role being taken by community health volunteers and village committees. The pilot program undertaken in Hang Chat for improved wells for household water supplies had promising results and is being continued in other areas of the province. Pilot programs for nutrition improvement have not been so promising, largely because they were designed to remain dependent on government health service personnel and did not give a major role to community health volunteers. Further study and advances are needed in these programs and in other high-priority programs before the impact on the health status of the population can be seen.

While the general validity of the Lampang approaches to rural health care is substantial, greater efforts are now needed in programming high-priority health promotion and disease prevention activities. Building on the established role and the high performance of community health volunteers in the areas of illness care and family planning service delivery, community health volunteers should be encouraged and technically guided to promote and conduct local nutrition improvement programs, water supply programs, improved sanitation and other health promotion programs. Rural health service personnel should be given the supplies, materials, technical supervision and encouragement to expand immunizations and other disease prevention activities.

The potential of the Lampang system has been realized to a great degree for some important program areas. Attention should now be placed on strengthening programs with greater effect on health status. The evaluation findings and the general experience in Lampang have promising implications for the rural population in Lampang and, more importantly, they also have useful implications for the National Primary Health Care Program in particular, and for the national health care delivery system in general.

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