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ASSESSMENT OF THE

PUBLIC HEALTH SECTOR

IN HONDURAS

(1975 - 1985)

USAID-HONDURAS

June 28, 1980

PREFACE

The Objectives of the Analysis

This assessment was prepared by the USAID/Honduras Health Division as a part of a larger planning project (522-0148) jointly financed and implemented by the Honduran Ministry of Public Health and the USAID. Its content is drawn heavily from the various detailed reports prepared under that project by Honduran health professionals, consultants from the Center for Disease Control, Management Sciences in Health Inc., the United States Public Health Service, INCAP, and the Community Systems Foundation.

The assessment was prepared primarily for use by decision-makers in the Honduran Ministry of Public Health, the Government of Honduras in general, A.I.D., and other development agencies who may wish to evaluate proposals for assistance to health sector programs in Honduras. It focuses therefore on the broad issues of overall policy formation, and is particularly concerned with resource allocations within public health sector programs in Honduras. Detailed guidelines on means to implement the proposed recommendations are beyond the scope of the assessment. The nature of the guidelines needed will depend upon which of the several alternatives considered here is actually undertaken by the GOH in its efforts to provide health care to the Honduran people. In some cases, detailed guidelines can be found in the background studies upon which this report is based. In other cases, more detailed implementation planning is needed.

This is the first attempt to prepare an assessment of the health sector in Honduras, and although voluminous background material was collected and consultants developed an enormous amount of additional information, time constraints and a lack of reliable data often limited the depth of analysis that was actually possible. Constraints and limitations of this type together with the need to focus on the public health sector, which is intended to serve the poor of Honduras, led to only brief consideration of some other elements of what might be considered the total health sector. Elements not considered in depth were the private health care and social security system which serve a small percentage of the total population -- that which is relatively more prosperous.

The objective of this assessment is to draw together and evaluate the detailed observations, conclusions, and analyses which have been prepared; and to present these in a format which would serve to highlight a range of policy choices, investment levels and programmatic measures needed to improve the health status of the Honduran population.

Part One of the report provides a broad description of the health problems in Honduras and the existing efforts to overcome them. The various sections of Part Two deal with what were judged to be the key issues facing the health sector. Since the issues are closely interrelated an attempt has been made to point out the major synergisms, although not all could be included. Part 3. of the Introduction draws general conclusions and points out critical interrelationships between the various topics discussed in Part Two.

HEALTH SECTOR ANALYSIS

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INTRODUCTION

1. Previous Analyses

A review of documents on planning, administration, and management of the health sector was conducted for the Ministry of Health in 1979 by Fortin Lagos y Asociados. That review identified over 1,000 documents which had been published on the health sector, most since 1974. A selected group of 400 of these reports was then collected, abstracted, classified, and indexed to provide a documentary basis for this report and for future reference. None of the large number of documents are sector assessments; most focused in depth on a particular subject.

The Five Year National Development Plans, published in (1974 and 1979), which were developed by the GOH were essentially establish a series of goals and target indicators of health sector programs. However, neither document was designed to discuss alternative planning options, or to identify constraints on sector programs. Annual operational plans to implement the Five Year Plan are largely budgetary documents. The MOH has published several other documents explaining its policy of extension of coverage. However, these documents do not consider alternative policies, nor do they deal in depth with the support components needed to make sure that programs actually work.

In 1972, the Office of International Health (OIH), then in the Department of Health, Education, and Welfare, published a short statistical summary of the health sector in Honduras in its Syncresis series. In the summer of 1979, the OIH staff spent several months in Honduras reviewing more up-to-date information and producing a series of descriptive working documents on the health sector as background papers for use by other consultants for this assessment.

2. Analytic Approach

Because of the wider focus of this assessment, and because it has been prepared by a broad range of technicians, it was necessary at the outset to develop a conceptual framework within which to develop the analysis.

The health sector is complex in several dimensions. It employs a large number of people. The MOH alone employs over 10,000. Health programs take place in a broad range of settings ranging from the sophisticated Teaching Hospital in Tegucigalpa, to village homes where health workers meet with families to help deal with their health problems. In addition to the traditional curative programs, the health sector includes public works and

special programs in such areas as mental health, dental health, occupational health, maternal-child health, family planning, vector control, vaccination programs, food inspection, nutrition, water and sanitation projects, hospital inpatient care, laboratory examinations, clinic outpatient care, home visits, community organization and health education.

Because of the size of the health sector, the various administrative support programs for the direct service programs are massive. In fact they often have a life of their own which is independent of the programs they serve. These programs include planning, supervision, training and in-service education, payroll, development of technical norms, administrative control, purchasing, logistics, transportation, communications, budgeting, accounting, operation of kitchens, and a number of more detailed functions. For assessment purposes, these activities are grouped into certain broad categories which in turn consitute the analytic framework discussed below.

After lengthy discussions between A.I.D. and the GOH and an extensive review of the sector and its descriptive literature, it was obvious that it would not be possible or useful, in the near term, to review all of the various aspects of the health sector in depth. Therefore, priority areas of analysis were established to group the important elements under convenient headings and to discard elements that were not of primary importance, thus permitting the assessment to deal in more depth with the health problems that most affect the poor and that produce the highest levels of morbidity and mortality in Honduras. In order to maintain balance, the priority areas include key health programs (those designed to deal with the health problems of the poor), and also the more important support functions required to implement these programs.

The key program areas selected for analysis included three areas:

Communicable disease control
Environmental Improvement
Personal Health Services (emphasis on primary health care).

The key support areas identified included:

Development of Human Resources.
Management and Administration.
Logistics and Maintenance.
Financing and Budgeting Health Programs.

This approach produced a set of 12 study areas corresponding to the four support functions required for each of the three program areas, as shown in the following illustration:

Support Functions	Program Areas		
	Communicable Disease Control	Environmental Sanitation	Personal Health Care
Human Resource Development			
Management and Administration			
Logistics and Maintenance			
Budgeting and Financing			

The three program areas were selected because they are priority program areas for the MOH, and they are, in fact, central components of any general public health program. Some key areas such as nutrition and human fertility were considered as part of personal health care, in order to broaden the scope of the analysis. Moreover, the analysis of communicable diseases focused on several specific areas including diarrhea, malaria, immuno-preventable diseases, and tuberculosis in order to cover the diseases of greatest significance. As a result, however, we have not considered several kinds of health programs, principally because they do not seem to address the critical needs of large numbers of the rural or urban poor to the degree that other programs do. These include: mental health, occupational health, dental health, food inspection, and chronic disease. The hospital component of basic health care also was given relatively little attention in order to allow the analysis to focus on the basic (primary) health care components of the extension of coverage program.

The analysis of support functions is relatively more complete than the programmatic analyses because it was observed early in the development of the analysis that failure to maintain support functions was a critical factor restraining the efforts of the health sector. However, there were several

areas of support that were treated less completely in the analysis, either because of the magnitude of the task or because of the absence of adequate data in these areas. These include: (1) technical feasibility of improved radio communication; (ii) task analysis of main categories of human resources; (iii) budgetary analysis which links expenditures to functional programs; and (iv) detailed organizational analyses of the Ministry of Health.

From an organization point of view, the analysis focuses primarily upon the Ministry of Health. This focus reflects the Mission's interest in programs directed at providing health services to the poor majority of Honduras. Private, for-profit agencies and the Honduran Social Security Institute were given little attention because their programs do not reach the target group.

It was necessary to analyze support functions such as logistics apart from programs because of the integrated nature of MOH health programs. For example, the logistical system for basic health care and communicable disease control is the same. Moreover, the logistical system functions to some extent as an independent program with its own objectives. However, this analytical separation should not obscure the intimate relationship which actually exists between health programs and support functions.

The objective of the health programs is to improve the overall health status of the Honduran people. Support functions provide the means by which programs can achieve their goal. In other words, support functions properly designed and executed should resolve many constraints facing health programs. Thus the outputs of support functions are the inputs to health programs. This fact is important in comparing the various sections. Most of the analyses begin with a statement of the "Problem". For health programs the "Problem" refers to the health status of the Honduran people. Support functions are directed at improving the health programs themselves. Thus their problems relate to the means of meeting their objectives in ways that resolve the constraints limiting the health programs.

Maintaining this distinction between the objectives of health programs and those of support units helps to clarify the issues discussed below.

Each of the analytical sections in Part Two of this report is organized into four main sections. Generally the analysis begins with a discussion of the "Problem". Which attempts to describe the salient issues and is intended to be descriptive, posing the key questions to be dealt with in the following analysis.

The second section, generally called "The Existing Response", attempts to describe what is being done now by the GOH to confront the stated problem. This provides the starting point for the third section, usually called "The Constraints", which is designed to identify factors which limit the success of existing programs. The focus on these issues should not be understood as criticism of GOH programs. All programs face limitations and constraints. Nevertheless, since the objective is to help the GOH overcome these limitations, it is essential to identify clearly where assistance best can be directed to improve the health of the Honduran people. Identification of these constraints is important to the GOH, which bears the ultimate responsibility for resolving them.

Finally, the fourth section, "Recommendations", contains general ideas on what can be done to overcome the constraints which have been identified. The recommendations are presented in general form. However, in many cases, more detailed recommendations can be found in the background documents prepared especially for this report or in many GOH reports and plans.

3. Summary Conclusions, Constraints, and Recommendations

The assessment was designed neither to cover every area of the health sector nor to analyze all selected areas in depth. As was indicated in the introductory statements, the USAID and the GOH selected areas and topics most in need of review within established Honduran health priorities.

Many conclusions reached during and after the process reinforced the impressions formed beforehand. For example, it was believed that the general health policy of Honduras was appropriate for current conditions and this was borne out by the assessment. Other conclusions reversed previously held opinions. As an example, the assesment called into question the advisability of expanding the number of health facilities along the same lines that have been followed in the recent past. In addition, it helped clarify the importance of some programs and activities and identified new questions which, when answered, will lead to improvement of the health services available to the Honduran population. Initiating and performing the assessment, for many people, meant adding hours onto a full day's work. We at USAID are pleased with the time and effort given by our Honduran counterparts under these conditions. We believe that many found the process useful, leading to greater mutual appreciation. Unequivocally this is true for the USAID, which is impressed more than ever with the national concern for better health and the measures being taken by Honduran health professionals to improve health services.

The most important general observation confirmed by the assessment is that Honduran health policy, as stated in the Five Year Plan, is highly appropriate to present conditions. Its orientation toward people who lack access to health services is commendable. More importantly, the policy has been implemented in many ways. Since 1974 a high priority has been placed on providing water and waste disposal services and basic health care coverage for

all people, emphasizing the poor and particularly mothers and children. Programs to prevent sickness and promote health have been developed with these orientations and have met with considerable success. More importantly, these programs are continuing to be implemented and refined.

It is evident however, that directing the orientation of the health system in this manner did not automatically eliminate or decrease the hospital based health care orientation which has been the basis of health services here and in many countries for so many years; there still is a strong orientation in that direction. Certainly such services are important; but non-hospital services appropriately directed and supported are even more important in the Honduran context. Such orientations often change slowly in a traditional medical community. Yet changes are occurring; budgets and other support have increased in the areas of prevention and promotion, and health service coverage is increasing through the use of non-traditional health workers.

Programs are providing environmental health services and basic health services through the extended coverage program. The policy is excellent although it has not been implemented fully. The effectiveness and efficiency of the structure are handicaped by decision making, programming and implementing procedures that are not yet attuned to the policy. Even where such procedures are well defined, administrative and management practices frequently are inappropriate. Despite this, the desire of the field workers to perform the tasks for which they have been trained is impressive and, for this reason, the situation generally favors improvement.

A major objective of this assessment was to define the nature of constraints or limitations in the areas reviewed and to develop reasonable recommendations which would address the critical problems. In the next sections these constraints and recommendations are consolidated under the titles Policy, Programs, and Technology and Support.

a. Policy Constraints

Implementation of the health policy which has been in effect since 1974 has been inhibited by the configuration of health sector organizations. These organizations, particularly the MOH, came into existence originally to manage vertical programs on a national scale (e.g., malaria eradication, tuberculosis, immunization, and hospital care) not horizontal, integrated programs on a regional basis. Because the overall structure of the MOH did not change to permit it to manage, on a decentralized, integrated basis, either the traditional or the new programs, the assessment indicates that most of them are operating at a level of effectiveness below that of the past or, in the case of new programs, below that which might have been achieved by this time, had a more comprehensive reorganization occurred. Moreover, the sheer growth of the MOH in terms of employees, facilities, programs and budgets would appear to have produced a critical need for reorganization. The resulting organizational constraints which affect policy implementation are as follows:

-- Weak Lines of Authority and Control. National goals in specific health care areas are not well understood or accepted at the field level. Normative offices characteristically lack the ability either to communicate policy to the field or to evaluate performance. Neither do these offices have sufficient influence over the budgetary process to allow them to influence performance or assure conformity with policy. Finally, in some cases, they lack the technical resources needed to develop clear norms and to communicate them to implementing units. These weaknesses affect the performance of nearly all high priority public health programs since the total result is that sanitary regions are implementing policy without a clear set of guidelines. They are exacerbated by a failure to use administrative manuals, which were developed to facilitate planning, budgeting and administration, and the absence of regulations and position descriptions which are needed to establish lines of authority.

-- Communications. There appears to have been a generalized failure to communicate to health professionals and to the public, exactly what the current health policy is and how it is to be translated into budgets and action programs. This has allowed health professionals to continue to think and act as if hospital care were still the highest priority service being provided by the system and has operated to the detriment of the program of extension of coverage and other preventive health programs. It has also deprived the public of information it would need in order to use available services in appropriate ways.

This constraint affects the performance of the entire system and dilutes the effectiveness of rural health posts, auxiliary nurses, and volunteer workers most severely. In particular it affects those programs that have a preventive orientation, e.g., immunization and malaria control.

-- Underutilization of Volunteer Workers. While the policy decision has been made to use volunteer workers to extend the coverage of the health system, a decision to upgrade the skills and motivation of these workers systematically to maximize their utility has not been made. Several important programs suffer as a result, e.g., immunizations, nutrition surveillance, referral and malaria control.

-- Financing. Overall availability of financial resources to the health sector has not been a constraint but it will be in the immediate future. Nearly all programs and facilities, except hospitals and water supply programs, should receive higher relative levels of funding if the health policy is to find expression in effective coverage of the Honduran population. Increased activity in the prevention of disease will require that relatively greater resources be allocated to priority public health problems and diseases at the village level. At the same time, existing hospital facilities, and those already planned and financed, will automatically absorb higher levels of funding. Unless

new construction can be curtailed and strict controls can be placed on operating costs, facilities will draw resources away from higher priority programs and activities.

-- Political. Politicians and doctors find it hard to resist the temptation to build, equip, staff and operate hospitals. This is true of politicians because hospitals are visible, popular structures that provide palpable evidence of their concern for the people. It is true of doctors because hospitals are convenient, familiar places to do what they are trained to do. The argument for increasing hospitals is reinforced by the fact that, by modern standards, Honduras has too few hospital beds. In real terms, however, greater health benefits can be derived from preventive medicine programs and hospital care can be made more efficient thereby. Failure to appreciate this relationship and propensity to yield to the temptation to build hospitals continues to be a constraint.

b. Policy Recommendations

Establish clear lines of authority and responsibility.

The MOH should examine all laws, decrees, regulations and customary procedures that establish authorities and responsibilities in the health sector and make changes in internal regulations or recommend changes in legal authorities as may be necessary to establish clear lines of authority and responsibility within the MOH and between the MOH and other health sector entities.

Establish position descriptions for all MOH personnel.

The MOH should up date the personnel manual describing the authorities, responsibilities and duties of each position in the Ministry as well as the skills, qualifications, education and experience desired for each position. Regulations governing the methods of establishing new positions and for revising existing position descriptions should be issued simultaneously with the manual.

Develop and promulgate policy guidelines.

The National Development Plan provides an adequate foundation upon which to develop policy guidelines to be followed by the sanitary regions. The policy as stated in the Plan should be amplified and interpreted in concrete terms and a series of seminars led by policy level MOH personnel should be held annually in each region to explain policies and identify implementation problems.

Regular performance inspections of the sanitary regions should be conducted by normative office personnel to determine whether major national policy components and specific programs are being implemented as planned.

Provide logistical support to community level health workers on a priority basis as a matter of national health policy.

Take steps to assure that all volunteer workers receive continuing education to assure that they maintain and improve their skills and can accomplish the mission for which they were incorporated into the extension of coverage system.

In the near term curtail all further hospital construction except that for which firm commitments have already been made to communities or contractors. At the same time concentrate resources on making the extension of coverage and referral systems work.

Develop public health professionals.

Basic medical education in Honduras should be oriented more toward non-clinical public health services and preventive medicine which will require skills, inter alia in health systems management and administration, planning, epidemiology and malariology, as well as better trained laboratory technicians, entomologists and other support technicians. In the near term the lack of some of these professionals can be compensated by technical assistance and additional short-term training of existing personnel. In the long run, training in most of these areas should be provided in-country, primarily by the national university.

c. Program and Technology Constraints

While the policy section indicated many general areas in which policy implementation needs to be improved it is also apparent that specific programmatic and technological elements require attention to overcome implementation barriers. The medical cure orientation of the traditional health care system, which was the principal orientation of the Honduran system up to the early 1970's, still is dominant. While increasing attention is being given to prevention of disease, promotion of health and the involvement of Honduran citizens in improving their own health status, the definition and inclusion of such elements into the general service structure is incomplete. Although the transition from a medical cure structure to a more balanced cure/

prevention system is occurring, the best combination for Honduras is not certain; incomplete definition and execution of programmatic and technological components reflect this transition.

The critical constraints which affect programmatic and technological implementation are as follows:

-- Non-existent or poorly implemented technical norms

The failure to implement appropriate technical norms is a theme found in almost every section of this assessment. In many areas, especially in support functions such as maintenance, norms have never been developed. With the system increasing in size, inefficiency and costliness of individual case by case attention in maintenance (and other areas) is increasingly apparent. Equally costly is the failure to implement well designed norms correctly. Numerous examples exist where accepted treatment norms are not followed by health care providers. For example, failure to assure that tuberculosis patients receive their entire treatment may worsen the tuberculosis situation by developing resistant mycobacteria. In addition a lack of coordination among MOH offices developing norms often has resulted in conflicting priorities and/or excessively heavy work loads for the health service provided. A case in point is the auxiliary nurse.

-- Patient Referral

Much of the anticipated effectiveness and efficiency of a regionalized system of graded levels of care could be attained by having the simplest problems handled by lesser trained individuals while more complicated problems are referred to more sophisticated levels of care. Less complex problems also should be referred downward from the higher levels. Downward referral does not exist. Upward referral exists but is of limited effectiveness for various reasons, including the distances involved, fear of the unknown, and frequent incidence of discourteous treatment of patients at higher levels.

Community Participation and Acceptance of Modern Health Practices

Efforts to motivate communities to direct their own resources toward disease prevention and health promotion have had only limited success. However, important initial steps have been taken to implement the community volunteer system and to use community labor and materials in health projects. Unfortunately many practices of the formal health system are neither understood nor accepted by rural dwellers, resulting, for example, in resistance to improved midwifery practices. This results, in part, from the fact that large numbers of health providers have not learned to overcome a sociocultural gap in delivering health services. Education of the population has been limited with one result being that people often are unaware of the services available to them. Formal and voluntary health workers are active in communities but their efforts go unrecognized. Through custom or lack of information, many people are acting in ways which harm their health.

Evaluation

The pursuit of effectiveness, efficiency, expanded coverage and appropriate utilization of health services requires routine and special evaluations of specific medical interventions, service programs, and support efforts in order to identify needed changes. Evaluation frequently is not done or is perfunctory and of limited use. As examples, actual coverage of the immunization program is not known and the effectiveness of volunteer workers has never been evaluated formally.

Service Outreach

The MOH believes that less than 50% of Honaurans use the formal health system. Many do not have access for geographical reasons, others with access choose not to use it. While the MOH does not seek to require that Hondurans use its facilities, it has an obligation to inform citizens that services are available and to make those services as accessible as possible. Active outreach is needed especially to avoid particularly dangerous disease outbreaks.

Laboratories

Insufficient numbers of poorly equipped and inadequately staffed laboratories exist to support the increasing number of services to be provided by the MOH. Inefficent transmission of samples and return of results leads many practicioners to fail to use the labs that do exist. Multiple treatments all too often are administered on the basis of inaccurate diagnoses. Laboratory data is not used in the epidemiological surveillance and analysis process, which means that an important source of information which could influence services is wasted.

Health Data Information

Required health data is not provided by all facilities; vital data reporting is incomplete and untimely. The ability of the MOH to mount special studies and investigations to obtain and analyze better health status information is limited. A poor data base also weakens planning and evaluation.

d. Program and Technology Implementation Recommendations

-- Improve the system for developing and implementing technical norms.

A coordinating body should be constituted and charged with reviewing and revising existing norms for clarity and consistancy, indicating where new norms are needed. The coordinating body should use comments, observations and complaints of the implementing levels as an important source of information. The implementation of new norms developed by appropriate normative offices and the revised norms could proceed more effectively if coordinated technical assistance were provided by the Central Ministry to the regions.

Possible alternatives are a group formed out of the existing normative offices under the Director General or providing additional staff under the Director General for this purpose.

-- Motivate health system providers to develop empathy and understanding of their patients.

Health providers need to understand better the socio-cultural gap which exists between the provider and the patient. In addition they should understand how to deal with the difference in ways that promote improved patient health. Provision of sociological or anthropological expertise in the development of curricula for students in basic or in-service training is essential. Alternatively a closer socio-cultural "fit" between provider and patient could be attempted through improved selection of health provider candidates.

-- Improve referral

Physicians and nurses need to gain a better understaing of the graded system of care and the importance of referral both upward and downward. Both patients and information about patients should be interchanged in this process. Attention must be given to more courteous treatment of patients and, where possible, assistance should be given in transportation.

-- **Strengthen evaluation capability**

Responsibility for evaluation should be established firmly. The planning office staff could be increased and given responsibility for evaluation of all programs and activities, or if the Directorate General Office is expanded evaluation responsbility could be given to that group. In any event methods and techniques of evaluation need to be developed and disseminated.

-- Active case finding and home visits should be emphasized

Facility-based services at the local level should be deemphasized. The auxiliary nurse and, as appropriate, higher level workers should supervise volunteer home visits actively and accompany volunteers on them. Where demand for facility treatment is high, additional staffing may be required. Concurrently the number of tasks performed by one auxiliary nurse should be reduced.

-- The laboratory system should be expanded and its data should be integrated into the surveillance system.

Extension might occur through an increase in the number of laboratories, by improving the system for transmitting specimens and returning results or by putting basic laboratory equipment into CESAMO's without laboratories and having MD's do their own analyses. Further upgrading could be done through adding laboratory technicians in some locations and existing laboratory technicians should have their skills updated.

-- Improve the health data system

Although significant weaknesses remain, PAHO-MOH efforts in the past two or three years have been quite successful and routine data collection is expected to improve. The area of special studies and investigation of health related topics remains weak, however. Training and upgrading of the individuals who should do this, primarily epidemiologists, is needed. In-country training, training abroad and technical assistance are required.

-- Improve mass media education

To support individual programs and the local level provider, radio, TV, pamphlets and poster information programs should be developed. The existing small office in the MOH could be expanded or outside agencies should be contracted to develop such programs.

e. Support Systems Constraints

The assessment that follows shows that the MOH has made substantial financial outlays in support of its policy. It is clear that the MOH has the will to overcome the critical health problems of the Honduran people and has designed many specific health programs that could help accomplish that goal. Numerous personnel have been trained to work in both the formal and the informal systems. It is apparent, however, that the full weight of all of these positive factors cannot be brought to bear until support systems are improved. The following constraints in the area of support systems have far-reaching implications for most health programs and activities, particularly those involving basic health care:

-- Number of Personnel. Hospitals represent the only area of the sector where a shortage of staff is not apparent and where there may be a surplus. (This observation does not speak to the question of whether personnel are trained properly to fill the positions they occupy.) By contrast there are insufficient numbers of people trained to administer vaccinations on the scale required; there are too few vector control personnel; there are two few auxiliary nurses to do the manifold tasks prescribed for them; and there are too few laboratory technicians.

-- Training of Personnel. Realization of health sector goals is frustrated by the scarcity of personnel who are adequately trained for their jobs. Even the attempt to gain knowledge of the Honduran health situation is impeded by the shortage of trained epidemiologists who can produce information and operate an effective vital data system. Training is need for maintenance and logistics personnel, auxiliary nurses and volunteer workers, health instructors, entomologists (in the vector control program), for health planners and administrators and a host of other personnel. There is no system for continuing education or any requirement, even for MD's, to keep current with the state of the art. For the most numerous category of health providers, the auxiliary nurses and volunteer workers, initial training is minimal in relation to the tasks they are expected to perform (10 months for the auxiliary and six days for the volunteer) and continuing education is sorely needed to make them optimally effective.

-- Supervision. Outside the hospitals, supervision is weak for most personnel and programs. Even within the central offices of the MOH there is doubt as to who supervise whom. However, supervision appears to be weakest at the lowest levels of the system, where auxiliaries and volunteers work, because of poor supervisory training and the inconvenience of making long, uncomfortable trips in order to supervise. At this level the lack of supervision (along with weak logistical support and lack of recognition) has contributed to poor motivation of volunteers resulting in a high rate of attrition at that level.

-- Coordination. Although the current health policy has existed for more than five years there is still a poor understanding of it among health workers. This affects coordination and results in malfunctioning of critical elements of the strategy, most notably the system of patient referral from lower to higher echelons and back. The failure to coordinate also affects the budgeting process, the supply system, the maintenance system, the training of human resources and, ultimately, the efficiency and effectiveness of the entire system. Again, failure to communicate policy is a key factor underlying the lack of coordination.

-- Logistics and Maintenance. Many of the key elements of an effective logistics system are present and there seem to be sufficient financial resources for the supplies required by the system. The actual performance of the system is not yet effective, however, and the failure of this system reduces the effectiveness of key health programs, including the extension of coverage systems in which auxiliary nurses and volunteers lack the supplies they need, water supply and environmental sanitation programs which suffer for want of materials, the immunization program and even the hospital care programs. A weak maintenance system abets the logistical system in these respects.

-- Transportation and Per Diem. A shortage of vehicles and other appropriate modes of transportation is at the root of weak supervision, poor logistical support, the non-functioning referral system, the problem-ridden malaria program and several other problems with which it interacts. Lack of per diems to finance travel particularly exacerbates the poor performace in supervision and affects performance in critical disease areas such as TB, which require patient follow-up.

f. Support System Recommendations

-- Continuing education

Nearly all aspects of the assessment point to a need for continuing education both in-country and abroad. The first priority should be to train existing personnel, particularly auxiliaries and volunteers to do their tasks better and to add skills, such as vaccinating, to those they now have. The second priority is to develop specialties, such as epidemiology and public health system management and administration. Formal preparation is required for instructors in both continuing education and formal training programs. Training at all levels should include indoctrination on the health policy of the country, on the functioning of the health system and on management of cultural differences between health providers and clients.

-- **Add personnel**

There are several critical areas of the system which require additional personnel, the most critical being the auxiliary nurse at the level of the rural health post where tasks are too numerous for one person to handle. There is a critical need also for more laboratory technicians and for administrative personnel of a higher calibre to assist in managing the eight sanitary regions. Small numbers of more highly trained people are needed in the logistics and maintenance systems. Significant numbers of personnel are needed in the vector control program and finally, the core management unit of the MOH requires beefing up and reorganization.

-- Improve supervision

Particularly the least-skilled personnel of the system required more intensive supervision by people trained for that job. Supervisors should be given training (especially in the need to be sensitive to the cultural aspects of their jobs), transportation, and adequate per diem allowances.

-- Improve the maintenance and logistics systems.

These two systems should be combined administratively to be more complementary and new facilities are needed, along with transportation in both. Critical to the improvement of these systems is the addition of more highly qualified personnel and the establishment of clear lines of authority and responsiblity. Another key is in-service training, particularly of reginal maintenance personnel and supply system users.

I. OVERVIEW OF HONDURAS AND ITS HEALTH SECTOR

A: GENERAL SETTING OF OVERALL DEVELOPMENT

1. Socioeconomic and Political Factors that Influence the Health Sector

a. Historical Expectations

Traditionally, scientific, curative and preventive medicine has been practiced only in Honduran cities, primarily Tegucigalpa and San Pedro Sula. With the exception of the areas influenced by foreign fruit companies, only in the last two decades was any serious attempt made to bring modern medical services to the people who live in the countryside. In 1958 there were only 21 hospitals in all of Honduras, and 11 of them were private. That same year only 16 health centers, health posts and dispensaries were operated by the state (compared to over 400 at the present time). For most rural Hondurans, folk medicine provided the only available remedies until very recently. Even today, the Minister of Health estimates that only 28% of the people have access to Ministry of Health (MOH) professionals and that 55% have no health services at all (beyond folk medicine), the remainder being covered by social security and private practitioners. The expectations of rural people are not highly developed with regard to modern health services. They have little or no knowledge of what services might be available to them or what value such services may have. Their knowledge of preventive measures they could take to avoid illness is rudimentary because they have had little education and almost no contact with professional health personnel.

Since virtually no rural people ever receive enough education to become health professionals themselves, there are few doctors or nurses with first hand knowledge of the conditions prevailing in rural areas or even marginal urban areas. These professionals have been drawn from a thin upper stratum of urban society and expect to practice in modern hospitals and to enjoy lucrative private practices. The medical school points them in that direction by emphasizing curative skills, virtually ignoring public health and prevention.

Thus, historical inertia has inhibited the implementation of the policy that, since 1974, has called for extension of coverage to the rural and marginal urban areas of the country. Professionals were not opposed to the policy; however, they were, and still remain to a large extent, unable to implement it because their training has not prepared them for it. Moreover, the administrative structure of public health sector institutions is not geared to it.

b. Economic Setting

Overall real GDP growth rates from 1976 through 1979 have been 7% or higher, but have been offset somewhat by the 3.5% annual population growth rate and a moderate rate of inflation which appears to be

accelerating, led by food prices. The economy is built on tropical and sub-tropical agriculture, forestry and some mining. For the last four years manufacturing has grown at a rate of 10% per annum, but agriculture's share of the economy has declined only slightly, from 37.6% in the late 1960's to 32.9% in 1978. Honduras has a debt-led, development oriented economy. Net external debt rose from $230 million in 1974 to $820 million in 1979. Debt service, according to IMF projections, is expected to rise from about 9% of the value of exports (1978) to 15%-16% in the mid-1980's. Growing current account deficits have been offset by large international transfer receipts and net Central Bank foreign exchange reserves have grown steadily to $180 million in 1979.

Despite the strong performance of the economy and fair prospects for continued growth, real wages appear to have declined slightly in recent years and, in fact, the income level of 90% of rural and 64% of the urban population is such that it cannot afford to pay for an adequate diet or private medical services, even if they were accessible. The few that can afford to pay are the educated urban upper class who use private practitioners and clinics with full, up-to-date services. Another 5%-7% are covered by the social security system, a highly subsidized system catering primarily to urban wage earners and their families. The remainder are the clientele of the MOH.

From the fiscal point of view, providing full coverage health care for nearly 3,000,000 widely dispersed people is a formidable task, even under ideal administrative conditions. Though the MOH budget has risen rapidly to try to accommodate the demand, it still spends only about $16.00 each year for each man, woman and child it should serve. This amount is clearly inadequate, despite the fact that health care costs, even in the best private Honduran clinics, are only a fraction of those found in developed countries. Nevertheless, considering the fiscal restraints on the GOH budget, there is an apparent willingness to spend for public health.

c. Political Factors

There are two groups competing for the services of the MOH: the peasant, and the urban poor. The peasant, or campesino, is the majority group in Honduras and, although most campesinos are independent of any organization other than the family, there are strong campesino unions, associations and federations which are increasingly able to demand and receive services from the GOH. A mark of their strength is the agrarian reform which they forced successfully on the GOH in 1972 and 1973.

The urban poor are not well organized but serving this group is a central concern of the MOH, because of the relatively greater visibility of the failure to do so. Major urban hospitals (national hospitals) designed to provide full services, including outpatient services, are the locus of medical attention for the urban poor. The medical staffs of these hospitals are composed largely of young, recent graduates of the University Medical School in Tegucigalpa. Many of them (out of frustration with the conditions under which they work) take advantage of opportunities to expose the inadequacies of

the system to the delight of some politicians and to the chagrin of the Minister of Health. In this way, the Ministry is forced to give attention to the institutions serving the urban clientele.

Political pressures in both urban and rural areas are important driving forces behind the effort to expand coverage, and yet health officials believe that the level of confidence in these services is low. This lack of confidence stems from the tendency of some of the population to reject modern practices in favor of traditional ones, and the unreliability of the services provided. The political imperative thus has come to encompass not only coverage, but quality of coverage.

2. Health and Development

Poor health conditions -- high morbidity and mortality, the high incidence of debilitating diseases such as infantile paralysis, malaria and parasites -- along with inadequate preventive and curative coverage form a strong link in a chain of socioeconomic factors tending to inhibit development efforts in Honduras. Poor health and widespread malnutrition, especially among infants and children, and high fertility rates have been identified as strong causal factor in the failure of Honduras to educate its population, particularly in rural areas. In obvious, if unquantifiable, ways the symbiotic effects of poor health and poor education combine to inhibit development in general by reducing the quality of human resources needed for the process. In all sectors of Honduran development the paucity of human resources for public and private enterprises and services is a common inhibiting factor. This is true in agriculture, health, education, the sciences, the arts, business and the trades. A weak health sector thus contributes to its own weakness by its own poor performance.

B. DEMOGRAPHIC PROFILE

1. Demographic Characteristics

Honduras is the fastest growing country in Latin America. The annual population growth is rate estimated to be around 3.5% (1975-80) as a result of the highest birth rate in Latin America (47 per thousand), a moderate death rate (12 per thousand), and neglible net immigration. Since 1940, the total population has more than tripled, from 1.1 million inhabitants to an estimated 3.7 million in 1980. The main reason for this increase in the growth rate has been a 50% decline in the death rate since 1950. The birth rate declined much less, from 51.3 to 47.1/1000.

The percentage of the population in the 0 to 14 years age group rose from 44.8% to 47.9% between 1950-55 and 1975-80. As a result, the dependency ratio* increased from 89.7 in 1950 to 102.6 in 1978. This indicates that

* Dependency ratio is a simple expression of the relationship between the size of the economically dependent population (i.e. age group 0-14 and 65+) and the economically active group (15-64).

there is just over one dependent for every person in the economically productive years.

Since 1950, significant internal migration has occurred. The movement has been primarily from the South and West, (Valle, Choluteca, Copan, Ocotepeque, Lempira) to the North (Cortes, Atlantida, and Colon). Both major cities have experienced substantial immigration. These general trends have produced an increasing concentration of the population. The thirteen towns with over 10,000 population in 1961 contained only 16.9% of the total population. They now contain 26%. It is estimated that they will contain 32.7% of the population by the year 2000. Under the GOH definition of "urban" in 1961*, 23.2% of the population lived in urban areas in 1961, and 31.4% in 1974. Absolute population densities remain relatively low (in 1980 about 32/Km2.), and the population is redistributing itself to more productive and economically dynamic regions.

The high birth rates in Honduras are the direct product of the very high fertility of Honduran women in most age groups 15-44. The TFR** is higher in the rural areas (8.7) than the urban (5.3), and lowest in the largest urban centers (4.7).There are significant variations. With the population stratified into socioeconomic groups, the TFRs for 1972 were: lower income group, 8.1; lower-middle, 7.9; and upper and upper-middle, 5.8. By Geographic region the rates were Northeast, 8.4; West, 8.2; and South, 8.2. The average number of children that Honduran women bear has remained above seven during the past thirty years, with particularly high rates in the 20-34 age group. However, evidence is appearing that the extreme fertility rates of this group are beginning to decline.

Trends over the 1949-1975 year period in three of the most important mortality indicators - life expectancy, infant mortality and child mortality show the greatest declines in the child (1-5) mortality rate, followed by the infant rate. The yearly increase in life expectancy, starting from a low of 39.9 for males and 42.4 for females in 1949-51, was over one-half of a year per year. Female life expectancy has increased more rapidly, resulting in a female advantage of three and one half years (56.9 to 53.4) in 1973-1975. (See Table 1).

Concerning mortality, important geographic, sex and socioeconomic differentials were found in the 1970-1972 EDEHN survey. The male disadvantage is substantial in infant mortality (139.1 to 92.1). Rural groups are most disadvantaged in the first seven days of life (67.6 to 33.9), 1-4 mortality (22.6 to 10.5) and in life expectancy (50.1 to 61.5). The regional rates were most different in 1-4 mortality with the West (33.7) at a

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* A place was defined as urban in 1961 if it had at least 1,000 persons plus the following services: mail; telegraph or telephone; highway, rail, air or sea link; water, electricity and a primary school

** Total fertility rate (TFR) reflects the number of children a woman will have in her her lifetime based on actual and expected fertility rates surveyed during a given year.

disadvantage as compared to other areas, such as the South (11.9). The 1-4 mortality rates were also much higher in the lower socioeconomic strata (24.7) than in the highest group (7.3). In terms of the crude death rate, those with less than four years of schooling and laborers have over twice the mortality of those in the other categories (See Table 4). The most striking finding relates to mothers' educational levels. Children up to two years of age who had mothers with no schooling were five times as likely to die (171 per thousand) as those whose mothers had ten or more years (35 per thousand). Also of note are the three rural departments with the highest infant mortality rates; Copan (156), Lempira (141), and Colon (141). Crude death rates decrease with increasing education and higher occupation level. (See Table 4).

Concerning migration, between 1961 and 1974 the Northern Departments of Cortes and Colon grew substantially through immigration (52.3 and 50.9% respectively) while most departments of the West (Ocotepeque, La Paz, Intibuca, Valle, Lempira and Copan) lost over 50% of their expected increase to outmigration. About 40% of the people living in the Departments of Cortes, Colon and Atlantida in 1974 were born elsewhere while only 3-4% of the people living in Ocotepeque, Lempira and Intibuca were born elsewhere but almost two-thirds of the people born in Ocotepeque (63.8%) and over one-third for Valle and La Paz no longer live there (See Table 3). Nevertheless these areas of relatively high population density continue to grow.

2. Demographic Projection

Demographic projections are, at best, informed estimates of what may happen. The projection discussed below projects a lower growth than may occur in fact. Nevertheless, the GOH will have difficulty meeting demands for social services even if the population grows at the slightly lower rate projected here.

The most important variable in making population projections for a country such as Honduras is fertility. The best available hypothesis assumes a decline of 32% in the total fertility rate between 1970 and 2000, resulting in an estimated TFR of 5 children per women by the year 2000. This follows a model U.N. life table pattern of high fertility with a somewhat increased decline in the extreme age groups for population configurations similar to that of Honduras. The mortality hypothesis supposes that the tendency observed in the 1950-1975 period will continue at the same pace so that the life expectancy for males and females would rise from 52.4 and 55.9 in 1970-75 to 66.0 and 69.7 in 1975-2000.

It is important to note that even under the most likely hypothesis of a 32% decline in the total fertility rate in this period, the Honduran population will continue to increase rapidly at a little over 3% per year. This is due in part to the fact that the size of the population in reproductive years is growing rapidly as a result of prior rapid population growth.

The population of Honduras will probably reach about seven million by the year 2000. The absolute number of children born each year will

continue to rise from an average of 140,000 per year in the period 1970-1975 to 245,000 per year in the period 1995-2000. The number of deaths would remain relatively constant under the mortality hypothesis of a decline in the crude death rate from 13.8 to 6.3, thus maintaining a yearly average of 40,000. The total fertility rate would fall from 7.4 to 5.0 and life expectancy would rise from 54.1 to 67.8. The age distribution would be modified slightly in that the relative importance of the 0-14 age group would be reduced by 5%, with that amount of increase in the 15-64 age group, and no relative variation in the 65 and over age group. (See Table 2.)

Honduras has two of the most rapidly growing cities in Latin America and one of the lowest levels of urbanization in the hemisphere. San Pedro Sula has been the most rapidly growing city in Honduras since 1950, growing at 9.4 and 7.9% in the 1950-61 and 1961-74 periods, respectively. In these periods Tegucigalpa grew at annual rates of 5.7 and 6.1% respectively, and Choluteca at 4.5 and 6.8%. By the year 2000 Tegucigalpa could be a metropolis of nearly 1,000,000, and San Pedro Sula of 658,000. Two other cities, La Ceiba and El Progreso, probably will pass 100,000 in population by the year 2000, while Choluteca would be approaching that mark. This projected level of growth is higher than the projected growth in services and jobs.

The percentage of the population that is urban is expected to increase from 32.2% in 1975 to 43.8% in 1990, with a high yearly growth rate (between 5.19 and 5.7%), compared with a low and declining rural growth rate of 2.4% in 1975 and 1.7% in 1990. The urban concentration will continue to be weighted toward ages 15 to 30 and the female sex.

C. ETHNIC AND CULTURAL PROFILE

To describe the general ethnic and cultural profile of the country would require far more space than can be devoted to the topic in this analysis. Therefore, the following description pertains to those ethnic and cultural characteristics that influence health status. The description is in summary form, leaving out detailed descriptions of particular health beliefs and behaviors in favor of statements that synthesize relevant details.

1. Ethnic Factors

Honduras is ethnically different from its Central American neighbors because the non-mestizo population constitutes a very small minority. The last time that ethnicity was measured nationwide was in the 1950 Census, when only 5% of the population was identified as non-mestizo. The major non-mestizo population group are Black Caribs (popularly known as Garifuna) in the Mosquitia area of the North Coast. These are descendants of slaves who shipwrecked or escaped in the Mosquitia area in the the 17th and 18th centuries. They speak a dialect which is a mixture of Carib Indian and West African. Their culture is a syncretism of West African elements and Carib Indian adaptations, as distinct from the more purely black people who were relocated to the Bay Islands and the North Coast during the mid-18th century,

after slave rebellions in St. Thomas. These blacks speak a pidgin English which is common in the Caribbean area. A third, much less numerous, ethnic group are the West Indian blacks who were brought to Honduras as laborers in the late 19th and early 20th century.

Four identifiable small Indian minorities are scattered in different parts of Honduras. The Paya, living in Olancho, number no more than two or three thousand. The Sumo, culturally very similar, live in the Departments of Colon and Gracias a Dios inland from the North Coast. The Xicaque, number no more than five hundred, and are found on the Montana de la Flor, a living relic of the past. In the Western highlands of Ocotepeque, Lempira, and Intibuca there are scattered villages of Lenca Indian descendants. This last minority is in the process of transition from identifiable Indian status to mestizo status as in the rest of rural Honduras. They can no longer be distinguished by clothing or language, but their social organization has some distinctive features.

2. Cultural Factors

There are two major distinguishable cultural systems in Honduras that define health in ways that differ significantly from the industrial, Westernized conceptions of health that dominate the public health sector. The predominant rural system is based on an amalgam of Indian and medieval Spanish concepts of health, with some absorption of more recent elements. This is best described by Adams*, who delineates cultural ideas concerning the causes of disease and methods of treatment. Disease is seen to be a result of some "outer condition" which may involve not only natural but supernatural powers, acting in conjunction with a peculiar inner condition of the body. The inner condition may be bodily or psychological weakness, hot or cold physiological state, or some other anatomical/physiological state. Psychological factors are very important, since embarrassment, envy, anger, and fright are thought to be sufficient to bring on diseases of various sorts with very little outside stimulus. The outer condition may be a natural element, or witchcraft, or the action of evil spirits. Traditional curers include the midwife, who also treats children's diseases, the herbalist, and the shaman who can be either a curer or a causal agent of disease. Treatment of diseases relies heavily on herbs and magical devices and rites to remove the basic cause of the disease, which may be an inner or an outer condition or both.

These health beliefs and practices are not static traditions but dynamic belief systems which have evolved, incorporating elements through the centuries since the conquest. It would be a mistake to think that they are scattered vestiges of indigenous beliefs that are on the verge of disappearing because of modernizing influences. On the contrary, their continued existence is assured by their resilience and ability to absorb new elements.

Two widespread examples of disease viewed in the above framework are "aires" and "susto". The concept of aires comes from Greek humoral pathology,

* Adams, Richard W. "Cultural Survey of Central America: Honduras", 1956.

through Spanish medieval medicine, to the New World after the conquest. An aire most commonly affects a person who has undergone undue physical strain, such as lifting a heavy weight. The aire, or humor, enters the body because of weakness or damage caused to a muscle or a joint. It was commonly cured in the past by leeching, although it is now cured most commonly by placing a candle on the part of the body that has the aire and covering it with a glass or bottle that is pressed to the skin until the candle goes out from lack of oxygen; the resultant vacuum is believed to extrude the aire from the body when the container is withdrawn. Susto is an illness which results from a scare, either natural or supernatural, which affects a person who has been debilitated. It is cured by herbs, most commonly a tea made from an herb known as ruda. These two illnesses are mentioned as illustrations of the general concept of disease. Both are caused by external agents working in conjunction with inner conditions. Thus, one gets an aire from the exterior only after an inner weakening. The two illnesses are common in the rural areas of Honduras, and still persist among some urbanites, especially lower-class, recent migrants to the city.

The second distinguishable cultural system is that of the Garifuna. It differs from the above in that illness is considered to be a result of external causes primarily. It is a misfortune which is seldom the fault of the individual involved. Malevolent spirits, jealous dead ancestors, or living enemies are thought to be the cause of illness, general bad luck, and even death. Illness may result from natural forces but more often from the will of someone or something else. Curative measures include, as a consequence, not only medicines to eliminate the symptoms but also magical rites to remove the basic cause of the disease.

The rural mestizo population of Honduras and the Black Caribs have had sufficient contact with public health services to know that their belief system is not in agreement with "modern medicine". They have adopted a number of strategies in the face of these differences: accepting some elements, rejecting others, and modifying some others. In general, the practices that are accepted are those that relate to curing of illnesses that are severe and incapacitating. The traditional practices that are maintained are preventive or relate to chronic diseases. The reason for this is that modern practices are demonstrably effective for incapacitating, severe illnesses. Many chronic ailments have such a strong psychosomatic element that traditional cures are just as effective, or ineffective, as others. The pace of acceptance of more modern practices has been retarded in Honduras by the fact that public health services were introduced first into urban areas and were found almost entirely in urban areas until the late 1960's, so that rural people had little opportunity to observe or evaluate them.

D. OVERVIEW OF HEALTH PROBLEMS

1. General

In terms of general and specific health indicators, Honduras statistically ranks near the bottom among Panama and the Central American

countries. (See Table 5.) The same is true when data from all Latin American countries is compared. Such comparisons of statistical information are sometimes questioned because of differences in methods of data collection and in the completeness of the data. However, treatment of the data is uniform enough to permit general comparative observations. However, trend data over the last two decades, as reported in vital records, indicate that significant health improvements have occurred.

2. Mortality

Information presented in Section B, above, showed that mortality rates are higher: in rural areas; among men; in the Western part of the country; in the lower socioeconomic groups; and in families where mothers have relatively less education.

The primary causes of death in most Honduran age groups are diseases of the respiratory, digestive, and circulatory systems. (See Tables 6 and 8.) The 0-1 age group suffers the greatest percentage of deaths (See Table 7.) Diarrheal disease is the leading cause of death for the country as a whole and for age groups up to 15 years. It and diseases of the heart are two of the five leading causes of death for all age groups. The tables also show that respiratory diseases, measles and whooping cough are important in younger age groups; malnutrition as a cause of death is reported only in the 5-15 age group; complications of pregnancy are a leading cause of death in the 15-44 age group, and in the older age groups, cancers, accidents and degenerative diseases occur more frequently.

A large proportion of all mortality in many of the most important categories is preventable or significantly reducible since the causes are disease agents for which simple, practical prevention methods and treatments exist. (See Section I.7, below, for information related to collection, completeness and accuracy of this data.)

3. Morbidity

Morbidity information is considerably more difficult to obtain and is incomplete and inaccurate. The principal Honduran sources for such information are hospital admission and discharge data and data obtained through required reporting systems, usually communicable disease reporting. Hospital discharge data is biased since usually only those who are especially ill and those who have access are admitted to the hospital, and thus the data fail to reflect both the large number of less serious problems and the serious conditions that go untreated. Most morbidity information is not reported.

In the existing data (see Table 10), discharge information is classified in categories too broad for valid generalizations. Nevertheless, the importance of pregnancy-related admissions is apparent, and it is likely that analysis would reveal a significant level of hospitalization for diseases or conditions which could have been avoided or cured at an earlier stage or which might better have been referred downward in the system for outpatient treatment -- as in the case of normal pregnancies or treatment of diarrhea.

The data on communicable diseases, which practitioners are legally required to report when found, confirms the importance of diarrheal disease. (See Table 11.) In addition, this data gives some idea of the tremendous amount of sickness which does not require hospitalization. From studies done elsewhere, it is inferred that what is reported in Honduras is only a small proportion of that which occurs. It is difficult to be sure of trends since data is available for only five years. The reported decrease in whooping cough is unlikely to have been caused by the vaccination program, and may be attributed to lapses in reporting. (See discussion in section G.2). Coverage is poor and therefore epidemic possibilities continue to exist. The apparent reduction in malaria rates is undoubtedly a function of the deterioration of the reporting system over the past few years. (See section G.3.) An apparent increase has occurred in reported influenza, against which preventive and curative interventions are weak. In general, most categories show little change.

An important associated problem is malnutrition, particularly protein-calorie malnutrition. Studies have been done which indicate that about 75% of the children under five years of age suffer from some degree of malnutrition, and that 30-35% of all children under five have second or third degree malnutrition. This was originally determined in 1966; studies in 1974 and 1975 showed no improvement. While some children with this problem are admitted to the hospital, the number is too small to rank in the main causes of admission. Many, if not most, who are admitted with malnutrition are admitted officially because of a different, usually infectious, disease. The synergism of poor nutrition and infectious disease is well known. Poor nutrition is a major underlying contributor to the significant infectious disease problem.

From the data presented, there is little indication that intestinal parasites cause any significant amount of clinical morbidity because the symptoms caused by these problems are frequently non-specific--something that one lives with. The 1966 nutrition survey showed that a high percentage of all age groups had intestinal parasites, the most common being various forms of intestinal worms (ascaris, trichuris trichiura, and hookworm). Between 23% and 80% of the different age groups had ascaris and/or trichuria while up to 27% had hookworm. Rates were higher in the rural area for all ages. Nevertheless, with the lack of adequate means of diagnosis, i.e., available laboratories with diagnostic capabilities, intestinal parasites have not been considered a serious problem. Ascaris and trichuria are believed to cause or exaggerate malnutrition or malabsoption, hookworm and trichuria help produce anemia. Their presence indicates unsatisfactory environmental and hygienic conditions. Strengthening laboratory diagnostic capability would allow the use of effective, simple treatment for these parasites.

Of the sexually transmitted diseases, syphilis and gonorrhra are by far the most common. Despite under-reporting, limited laboratory diagnosis capability and less than adequate attention given to these problems by health personnel, reporting in 1979 indicated a syphilis rate of 76/100,000 population and a gonorrhea rate of 143/100,000. The rates are higher in the

metropolitan area than in the rural areas. In an attempt to focus more attention on this problem, a 1979 public health decree indicates that free treatment is available to all who need it.

Anemia has been noted to be common among all age groups. The highest prevalence is in women 12-44 years old, especially during and after pregnancy. Pregnancy, poor nutrition and parasites are the most common causes. Rabies in wild aninals and urban dogs and cats is a continual problem. The gradually increasing number of people bitten each year and the increase in rabid animals caught is causing serious concern in the MOH. Leishmaniasis and Chagas disease have both been identified as causes of illness with public health implications. However, their clinical importance, prevalance and geographic distribution are yet to be determined. It appears that they have importance in limited regions.

The Section on disease and vital data reporting gives information related to collection, completeness and accuracy of this data.

E. GOVERNMENT HEALTH POLICY

The constitution of Honduras requires the State to defend the physical, mental and moral health of its people and to establish institutions for that purpose. The Sanitary Code establishes health as a social good for which the State has responsibility, especially as it affects maternal-child health and nutrition. This code is the basis for the establishment of the Ministry of Health and other health sector entities. The MOH is organized generally along the lines established by an internal regulation issued in 1964, although numerous de-facto changes have been made since that time and the regulation has lost much of its meaning. The organization of the MOH also has been modified by subsequent and sometimes conflicting internal regulations and policy decisions. The resulting organization is described in Section F of this assessment.

The Five Year National Development Plan for 1979-1983 sets forth GOH health policy to be implemented by the several health sector institutions. The health policy and strategy and priorities contained in the plan are related closely to the most severe health problems facing Honduras, and have been stated consistently in two successive five-year plans.

The general objective of the policy is to improve health conditions, particularly in rural and marginal urban populations by increasing the health service coverage of these populations, especially for mothers and children, and by concentrating on nutrition, environmental sanitation, communicable diseases and dental care. The policy calls for rationalization of available resources and strengthened planning in support of priority needs. The general approach indicated by the policy is through programs that have multiplying effects in order to reach the largest number of rural and marginal urban people. The process of extension of coverage is to be continued along with the use of the village-based pyramidal system and efforts to involve the

community in the process. The need for improved budgeting and administrative procedures and development of human resources is recognized and included in the strategy.

The highest priority attention in the plan is accorded to environmental sanitation which includes water supply, human waste disposal and other elements such as food inspection. The specific objective in this area is to reduce the morbidity and mortality that now occurs as a result of contamination of water, soil, the atmosphere, and from the existence of vector-borne diseases. The policy is focused largely on the water supply and human waste disposal problem and calls for increasing the percentage of the total population which has access to safe water supplies to 75% and the percentage having access to sanitary human waste disposal facilities to 38% of the rural and 54% of the urban populations by 1983. Achievement of these targets is amply supported by A.I.D. and other donor programs and the GOH budget planned to support the effort will be nearly 2.5 times greater in the 1977-1983 period than in the previous five years, before allowance for inflation.

For vector control the policy is concerned with the central problem of malaria, and calls for a change in the structure of the malaria program from a vertical program to a horizontally integrated program and from an eradication to a control methodology. Financing for the present five-year period is to be doubled over the previous period.

Food quality control consists primarily of inspection of food processing and vending installations. The plan indicates that the miniscule budget of $330,500 for the previous five-year period be increased to $2,239,000 for the current period.

In terms of priority, direct medical attention in hospitals and outpatient facilities occupies second place in the plan. But because this segment covers the operating budgets of hospitals and clinics, it occupies first place in budget allocations. The policy reaffirms the six level pyramidal structure of health services, and calls for increases in hospital services, improvements in the efficiency of resource use, and improving the quality of attention, especially in obstetrics, pediatrics and mental health.

An increase in the number of hospital beds by 1,717 to a total of 5,318 is a target of the plan, which takes the number of beds available in 1977 as the base. It is estimated that about 800 of the new beds are already in place. The total increase would improve the availability of beds from the present 1.09 to 1.3 per 1,000 population. However, realization of the total goal depends in large measure on the willingness of international donors to fund the remaining hospital construction. Such funding has not yet materialized. The Plan foresees hospital care budgets increasing rapidly from $17.1 million in 1979 to $45.1 million in 1983, but this increase presupposes the addition of new facilities and is not expected to be necessary in its entirety.

Related to the operation of hospitals and clinics is outpatient care provided at those installations and by volunteer health personnel. The activity emphasizes decreasing communicable diseases, reducing infant morbidity and mortality, attention to mothers and development of dental services. The policy calls for expansion of this type of care at the level of the Health Centers with Physicians (CESAMO) and Health Posts with Auxiliary Nurses (CESAR), the two lower levels of the health pyramid, and at the community volunteer level. The number of rural Health Posts is to grow from the present 379 to 462 and the number of Health Centers is to rise from 76 to 88 by 1983. This expansion is already financed through an IDB loan. At these two levels it is expected that 48.6% of the outpatient care will be performed. Another 19.6% of this care would be handled at the volunteer level by empirical midwives and health guardians. The number of these volunteers is to be expanded to 6,000 and 3,600, respectively, by 1983. Funding for outpatient activities is planned to increase from $8.1 million in 1979 to 14.5 million in 1983. The increase could be somewhat greater with the addition of a prospective A.I.D. loan emphasizing this activity and requiring GOH counterpart funding.

The policy contained in the plan also embraces the social security system and the production of pharmaceuticals. The social security system is self-contained, partially self-financed, and concerned with only a small segment of relatively prosperous people. It is not treated in detail here.

Lack of appropriate medicines in the system has long been a political issue attracting adverse publicity and contributing to low levels of confidence in the health system. Pharmaceutical production policy is aimed at achieving optimum capacity to supply the total health system from domestic sources, importing only raw materials to be processed in PANI laboratories. The national plan details production goals and provides for investments in raw materials, equipment and human resources to meet the goals.

In general, the health policy and plan are appropriate for the present circumstances, level of development and limited resources available to Honduras. They are fully consistent with the guidelines of the World Health Organization and with A.I.D.'s own legislation.

F. OVERVIEW OF HEALTH SECTOR PROGRAMS

The intent of this section is to describe the organizational structure of the agencies which provide health care in Honduras. The agencies to be discussed are the Ministry of Health (MOH), the National Water and Sewage Authority (SANAA), the Superior Council for Economic Planning (CONSUPLANE), the Honduran Social Security Institute (IHSS), the National Foundation for Infants (PANI), the National Autonomous University (UNAH), the Honduran private for profit sector including private voluntary organizations, and various international agencies.

1. Ministry of Health (MOH)

The MOH has three Directorates - Personal Attention, Environmental Attention, and Administration; and is organized to design and implement programs through central, regional and sub-regional entities. The central Ministry is primarily responsible for policy making, normative and administrative support functions. It also provides technical supervision and support of the health activities of the regions. The regions and their sub-units function as the executors of centrally designed health programs.

The Minister and Vice Minister of Health are most concerned with policy direction while the General Director of Health is the official who provides the most direct, continuous programmatic leadership to the central and regional units.

An analysis of the organization of the MOH was performed by the Division of Planning and printed in a 1978 publication, Desarrollo de la Estructura de la Organizacion en el Proceso de Extension de Cobertura. It indicated that there are four major policy-related levels involved in designing, guiding, coordinating and regulating the provision of health care to the people. These are the central, regional, area and operational, or institutional, levels. The central level makes policy and performs administrative and normative functions, issues national program regulations and administers the personnel, logistics, maintenance, training and financial systems. The regional level in turn interprets the central level health policy, formulates operational field programs, and then supervises and evaluates those programs. Regional programs are executed at the area level. Hospitals at the regional and area levels are not truly under the direction of the regional and area directors, but develop their own budgets independently and carry out their functions directly under the guidance of the Director General of Health. In practice, the regional offices are physically associated with the main regional hospital and informal coordination does occur.

Health services are grouped administratively into seven geographical districts and one metropolitan area (Tegucigalpa), called sanitary regions. The central offices of the MOH provide administrative services and do technical planning in order to support and direct the regions. Each regional administrative office directs several areas (30 in the entire country) where numerous decentralized health services are provided. The decentralization of health facilities and health services was designed to make the regional and local service units more effective in the delivery of health care.

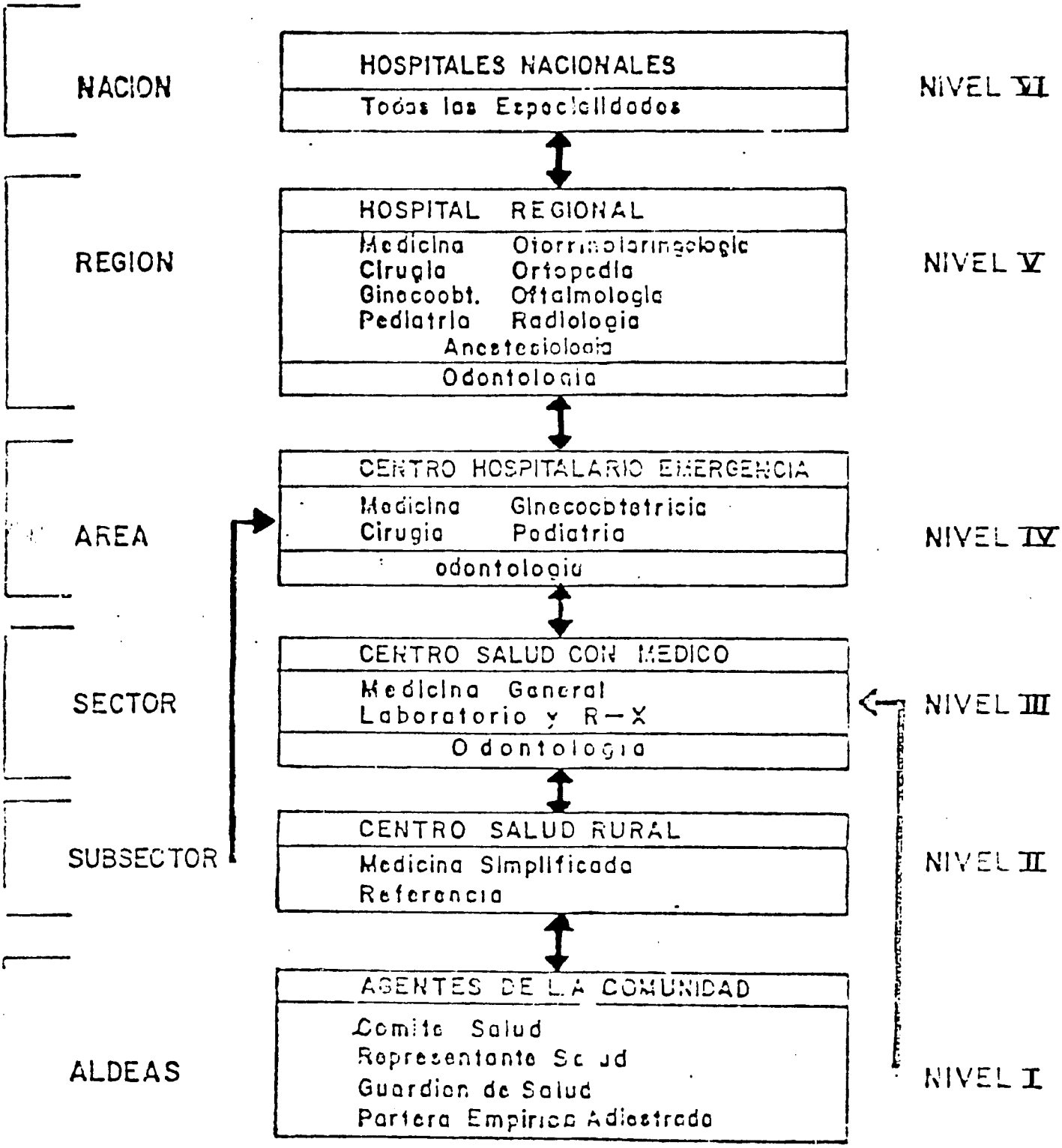
The Health service network is comprised of the following components (see Diagram 1): Level 6 - the National level represented by the three national hospitals in Tegucigalpa and the central MOH offices; Level 5 - the regional level represented by the eight sanitary regional offices and six regional hospitals; Level 4 - the area level represented by area officials and seven area hospitals, called Emergency Hospitals, or CHE's; Level 3 - the sector level represented by 76 Health Centers with a Physician called CESAMO's; Level 2 - the sub-sector level represented by 379 Rural Health

DIAGRAM No. 1

REGIONALIZACION DE LOS SERVICIOS DE SALUD

MINISTERIO DE SALUD PUBLICA. 1978

HONDURAS C. A.



Centers, called CESAR's and staffed by auxiliary nurses; and Level 1 - the community level represented by community volunteers. As can be seen from Diagram No. 1, the higher the level, the wider is the variety of more complex services provided. The regionalization scheme of the MOH services requires referral, administrative and supervisory networks between the six levels of facilities and three levels of administration.

The GOH health sector policy as set forth in the 1979-83 Health Plan is to promote the extension of health service coverage in rural areas without detracting from the services provided in the marginal urban areas. The MOH is attempting to carry out that policy of service delivery by implementing the program of the Directorates as follows:

a. Personal Attention

The MOH Directorate of Personal Attention is composed of eight divisions: Hospitals, Maternal-Child, Dental, Laboratories, Nursing, Health Education, Epidemology and Human Resources. The programs and norms designed at this level are implemented through services of the region and area, i.e., hospital based health care and ambulatory health care provided by the CESAR's and CESAMO's and community health workers in the countryside.

(1) Hospital Health Care (National, Regional and Area Hospitals)

(i) National Hospitals -- The three major national hospitals play a significant role in delivery of health care in Honduras. These hospitals together had 1,866 beds in 1977 and form the most highly specialized link in the regionalized system of service delivery. In 1977 there were five national hospitals in Tegucigalpa including San Felipe, Materno Infantil, Instituto Nacional del Torax, Psiquiatrico de Agudos Mario Mendoza and Psiquiatrico de Cronicos Santa Rosita. The consolidation of Materno-Infantil, San Felipe and Psiquiatrico de Agudos Mario Mendoza to form the Teaching Hospital in 1978 has provided a medical center for developing professional medical personnel. Theoretically, the national hospitals serve as the final point of patient referral by receiving patients referred from other MOH public health facilities. Although the provision of adequate hospital care has received high priority, the MOH has also maintained that the rational use of expensive hospital care depends on the development of basic level care. The hospitals' role is to support, technically and administratively, the community health efforts.

Administratively, the Teaching Hospital is comprised of:

-- Director General's Office,
-- Advisory Committees to the Director General,
-- Coordinating Committees to the Director General's Office,
-- Internal Auditor's Office, and

-- Executive Departments including administration, medical, Hospital San Felipe, Hospital Psiquiatrico de Agudos, and the 12 medical divisions (surgery, pediatrics, pathology, internal medicine, obstetrics-gynecology, psychiatry, radiology, nursing, anesthesiology and physical therapy/rehabilitation).

The administrative structure and range of services available at the other two national hospitals more or less approximate those provided by the Teaching Hospital but are specialized in their respective areas of pulmonary and psychiatric disease.

(ii) Regional Hospitals. -- In 1978 there were six public regional hospitals in the municipalities of Comayagua, San Pedro Sula, Santa Rosa, La Ceiba, Juticalpa, and Cholutecu. The IHSS in 1978 had two regional hospitals, one in San Pedro Sula and one in Tegucigalpa. The public regional hospitals serve as the referral point for patients from the CHE's and CESAMO's. The public regional hospitals also refer more complex cases to the national hospitals. The IHSS regional hospitals represent the highest point of health care within the IHSS network of services, receiving patients referred from peripherial IHSS clinics. The eight regional hospitals together had 1,350 beds in 1977.

The public regional hospitals offer such services as obstetrics-gynecology, pediatrics, surgery, internal medicine, ophtalmology, orthopedics, otolaryngology, and in some cases psychiatry. The IHSS regional hospitals currently offer similar diagnostic and treatment services. These hospitals also offer outpatient services.

The regional level auxiliary nurses, general service workers and general practitioners comprise the greatest number of workers. As a point of interest, it should be noted that the IHSS regional hospitals employ paramedics and nurse auxiliaries in more extended roles than the MOH's regional hospitals.

(iii) Area Hospitals. -- In 1977 there were seven MOH area hospitals (CHE's) with an average of 55 beds each located in the municipalities of Danli, Tela, Santa Barbara, Tocoa, Yoro, Trujillo and Sonaguera. CHE's are capable of providing obstetrical-gynecological, surgical, pediatric and internal medicine services. They serve as the center of patient referral from the lower levels, mainly the CESAMO's. CHE's function as hospitals for communities with less than 100,000 persons, and are regarded as acute care facilities where the average length of stay is about three days. The CHE's, in addition to their personal health care services, provide preventive services such as health education, nutrition education, and vaccinations.

Planning figures from 1974 indicate that the average CHE has two registered nurses and two or three doctors. In 1978 an average of 31 auxiliary nurses worked in each CHE.

(2) Primary Personal Health Care (CESAMO's and CESAR's)

(i) Health Centers with Physicians (CESAMO's). In 1978 there were 76 CESAMO's of which 57 had only one physician. Altogether there were 209 physicians in CESAMO's. The 19 largest CESAMO's had a total of 152 physicians between them, or about eight to each of those units. There is at least one auxiliary nurse in each CESAMO. In addition, almost every CESAMO has a small diagnostic lab and a lab technician who can perform such tests as simple blood counts, urine analyses, and blood sugar. The CESAMO has preventive and curative functions which are outlined below, and is generally designed to serve about 10,000 people although this is not always feasible. The CESAMO also has various administrative, organizational and planning responsibilities at the local level. They include:

-- organizing and coordinating of community health activities;
-- medical consultations;
-- referral to CHE's;
-- prenatal care;
-- childbirth care;
-- supervision of empirical midwives;
-- family planning services;
-- infant and child care (weaning, pre-school, newborn);
-- nutrition surveillance;
-- dental health education and dental care;
-- immunizations;
-- diarrhea prevention and treatment;
-- tuberculosis detection and control;
-- basic environmental sanitation;
-- malaria/aedes aegypti surveillance;
-- administration and supervision of CESAMO personnel;
-- program evaluation and planning;
-- teaching of CESAMO personnel;
-- maintenance of an information system; and
-- material and logistical support of CESAMO activities.

(ii) Rural Health Centers (CESAR's). The MOH's program for extension of basic health services is centered around the CESAR which links the formal health system (the health centers and hospitals) discussed above with the informal system of community volunteers. The 379 CESAR's in Honduras in 1978 provided basic health care and served as the resource facility for the community health volunteers.

The functions of the CESAR are to:

-- provide rural health care; which includes simple medical care, health education, vaccinations, and family planning information;
-- expand basic sanitation education;
-- provide special attention to the mother and child;

-- participate in community development and facilitate decision-making;
-- contribute to agricultural development as it relates to health; and
-- facilitate patient referral to other levels of health care.

According to the original 1974 CESAR design, the CESAR was to provide health care to communities of less than 3,000 persons. The CESAR facility is small but adaptable to the setting of the local rural environment. The land for the CESAR is donated by the community and the community pays up to 50% of the construction costs in the form of either labor or construction materials.

CESAR's are staffed by an auxiliary nurse who is responsible for providing both clinical and preventive services and for overseeing and supplying the volunteers working in surrounding villages. Community work involves supervising or otherwise dealing with the following health personnel: the health promoter, the health representative, the guardian, the empirical midwife, and the auxiliary for vector control (ACV).

The health promoter is the key person in initiating community participation in the delivery of health services and implementing community water and human waste disposal service programs. He is an MOH employee assigned to a CESAR who seeks out community leaders and organizes health committees consisting of three representatives from the communities surrounding the CESAR. After that, one volunteer health representative is elected from each community surrounding the CESAR. The representatives are then trained by the health promoter and the auxiliary nurse in a six-day course covering motivation technologies and organization of the community. After training, health representatives work closely with the health promoter in the promotion of environmental sanitation activities such as latrine and well building. In addition, the health representative also is responsible for promoting community gardens and home improvements.

One of three representative's first duties is to encourage his community to elect a health guardian. Guardians are unpaid volunteers who provide services directly to individuals. Their training enables them to treat simple diarrhea, colds, and parasites and to provide first aid if required. They are also trained to give well-baby advice, to provide health and nutrition education and to promote preventive health measures such as boiling water. The guardian is provided with basic medicines such as aspirin, antidiarrhetics, antispasmodics, expectorants, and antiparasitics along with alcohol and merthiolate for the treatment of wounds. The guardian is also trained to refer complicated cases to the auxiliary nurse.

Both the guardian and the health representative are recruited to help during vaccination campaigns by alerting their communities when the vaccinators will arrive. With the change from vaccination campaigns to having vaccination provided by the CESAR auxiliary nurse, the responsibilities of the guardian have changed also to encouraging families to bring their children to the CESAR for vaccination. In one region of the

country guardians are being trained to vaccinate against polio, since this vaccine is an oral one and requires only that drops be placed in the mouth of the recipient. This modality has not been adopted by the whole country, but is an example of how the services of the guardian can be extended. (See also Section G-2.)

Finally the empirical midwife is probably the most active person in the informal health system. In an effort to exploit already existing resources, the MOH decided to extend MCH services by training empirical midwives who already practice midwifery. The short training program for midwives consists of an initial phase of training followed by monthly meetings with the auxiliary nurse. The training is designed to upgrade their skills and, by formalizing their link with the health center, to encourage midwives to report all their activities, including pre-natal care, attention at birth, post-natal care, referral to family planning and well-baby activities which are available at some MOH facilities.

The monthly meetings are to be held for the health committees and all community volunteers according to a schedule agreed upon by all involved. Generally the meetings are held towards the end of the month so that all activity in the communities can be reported in the monthly CESAR report. Topics of general interest are discussed with the group as a whole, and then the representantives meet with the health promoter, and the guardians and midwives meet with the auxiliary nurse. All three volunteers are supplied with the necessary material for their work, and the representative gets help in getting his supplies (such as cement) back to his community.

b. Environmental Attention

The Directorate of Environmental Attention has Divisions of Basic Sanitation, Vector Control and Food Control. As with the Directorate of Personal Attention, the Central MOH offices of this Directorate are normative and provide supervision and technical assistance to the region and local sanitation employees. The Division of Food Control and, to a lesser extent, the Division of Vector Control still retain elements of their previous vertical program structure. The activities of the Directorate include the provision of water supplies in rural villages with less than 500 inhabitants; the provision of human waste disposal systems in rural villages; control of disease vectors (principally the aedes aegypti vector of dengue and the anopheles vector of malaria); and maintenance of food sanitation through services such as slaughterhouse and restaurant inspection. The regional offices have senior promoters for the water and sewage program and the vector control program. Lower level field workers (Health Promotors and ACV's) function at the area/CESAR level.

c. Support Services.

Support services are managed within the MOH by the Directorate of Administrative Services which include the entities responsible for accounting, procurement, maintenance and transportation. See Section I for detailed discussions of each of these areas--their programs, and their problems.

2. Related Health Sector Agencies

a. National Water Sewage Authority (SANAA)

SANAA is an autonomous public service entity, created in 1961, with its own legal identity and capital structure. It is governed by a Board of Directors made up of the Minister of Health, who chairs the Board, the Minister of Natural Resources, one representative from the National Engineering Association, one Medical Doctor from the UNAH, and one representative of the municipalities, designated by the Ministry of Government. It also has a manager and a sub-manager, both of whom are named by the Board of Directors.

The objective of SANAA is to promote the development of safe water supply systems and storm drainage and sewage systems throughout the country, for which purpose it must carry out studies, construction, operation, maintainance and administration of all water projects and drainage works in Honduras other than these provided by the Directorate of Environmental Attention, SANAA and the Division of Environmental Sanitation of the MOH of are the two institutions charged with water and environmental sanitation programs and activities in the country.

The SANAA consists of five major components: (1) The management component, with various staff offices, which include legal counsel, auditing and a number of advisors; (2) the Administrative Directorate which includes such departments as Accounting, Personnel, Transportation and the like; (3) the Department of Engineering which handles design and construction of both urban and rural facilities; (4) the Department of Operations and Maintenance for the Metropolitan (Central) District; and (5) the Department of Operations and Maintenance for regional facilities. There are also a number of special units including an office responsible for a Master Water and Sewer Plan for the Central District, and an office for projects financed by the Interamerican Development Bank (IDB). SANAA is a large institution, with approximately 900 personnel. Of these, about 500 are located in Tegucigalpa and work on the water and sewer systems in the Central District. About 200 other personnel have been assigned to the recently established regional offices. (See Diagram No. 3.)

b. Superior Council for Economic Planning (CONSUPLANE).

CONSUPLANE is an advisory and consulting body which is responsible to the Council of Ministers and the Chief of State for, among other things, the formulation of economic development plans for the country. The plans are prepared by the Technical Secretariat of CONSUPLANE, which is an organization of about 300 people under the direction of an Executive Secretary. The organizational structure of CONSUPLANE is quite complex. The principal units are a series of planning directorates, one of which, the Directorate of Planning in the Social Sector, contains a Department of Health.

The Department of Health is responsible for coordination of, and participation in, the formulation of annual operating plans and budgets of the other institutions in the sector. Other functions of the Department

include evaluation of operating plan implementation, and preparation of periodic reports. Finally, the Department also has responsibility for identifying possible sources of technical assistance to the sector and for helping to secure such assistance, if necessary.

c. Honduran Social Security Institute (IHSS).

The IHSS is an autonomous institution established in 1959, for the following basic objectives: (1) to prevent or minimize the incidence of work accidents or illness induced by work; (2) to protect the health of the Honduran worker; and (3) to provide severance benefits established under law and in general, reduce the number of work days lost to illness or injury.

In order to meet the aforementioned objectives, the IHSS operates three separate programs; (1) provision of medical attention; (2) administration of pension and severance pay systems; and (3) supervision of occupational safety and hygiene systems.

There are essentially three main IHSS components: (1) the Directorate General, which is responsible to a Board of Directors and has a number of staff offices (legal, planning and so forth); the Central Directorate which includes a number of administrative and accounting offices and a Directorate of Medicine, which manages the Tegucigalpa hospital, its peripheral clinics and assorted medical service offices; and a Regional Directorate which manages the San Pedro Sula hospital, its clinics and a series of regional, administrative offices.

Since it is essentially an insurance system, IHSS deals with people who can afford to make payments out of their salaries (along with matching funds from employers--both private and public) into the social security fund. While contributions are small by U.S. standards (2.5% of a worker's salary, up to L 600.00, and 5% of the salary in matching funds from the employer), the average unskilled worker's income is so low as to preclude participation in the system. Consequently, the IHSS system covers only 5%-7% of the population and 12% of the economically active population with health services that are of relatively high quality.

d. National Foundation for Infants (PANI)

The PANI is autonomous institution, created to benefit the physical, mental and social well-being of mothers and small children. PANI is supported by the proceeds of a pair of national lottery systems, and has a series of programs designed to meet its particular objectives. They include programs in health, education, employment generation, community assistance and social improvement, and assistance to certain schools and non-profit organizations. As adjuncts to some of its programs, PANI administers a food production plant which turns out food items to be used in its infant and child feeding programs and those of the National Board for Social Welfare (JNBS), and a small factory which produces school materials such as notebooks, pencils, and chairs. Both of the plants also provide employment for indigent

mothers whose children participate in its child-feeding program. Efforts in education include construction of classrooms, and provision of school materials to children.

Another PANI program is the Pharmaceutical Production Laboratory which produces about 50 different pharmaceutical items including pills, capsules, and syrups. The Lab was established by the GOH and PANI in an effort to reduce costs of certain pharmaceuticals to the general public. Most (about 90%) of its products go to the MOH with the rest being sold to the IHSS or distributed through PANI's own health programs.

As might be expected, PANI's organization is designed along the lines of its programs: an Executive Council chaired by the Minister of Health; an Executive Directorship with assorted staff offices, incuding planning, auditing and legal advisor; and six divisions or departments, one each for personnel, basic (administrative) services, the national lottery, finance, project development and implementation and the Pharmaceutical Division.

e. National Autonomous University (UNAH).

The UNAH has separate schools for medicine, dentistry and nursing. The School of Medicine is discussed in a number of sections in this document; accordingly, it will not be discussed here. As was mentioned earlier, dentistry is not considered within the Scope of the Assessment, so it is not discussed.

The Nursing School operates with its own staff of 14 people (12 fulltime, five with graduate degrees), and offers the Honduran equivalent as a Bachelor of Science Degree in Nursing (five year course, including a year of social service and a year of research). The school currently has 284 students studying a curriculum which includes nursing theory, practice, materials and child care, administration and communication.

3. The Honduran, Private, For-Profit Sector

Private sector health services and expenditures are thought to be substantial, but no data exist to indicate the actual level. Private hospitals, laboratories, physicians, nurses, and dentists are concentrated in Tegucigalpa and San Pedro Sula where they serve about 9% of the population, mainly the upper classes, though many private doctors also work part time with IHSS or the MOH. Such services are oriented almost exclusively toward diagnosis and treatment of disease, (rather than prevention) and are available basically in urban areas for those who can pay. As such, they contribute almost nothing to improving the health status of poor Hondurans.

Pharmacists, druggists, and midwives are distributed much more widely and serve a large portion of the urban and rural poor. Midwives, for example, attend about 80% of Honduran births. The sale of drugs is largely uncontrolled except for those containing narcotics and druggists are not

trained in diagnostics. Most midwives are still untrained in sanitary procedures. Their services therefore are viewed as incomplete.

4. Private Voluntary Organizations (PVO's)

PVO activity has increased markedly over the past 20 years. Before 1960, there were 17 PVO's in country, 11 of which were participating in health or nutrition programs at that time. By 1980, there were 68 PVO's working in health or nutrition programs, making a substantial contribution to health in Honduras through their health nutrition programs.*

The impact of health related PVO's in Honduras is indicated to some extent by their contributions of manpower, facilities and budget to the health sector. Detailed information is available on 55 of the known PVO's. They provide at least 42 graduate nurses, 31 MD's, 4 nutritionists, and 64 auxiliary nurses. The total staff of these 55 agencies is over 650 people. The same agencies operate 45 outpatient clinics, and 4 hospitals. The clinics provide an average of 445 consultations per month each. The hospitals are widely recognized for an exceptionally high standard of medical care. Each of the hospitals and many other PVO programs train health workers. Collectively, the 55 agencies contribute well over $8,000,000 per year to health programs in Honduras, mostly from foreign sources. Ten of these same agencies currently support 53 full time and 32 part time workers in the MOH. In addition, almost $1,860,000 in materials (food, medical equipment and so on) and cash are being provided directly to the MOH by PVO's each year.

In general, it appears that some of the PVO programs may be too sophisticated (too costly) for as Honduras' development needs. To some extent this is indicated by PVO's extensive use of MD's and nurses in curative programs, and a comparatively low use of paramedical personnel. There is also a notable lack of coordination and communication among PVO's in Honduras, many of which use appropriate technology, or have educational materials or other information which might be put to good use in other parts of the country by other agencies, both public and private.

5. Other Donors

In general, the level of participation in the health sector by bilateral and multilateral donors is comparatively low in relation to donor activity in other sectors. The following represents a compilation of known activities, being financed by other donors. It is interesting to note that, with the exception of PAHO, most international funds are allocated either to physical plant construction, food delivery programs or the establishment of latrines, wells and potable water systems.

-- PAHO, the Pan American Health Organization, has a long history of association with the health sector in Honduras. Its approach has been

* These are preliminary results from an USAID funded study of PVO's with health and nutrition programs in Honduras. The MOH contributed guidance and support to the study.

reactive, rather than comprehensive, and has tended to relate to specific micro-problems by providing short-term technical assistance as requested. Currently, PAHO is working on selected problems in epidemiology, maternal-infant care, direct medical care and simple medicines, malaria epidemiology, administration, medical laboratories, human resource development, zoonosis and nutrition. None of these activities involve financing to any substantial degree. Instead, studies and training are the principal PAHO contributions.

-- The Inter-American Development Bank (IDB) provided $4.7 million in loan funds for construction of the national teaching hospital (1975-1978). The IDB presently is providing loan funds in three areas: (1) $14 million to the MOH to improve existing health care facilities and to build 10 new hospitals and 235 rural health posts (1976-81); (2) $12 million to SANAA for urban water systems in El Progreso, La Ceiba, and Puerto Cortes (1978-81); and (3) $4.5 million to SANAA for urban water systems in Tegucigalpa (1978-81). The IDB and the SANAA recently signed another loan of $7.5 million for rural aqueducts for 150-180 rural towns in the size range of 200 to 2,000 persons each, for execution in 1980-1983.

-- The Cooperative for American Relief Everywhere, Inc. (CARE) is making health and nutrition its priority program area in Honduras. In 1979 CARE donated $200,000 for rural water programs with SANAA. Projected inputs to SANAA for 1980-82 are $1.2 million. CARE also distributes PL-480 Title II food supplements (1980 commodity value of $2,300,000), provides visiting medical staff, and promotes improved sanitary conditions through housing programs.

-- Various international agencies including the Swiss Government, Foster Parents' Plan and the United Nations International Childrens Emergency Fund (UNICEF) contributed about $1.0 million in grants to finance small rural water systems through the Programa Sanitario Basico (PROSABA) of the Ministry of Health, in the period 1977-1980.

-- The United Nations Development Program (UNDP) has recently developed a project to assist demographic efforts, census and vital records. Funds from this project ($1.0 million) passed through the United Nations Fund for Population Activities (UNFPA) are being used to support and extend Maternal Child Services of the MOH (1979-81).

-- The European Economic Community (EEC) is negotiating a grant of $4.0 million with the MOH for latrines, wells, and water systems to cover 90% of the population of Olancho (Health Region 7) during the period 1980-82. Since 1975, after Hurricane Fifi, the EEC has donated food commodities including wheat, rice, powdered milk and vegetable oil. Commodities are handled rather like those of the PL-480 program. They are either sold to generate revenue for development uses or donated through various feeding programs.

-- The West German Government began a Food for Work (FFW) Program in November 1975 as a temporary response to Hurricane Fifi. Since then, the program has been redesigned to support the GOH National Development Plan,

emphasizing employment and income generating projects in order to secure the basic food needs for marginal Honduran families. Total program value in 1978 was $1,861,000.

-- The Catholic Relief Services (CRS) administers two nutrition programs--a Maternal Child Health (MCH) supplementary feeding program and a FFW program that focus primarily on rural community development efforts. In 1980 an estimated $900,000 in PL-480 Title II commodities will be provided.

-- The World Food Program (WFP) is administering a four-year $5,561,000 FFW program for rural development of self-help projects, primarily in Southwestern Honduras.

-- The Canadian International Development Agency (CIDA) is assisting the MOH in the development of a continuing health education program. The amount of project funds (as far as can be determined) is $80,000.

II. PRIORITY AREAS OF ANALYSIS

G. SELECTED HEALTH PROBLEMS AND DISEASES

1. Diarrhea

a. The Problem

In Honduras, diarrhetic disease is a principal cause of morbidity and diarrhetic dehydration is an important contributor to the high rate of infant mortality. During 1978, the MOH recorded 110,393 cases of diarrhea (excluding amoebic and bacillary dysentery) giving an incidence of 3,210 cases per 100,000 population. The magnitude of this problem is actually much greater since only a tiny fraction of it is ever recorded.

Diarrhetic diseases represent one of the first five causes of mortality in all age groups. In 1977 diarrhea caused 12.4% of all deaths and 24.4% of infant deaths. Among the deaths due to diarrhea, 77% occured in children under five years of age. The number of deaths per month in the population showed a peak which coincides with the major peak of observed diarrhea.

Among children, diarrhetic disease is the main cause of hospitalization, and is a leading cause of outpatient visits. Cases of diarrhea occur during the entire year but there is a marked seasonal variation with greater incidence occuring during the rainy season (June, July and August) and during the cold months of October, November and December. A similar pattern has been seen in some other less-developed countries, and it has been observed in microbiological studies that the larger rainy season peak is caused by bacterial pathogens, while the cold season peak is caused by rotavirus. Undertaking studies and diagnosis through increased use of laboratory analyses in Honduras would assist in obtaining a clearer picture of the disease situation.

There is an intimate relationship between infant diarrhea and malnutrition. Repeated episodes of diarrhea lead to malnutrition, and malnutrition predisposes its victim to an increase in the incidence of diarrhea with greater severity and mortality. A classic study of the relation of nutrition to diarrhea was done in Guatemala. It showed that during the first six months of life, when the child was only breast fed, the rates of diarrhetic disease were low and the infants followed the normal growth curve. When the period of weaning began, the rates of diarrhea increased. Thus, from age five months, many children failed to maintain normal growth. Moreover, in the absence of infection the children grew well even though they received marginal diets. However, during periods of diarrheal infection children absorbed less than the quantity of calories recommended. Adults with diarrhea also have been shown to fail to absorb various types of foods for weeks after the diarrhea episode. Thus, reducing the incidence and severity of diarrhea could improve significantly the nutritional status of the population.

The importance of the bacterial and viral-contaminated rural home environment has not been as completely analyzed as the relationship of diarrhea and malnutrition. However, it is clear that contamination of water in the home is an important factor producing diarrhea. Contaminated water entering the home, of course, is also important. Food is frequently contaminated while it is being prepared, the main source of such contamination being unclean hands. Lack of sufficient water limits the ability of the family to maintain clean homes and personal effects. Poor waste disposal increases the chance of significant contamination. This, combined with improper food storage, improper disposal of solid food waste, and poor personal hygiene, increases the chances of diarrhea.

The mechanisms most important for transmission of the etiologic agents of infant diarrhea at all levels are: (i) fecal contamination of weaning foods; (ii) fecal contamination of water; and (iii) fecal contamination of the hands. However, it is not only diarrhea pathogens which are transmitted by contamination. Typhoid fever, hepatitis, bacillary dysentary, amoebic disease, and infectious skin and eye disease pathogens also are transmitted in this manner.

b. The Existing Response

The MOH recognizes the importance of diarrhea as a cause of morbidity, and it is accorded a high priority in MOH programs because of its heavy impact on children less than five years of age. Standard treatment now consists of antibiotics, antiperistaltics and other drugs in mild cases. Intravenous fluids are used in more severe cases under the supervision of MD's. Definitive diagnosis of the cause of diarrhea by laboratory methods seldom is undertaken, and can only be done in a limited number of facilities. However, such studies are important, since diarhhea can be caused by a variety of agents requiring individualized treatments.

The MOH has conducted several studies of this problem. A diarrhea study was done in Danli; studies of rehydration were done among Nicaraguan refugees and in Ocotepeque and, with PAHO assistance, oral rehydration studies and demonstrations were conducted at the Tegucigalpa teaching hospital. Control of the problem has been encouraged through development of regional activities by various MOH Divisions such as Nutrition, Environmental Sanitation, Maternal-Child Health, Epidemiology, Human Resources, Health Education, and Nursing. Improvement of basic sanitation is underway in rural areas principally through the provision of water and adequate means of human waste disposal. National and foreign support for those Honduran agencies working in this area has been strong and is increasing. This program is analyzed in Section H.5.

Most diarrhea deaths are the result of dehydration or the loss of essential body fluids and salts. Intravenous and oral rehydration appear to be the best means to replace these fluids and prevent death so that the body will have time to overcome the actual cause of the diarrhea. The MOH has begun to examine the possibility of encouraging oral rehydration in the home on a national scale. This can be effected with boiled water, salt, and

sugar. A rehydration manual has been prepared and is being used in several health regions to explain this relatively new technique. However, when administered improperly, oral rehydration can cause serious complications. Therefore, while some health workers have been instructed in the mixing of such rehydration fluids, there is concern among professionals that this will be done incorrectly by mothers and health workers.

Trials in which pre-packaged electrolytes are added to water to form oral rehydration fluid are now underway. UNICEF made available several thousand packets of electrolytes which the Ministry distributed in several regions. While no evaluation of their effectiveness has been done, eye witness reports indicate that they are being used successfully in the home. PANI, the Government entity responsible for production and control of drugs, has acquired a machine for the production of powdered glucose, electrolytes and bicarbonate in aluminum envelopes. The packaging material and machine are ready for use, and the basic ingredient, i.e. glucose, has been ordered from abroad.

The MOH has a program to educate mothers concerning: (1) the importance of diarrhea as a cause of death; (2) methods for preventing diarrhea; and (3) how to prevent dehydration. However, community education efforts have been small and scattered, and there is no evidence that they have been effective. The MOH, in collaboration with the Academy for Educational Development, is now undertaking a significant applied research project in health education using mass media methods to reduce diarrhea. The AID-MOH Rural Water and Sanitation project also has a significant educational component. Together these programs will do the research, development and testing of the use of mass media to identify sanitary and cultural practices needed to reduce the incidence and improve the treatment of diarrhea.

c. Discussion

MOH's emphasis on the treatment of diarrhea has led to a number of significant actions. Efforts in water supply and sanitation are to be especially commended. However, no particular individual or office appears to have assumed normative responsibility related to developing diarrhea program priorities and coordinating efforts. Important functions of such an office would include training of professionals and auxiliary personnel; public information and education; supply and distribution of electrolyte packages, and developing the supervisory methods to assure performance by offices and individuals responsible for implementation of the program.

Multiple studies of oral rehydration have shown it to be very effective, but it has not taken root among M.D.'s and Registered Nurses in Honduras, primarily because the idea is relatively new and the basic work has been done elsewhere. Its acceptance and widespread use will be much easier if these professionals endorse it, supervise its use by others, and redefine circumstances for use of intravenous fluids and other medications. Expert opinion indicates that probably only 5%-7% of the infants with diarrhea require intravenous therapy and a portion of this need could be eliminated by timely oral rehydration. Also, recent studies indicate some commonly used

medications such as neomycin may actually cause diarrhea. Others, such as kaopectin, are not effective and might be just an expensive placebo. Funds which could be saved through discontinuing these, and other, less appropriate interventions would be more than sufficient to pay for electrolyte packets. On the one hand, the MOH is not in a position to insist directly that certain treatments be taught in the medical and nursing schools, and knowledge of oral rehydration in the medical faculty is limited. On the other hand, the MOH does control what treatments are taught to new MD's in the Teaching Hospital and to auxiliary nurses and volunteers, and it has developed oral rehydration norms. Communication problems, however, delayed transmission of this decision to the teachers in the various MOH programs. Thus, no specific training was planned for the instructors on the new treatment they were to teach.

Beyond the wider application of oral rehydration techniques, further improvement of the treatment of diarrhea and all gastrointestinal problems depends on more specific diagnoses of the problem through increased laboratory testing. Presently the data being generated in laboratories is not being collected and subjected to epidemiological analysis, although such studies could be an important step in evaluating programs. For the moment, oral rehydration is an essential component of treatment; additional definitive measures would be indicated as the result of increased laboratory studies.

d. Recommendations

Increase organizational priority given to diarrhea.

-- The MOH should continue to place highest priority on the diarrhea problem and should designate an effective, respected physician and staff to coordinate the various efforts necessary to create a vital program and encourage recognition and acceptance by the professional community. The physician could come from within or from outside the MOH, and should be given priority support. Or the MOH could make this a priority program of an existing office. Concurrently, regardless of the organizational mode selected, the MOH should implement an oral rehydration and education program at the auxiliary nurse and community level with an efficient referral system for the most severe cases. In any case, the following measures should be adopted as required.

a. The development of appropriate training for the health care providers.

b. Improvement of the logistical system to assure timely delivery of electrolyte packets, timely purchase of materials, and rapid transmission of samples to the laboratory and results back to the provider.

c. Development of appropriate mass media messages by the Education Division. Instructions for the health workers

to pass to parents of sick children, such as continuation of breast feeding, the importance of personal hygiene, sanitary food preparation, and use of latrines should be developed to reinforce mass media efforts. Such efforts should be emphasized in the weeks before and during diarrhea peaks.

Increase use of laboratory diagnosis

-- Increase the effectiveness of laboratories in diagnosis and as a component of disease surveillance by improving equipment, training and procedures.

Increase use of oral rehydration and reduce use of intravenous therapy and other medications.

-- With the exception of specific severe cases, the role of intravenous treatment should be deemphasized. Drug treatment should be targeted on dysentery and specifically diagnosed diseases requiring them. This will require implementation of the recommendation on laboratories, above. Extensive training should be given in the use of both packets and of salt and sugar for oral rehydration in the home.

Continue to support water and sanitation programs to the extent possible.

-- Continued attention should be directed toward provision of water and adequate human waste disposal, as well as improving nutrition. (See seperate sections related to these topics.)

2. Immunopreventable Diseases

a. Background

Since 1950 Honduras has carried out intermittent vaccination programs. In early programs high priority was given to smallpox and typhoid fever. In 1952 because of an outbreak along the Nicaraguan border a massive campaign against jungle yellow fever was undertaken succesfully . During the mid-1960's and early 1970's the vaccination program shifted priorities toward protecting children of less than six years of age against polio, diphtheria, whooping cough and tuberculosis. By 1973, the program had expanded to include measles and tetanus; campaigns were carried out twice a year with an 80% vaccination rate as a target. DPT and polio vaccinations were provided as a two-dose series, until the MOH decided to use a three-dose series in the mid-1970's.

b. **The Problem**

Despite Honduran efforts to vaccinate the susceptible population against immuno-preventable disease, outbreaks of those diseases continue to occur. In 1979 there was a widespread epidemic of polio with 226 paralytic cases and nine reported deaths. A large proportion (67%) of those afflicted had not been vaccinated against polio. The MOH undertook emergency efforts to stop the epidemic through a vacination program. Although it has been proven that wide-spread application of Sabin vaccine can stop an epidemic, this epidemic affected one area after another over a period of ten months despite the increased vaccination efforts, indicating a serious failure of the effort.

In the same year almost 5,000 cases of measles were reported, and 280 deaths were listed as caused by measles. Whooping cough was reported in 2,541 cases and 184 deaths were reported from this disease. These diseases are many times more common in Honduras than in the United States. (See Table II.)

In 1970 the WHO established a ten year health plan which established goals for various programs in the Americas . The goals set for incidence of specific immunopreventable illnesses and deaths in this plan are compared with reports of actual rates in Honduras in the following table:

INCIDENCE OF SELECTED DISEASES
PER 100,000 POPULATION

Illness	Goal 10 yr. Plan	Honduras Actual
Morbidity		
Diphtheria	1.0	0.1 (1979)
Polio	0.1	6.3 (1979)
Mortality		
Measles	1.0	7.8 (1977)
Whooping cough	1.0	5.5 (1977)
Tetanus	0.5	2.2 (1977)

Because of marked underregistration (possibly as high as 90% for measles!) the rates presented in this table and elsewhere are undoubtedly less than those which actually occured, with the possible exception of diphtheria which is believed never to have been important in Honduras.

c. The Existing Response

(i) Policy

In 1978 the vaccination policy was expanded to include vaccination of 100% of the children born each year with three doses of DPT and Polio vaccines and one dose of BCG. Vaccination against measles is now provided between the 9th and 23rd month of life. If for any reason children

are not vaccinated during the above periods they are vaccinated in the following year. Where epidemics do occur, vaccination of other age groups are done if recommended by the Epidemiology Division.

In 1978, vaccination campaigns were discontinued and vaccination responsibility was given to each MOH facility under norms established by the MOH Division of Epidemiology. This is in agreement with the general policy of the MOH to integrate and regionalize services. This major change in policy has required the MOH to reevaluate training, equipment and support requirements of the various health facilities. A substantial effort is being made to establish appropriate refrigeration capacity at each facility. Unfortunately, the change-over from the campaign strategy to integrated programming was not completely thought out.

The following operational priorities have been established for allocation of equipment, supplies, materials and support:

1) Densely populated urban zones;
2) Urban zones less densely populated which have health facilities;
3) Rural zones where the extension of coverage system (CESAR and volunteers) has been established;
4) Rural zones without extension of coverage and with disbursed population.

(ii) Coverage Attained

Actual coverage of target population through vaccination has never been determined clearly since no specific surveys have been undertaken with this in mind. Estimates of coverage have been made based on doses of vaccine given. The 1979 coverage of the one to two year age group gives the following estimates of coverage.

Percentages Covered* 1979

DISEASE	Number of doses applied 1	2	3
DPT	56 %	37 %	21 %
Polio	64 %	46 %	26 %
Measles	55 %	n/a	n/a

* calculated by dividing the number of reported immunizations in the age group by the population of that age group less those vaccinated in 1978 when they were less than one year of age.

Some vaccinations have been given by the IHSS (possibly to 2% of the target population), private physicians and private voluntary organizations. Inasmuch as these groups provide services to a small proportion of the population, the MOH coverage figures probably provide a reasonable estimate of the total coverage attained.

(iii) Supply and Logistics

Vaccines are purchased by the MOH from foreign sources and stored in the cold storage room of the National Children's Foundation (PANI) until they are distributed to the various facilities. The MOH also participates in a PAHO sponsored purchasing program.

Within the public health system a comparison of vaccine doses sent from the warehouse cold storage and those reported as having been given or still available indicates a failure to account for many doses. A review of this situation in 1979 indicated that about 500,000 anti-polio doses (one third of those sent), and one half of the anti-measles doses were not accounted for. The cost of the missing vaccines was about $80,000. Given the limited funds available, this represents a significant loss. While some recording failures undoubtedly occured, the Division of Epidemiology also blames: (1) losses due to lack of refrigerators to keep vaccines at proper temperatures; and (2) the inability to use vaccines which arrived in country with only short periods remaining until expiration.

d. Discussion

(i) Policy of Eliminating Campaigns

The policy of integrating services such as immunization into the community based programs (rather than using campaigns) is endorsed by international organizations including the World Health Organization. Honduran professionals are well aware that the campaign approach did not provide satisfactory results and have elected to implement the new policy. While there is no Honduran data indicating that the new approach will provide the desired coverage, provision of these services through the existing facilities could be expected to be both more cost-effective and medically efficacious. The campaign approach required many regional, area and local health workers to leave their usual jobs and work several weeks on vaccinations. The integrated approach builds vaccination into the daily work of specific health workers.

(ii) Manpower requirements

Vaccinations are to be done by local health personnel in CESAR's, CESAMO's and CHE's, but principally by CESAR auxiliary nurses. This new task requires that the auxiliary nurses learn additional skills. Technical knowledge (concerning safekeeping of vaccines, temperature for storage, preparation of vaccines, age at application, and contraindications) is being incorporated into the basic auxiliary nurse curriculum. However, in-service training programs have yet to be developed. If program targets are to be met in the rural areas, each CESAR and CESAMO will need to provide an

average of eight shots each working day; this will require between 55 and 80 minutes per day of auxiliary nurse time just for giving shots.

(iii) Motivation of Community and Program Staff

Obtaining satisfactory vaccination coverage undoubtedly will require active encouragement of families, principally mothers, to participate. This task of the village volunteers should be reinforced. Periodic supervision of their efforts in the community by formal health personnel, principally the auxiliary nurse, should be carried out. Given the present work requirements for the auxiliary nurse in the CESAR itself, there is some doubt about the advisability of their leaving the facility to supervise volunteers, especially given their present level of preparation for supervisory duties. Performance of supervision away from the facility has not been very successful. Similarly supervision of the auxiliary nurse by area supervisors has been less than needed and will have to be expanded to include supervision of the immunization activity.

(iv) Program Support

Additional efforts are needed to assure the existence and functioning of support elements. Many planned CESAR's have not been completed; adequate refrigerators, thermometers, freezers and special transport for vaccines are insufficient for the facilities which do exist; and the presently weak logistics and maintenance systems need to be strengthened, expanded and adapted to take care of the special requirements of this program. Vaccine purchased through the PAHO Expanded Program on Immunization has to some degree reduced the purchase problems. Continual evaluation of vaccine availability by the Division of Epidemiology and Supply personnel will permit adaptation of purchase methods if necessary.

e. Recommendations

Task Analysis

Establish a clear priority for immunization activities to be performed by auxiliary nurses and determine whether, given their large number of additional duties, they have time to give immunizations. If they do not, the number of additional personnel required at the auxiliary nurse level should be determined. Any additional functions which might be performed by volunteer workers and any changes in the organizational structure of the immunization program to which might make it effective should also be considered. A detailed task analysis would be needed for this purpose. (See section on the functioning of CESAR's.)

Training

Review and restructure training for those who may be required to accept increased responsibilities under the new vaccination policy. Such training should be related both to supervision and to technical knowledge, i.e., vaccine safekeeping, application, preparation, and contraindications.

Intensive, in-service training for practicing health workers.

Include more detailed training in vaccination within the curriculum of auxiliary nurses, professional nurses, guardians, and promoters, so that, through in-service training, the number of people able to administer vaccines is increased to cover demand.

Support

Improve supervision, supply, and maintenance related to the vacination activity. Provision of adequate supervision, logistics, maintenance, transport and equipment in general and as they specifically relate to vaccination needs (refrigerators, freezers, thermometers, and temperature controlled transport of vaccines), are discussed in Section I.

Evaluation

Develop the capability to evaluate actual coverage of the vaccination program. (See Section I 7 on Disease and Vital Data Reporting.)

3. Malaria Control

a. Background

In 1942 the GOH began an antimalaria program which included entomology studies, surveys and interventions in selected areas principally using larvicides and drainage. In 1955 with the technical assistance of PAHO and equipment provided by UNICEF, a program of eradication was developed under the malaria eradication law and was based primarily on the use of residual DDT in dwellings. In subsequent years, the malaria program enjoyed moderate success, but it was neither uniform nor complete. Gradually malaria began to appear in areas where it had once been eradicated and, in 1962, mosquitos in the south were shown to have developed resistance to DDT. This was caused in part by unregulated use of pesticides in agriculture. New insecticides were used and mass drug treatment was initiated in Marcovia with favorable results. Overall, however, insufficient financing temporarily retarded the program and the malaria situation deteriorated noticeably in the late 60's.

In response, additional resources were devoted the to program and by 1973-74 the problem had again decreased. However, insufficient insecticides and difficulties arising from Hurricane Fifi resulted in a significant increase in malaria by 1976. In addition (about 1976) labor and motivation problems in the malaria services became serious, and productivity of the workers decreased.

After reevaluating the entire situation in 1978, the MOH made a major policy decision to change the program from malaria eradication to malaria control. This led to the decision to discontinue the completely vertical structure of the service and to integrate malaria intervention activities into the regional services under the regional health directors of the regions. More than 100 field personnel (sprayers, supervisors) were dismissed and a position for a new type of malaria worker the Vector Control Auxiliary (ACV), was established. To date, the program has not been staffed fully and it is not completely functional.

b. The Problem

As a result of the political and programmatic changes which occured in the malaria programs many formerly active program elements have disappeared. This includes the passive surveillance system which involves community collaborators. As a result, the current malaria incidence in much of the country is not known with any certainty. However, the marked increase in reported cases (1974 - 7,503; 1978 - 34,606), despite the deterioration of the reporting system, attests to the seriousness of the problem, especially in the face of the weak screening system. Malaria specialists from the USPHS Center for Disease Control believe that the actual number of cases may be five times that reported.

Malaria exists in 90% of the area of the of the country, containing about 87% of the population. In 1978, some 400,000 people lived in areas free of malaria transmission (generally the result of geography or climate), and nearly 500,000 lived in areas where malaria no longer exists or is under control. This leaves nearly 2,200,000 people (approximately 453,000 houses in 7,488 localities) in areas where malaria transmission occurs. However, rates of transmission in many of these areas are low, again because of geography or climate. Two areas of known serious transmission are: (i) the low-lying north coastal area where non-resistant malaria vectors can be controlled through spraying of homes; and (ii) the South (Departments of Choluteca, Valle, and part of Francisco Morazan) where mosquitos resistant to some insecticides are found. The problem found in the South is of more importance, since the area of resistance to insecticide contains some 240,000 people.

While some insecticide resistance has been noted in the anopheles vector of this area since 1962, the increase has occurred recently is thought to have been aggravated by the refugee movement from Nicaragua in 1979. In that year an epidemic outbreak occurred within the city of Choluteca with a fluctuating but generally increasing number of positive smears through the first nine months of the year. Of considerable concern is the progressive

increase in the percentage of the positive smears which are due to the P. falciparum parasite; the possible consequence of infection caused by this plasmodium are much more serious than that caused by the more common P.vivax.

c. The Existing Response

The GOH change of policy to a malaria control program and the decision to integrate the program into the other health services resulted in the development of new levels of malaria workers in 1978.

The position of the ACV has been developed at the field level (CESAR) to replace the brigade chiefs, sprayers and evaluators of the old eradication program. The ACV is expected to be able to take care of routine problems where there are fewer than 400 houses. Special problems or larger concentrations will require additional services from the region or central levels. ACV functions include: (a) surveillance of the malaria situation in the area; (b) initiation of appropriate interventions to deal with individual cases and community level epidemics (guardians are to assist in patient treatment); (c) promotion of community participation in vector control; (d) carrying out home spraying and other anti-vector actions assisted by the community; and (e) providing sanitary education related to malaria. The ACV is required to have six years of primary education and a two-month malaria course. In 1979, 95 trained ACV's were stationed at some of the existing CESAR's. The initial ACV selection and training results were disappointing. Only 37% of those who started the courses actually began working for the malaria service; 58% of those beginning the training did not complete it. Six months after completion of training only 70 of the original graduating class of 95 were actually working. The apparent reasons include the low salary level, the delay in receiving salary and a lack of promotion possibilities.

A Promoter II trained to assist and supervise ACV's and a separate set of workers in the Aedes Agypti Control Program are to be located at the area level (CHE or CESAMO). At the regional level, there is to be a Promoter III (one for each sanitary region) who will coordinate and supervise all environmental programs including the vector program. Program implementation is directly under the control of the Medical Chief of the region. At the national level, a new Division of Vector Control with normative functions has been created to replace the vertical malaria office. Among the functions of this office are the preparation, evaluation and supervision of the vector control program. The separate laboratories, administration and epidemiology units of the old eradication service have been integrated into the regular line units of the rest of the MOH.

Priority attention is to be placed on communities where there is an incidence of more than 30 cases/1,000 inhabitants/year or any reasonably defined area with more than 20 cases a year which is less than 500 meters above sea level. Increased attention is being directed toward the North Coast where extensive DDT household spraying is being done on an emergency basis by soldiers trained by the Division of Vector Control and in the Choluteca area

where mass drug campaigns are being undertaken. The Choluteca area has received additional diagnostic attention, and it has been recommended that it be treated as a priority special case because of its potential danger.

The Division of Vector Control does not have a fully trained entomologist or other person trained in vector control. As a result, control depends excessively on the use of insecticides. In many locations, biological or physical control methods would better serve the purpose if personnel were trained to recognize when and how to apply them. At present, insecticides are often being applied, handled and stored in an inefficient and potentially hazardous manner.

However, the planned administrative structure is only partially in place. There are still insufficient resources and control. Understanding of the new system on the part of many important individuals is incomplete, and there is confusion about the role of individuals in the system. The transition has resulted in a marked decrease in surveillance and control activities and an increased number of malaria cases. The old system had an average of 225 field personnel for spraying and nearly 100 evaluators. There are now only 95 actual ACV's and, when the system is at full strength, there will be only 34 Promoter IIs (presently there are eight) for supervision and evaluation, and 200 ACV's. At the present time, it is intended that passive surveillance should be a task of the CESAR based personnel (guardians and ACV's) and later the community collaborator system when it can be revitalized.

d. Discussion

The new program

The malaria control program is a marked change from the old eradication program and is in several ways quite innovative. For instance, the ACV is a concept which has been discussed by malaria professionals but not previously used in Central America. The change to the integrated system is somewhat radical and untried. Much experimentation and revision will be required before the program will run smoothly. The programmatic and administrative responsibilities required by the new control program structure are still unclear. The tasks of the regional chief and the members of the office of vector control in the MOH have not been defined completely nor have mechanisms of coordination been established. The regional chiefs generally have insufficient experience in vector control to manage the program in their areas.

e. Constraints

(i) The ACV

The MOH believes that at least three times the existing number of ACV's are needed in the field. Moreover, the training of ACV's has not addressed adequately all of their prescribed tasks such as community diagnosis, larvicidal measures, adult mosquito control, community motivation and treatment of malaria victims.

(ii) Supervisors

Each region presently has two Promoter IIIs--one for water and sanitation, the other in vector control. It has not been decided whether the promoter with vector responsibilities is to be exclusively a specialist in malaria or whether his duties also will include water and sanitation responsibilities. There are no manuals or norms to regulate personnel actions in the new system. Four times as many Promoter II's are needed and their tasks should be defined.

(iii) Information system

There is a need for considerably more information as a basis for developing operational plans. The passive surveillance system is virtually non-functional. In-depth diagnoses are needed in many areas of the country in order to select and design appropriate interventions. Where planning data does exist the information is not used for both short- and long-term planning, nor have priorities for control efforts been established.

(iv) Program support

Because of the previous deterioration of the program there is a lack of needed equipment and supplies such as sprayers, educational materials, laboratory equipment, vehicles, some special larvacides, and adulticides and drugs.

f. Recommendations

Clarification of responsibility and authority

Clarification of tasks and responsibilities must be undertaken for all personnel in the vector control program. Until regional health personnel are adequately trained to take over implementation of vector programs, central level personnel should assert fairly direct supervision and control of personnel in the field (i.e., promoters, ACV's and community collaborators). This control should be used as the experimental basis to produce written norms and rules to define relationships, tasks, technologies and procedures.

Personnel development

Extensive training must be given all vector control personnel. The regional chief, epidemiologist and engineer should receive special training in vector program management. The course for ACV's should be revised and geared to the abilities of the personnel in the system with a view to increasing their capacity. Central level technical personnel should receive refresher courses overseas. Training is needed

for individuals who are to become community collaborators for passive surveillance. All supervisory personnel should have training to upgrade their supervisory skills.

Technical assistance

An expatriate entomologist, experienced in all phases of integrated mosquito control including insecticide handling, and biological controls, should be provided as full time advisor to the director of the Vector Control Division to assist him in organizing and operating an efficient vector surveillance system and in development and choice of varied vector control methods.

Experts in specific fields, e.g., chemical control, biological control, community participation, should be consulted or used as teachers to assure that practical, straight forward methods are designed for the ACV.

Management of personnel

The central level office should have personnel trained as trainers and technicians in all major malaria methodologies so as to be able to assist the region/area in diagnosis (entomological and epidemiological studies), development of appropriate interventions, and training of regional personnel in their implementation. A Honduran administrator should be provided to define and manage personnel responsibilities, relations with the rest of the MOH, communications, logistics, maintenance and other management areas.

Logistical support and maintenance

An inventory of vehicles, boats, motors, motorcycles, pumps, training and educational materials and equipment, should be done to determine maintenance and replacement requirements. Storage facilities are required for equipment and insecticides separate from other health system sypplies to prevent contamination.

Emergency preparedness

A central level fund should be established to support specific regional/area vector control efforts which occur as emergencies or otherwise were not contemplated in annual budgets.

Multisector policy on use of insecticides

Since it appears that agricultural pesticides have contributed to vector immunity, it is necessary to establish mechanisms of cooperation between MOH and Ministry of Natural Resources (MNR) to control the use of such agricultural insecticides which diminish the effectiveness of health programs.

4. Tuberculosis

a. Background

In 1959 the MOH created a Division of Tuberculosis which operated a vertical tuberculosis program. The program had dispensaries, outpatient services and a national sanatorium with 1,406 beds exclusively for TB patients. Between 1968 and 1973 the program was integrated gradually into the general health delivery system under the direction of the Division of Epidemiology. The tuberculosis clinics, sanitorium, supplies, equipment and budget ceased to exist as components of a separate program.

b. The Problem

Although reported rates of tuberculosis are declining, it is believed that its actual incidence may be increasing. Between 1972 and 1979 the reported incidence of TB decreased from 84.7/100,000 people to 38.4. The reported death rate in 1972 was 6.4/100,000 while in 1976 it was 3.2. However, the Division of Epidemiology has indicated that disease reporting for this program is very poor, and that it has little trust in the accuracy of the rates noted above. Some support for this opinion is borne out by the fact that, in 1978, 130,000 sputum examinations were programmed but only 8,100 were done or reported. Also the 1,323 new cases found in 1978 were only about 18% of those expected on the basis of estimated incidence of the disease by the Division of Epidemiology. Of the new cases reported in 1978, 70% were reported in the metropolitan areas of Tegucigalpa and San Pedro Sula. For every case cured, three new cases were found. Unfortunately many patients stopped their treatment or received irregular treatment, resulting in a 'chronic' condition with positive sputum many months later. Such patients are a source of infection in the community, and are at risk of developing resistant bacteria.

c. The Existing Response

The integration of this program into that of general health services required that the existing general clinics and hospitals take on the diagnosis and treatment aspects of this disease. The professional and auxiliary nurses of the extended coverage system became the first line of diagnosis, and geographical access gradually improved through extension of the outpatient system. X-ray and skin test diagnosis decreased, and sputum diagnosis increased. Treatment regimens were developed according to international standards, and the means to hospitalize serious cases were set up.

The majority of cases were treated on an outpatient basis, as is recommended, but the percentage of patients continuing treatment for the required period decreased noticeably through the treatment period. While outpatient treatment is the recommended way to treat the majority of patients it requires a capability to motivate patients to remain under care for a long period of time. When they do not continue voluntarily, the health system must actively find them, and encourage continued treatment. This capability is incompletely developed in Honduras, as shown by the fact that nurses made only 34% of the programmed visits during a year when 236 patients prematurely stopped their treatment and 135 were designated as chronic*. This high proportion of chronic patients also indicates poor follow up. Further, at regional and area levels, TB is not given any special attention.

Anti-Tuberculosis Vaccine (BCG) is provided now for children between 6 and 23 months or at older ages when risk is high (i.e. when there is a TB patient in the home). Although there is considerable evidence questioning the effectiveness of BCG, MOH policy is to continue its use in Honduras. However, in 1979, largely because of a lack of vaccine, only 14% of the target population was vaccinated. In 1979 a capable young epidemiologist at the central level was designated as the director of the TB program and he has initiated training activities which are important in revitalizing the program.

d. Discussion

Present efforts in TB are only partially successful in applying recommended methods for diagnosis and treatment. In part, this may be due to inattention to the disease after integrating the program into the general health system. The problems are less in the selection of methodologies than in the ability to apply them correctly.

Diagnosis is more effective by smear (the method emphasized by the MOH) than through use of X-ray, although both methods are useful in a TB program. The smear method requires health workers who can identify individuals who should be examined and who can prepare smears adequately for diagnosis. An effective means of sending the smear for laboratory diagnosis and returning the results, trained laboratory technicians, and correctly equipped laboratories also are needed. Many of these requirements are not now being met.

(i) Manpower requirements

Improvement of the program undoubtedly will increase the case load in both urban and rural areas, and will result in a marked increase in time which health workers, particularly nurses and laboratory technicians must devote to it. If the programmed number of smears for diagnosis is reached, it will require that 15 times the amount of laboratory time be

* Chronic patients are defined as those who show positive after six months of care.

devoted to smear examination as in 1978. Auxiliary nurses may average two to three hours a week taking samples, treating, supervising follow-up and doing some follow-up themselves. This would more than double the estimated time they now spend on TB.

(ii) Supplies

Reagents, slides and other materials are too often in short supply. Also, preparation of smears is less than acceptable because of faulty training and incorrect application of training. Infrequent supervsion and continuing education are insufficient to attain or maintain needed quality. A major indication of program inadequacy is the low number of smears and diagnosis made versus the number programmed. The reasons for this are not clear, but it may be that awareness of TB among health workers is low so that it is not being recognized even in patients who have suggestive symptoms. Also there is an apparent lack of community interest in diagnosis and treatment of people with TB which may be associated with ignorance of the dangers of the disease or of the fact that it can be cured.

(iii) Norms for treatment

There is concern that the recommended and accepted norms are not widely known or followed. To be effective, treatment must be continued for over a year. This requires a system which can find the dropouts; unfortunately, the present one does not do this. Thus, consideration should be given to shorter treatments using Rifampicine which, by case, may be more expensive but will lead to a greater cure rate. Such consideration, however, should not decrease the emphasis on active case search and follow up. Supervisors need to provide much encouragement to health workers to assure these actions are taken.

There is a growing body of evidence that BCG vaccine is not effective and that the harm it causes may outweigh any benefit. Recent studies indicate that its preventive qualities are marginal, and that its use may hinder other health programs by: (i) requiring time to administer BCG which could be devoted to other programs; and (ii) drawing attention away from the need to treat and follow up TB cases. Given the considerable loss of vaccine each year and the other considerations noted, the use of BCG as a preventive measure may be a counter-productive expense to the program.

e. Recommendations

The Honduran health system has a good set of service components for implementing a tuberculosis program based on facilities and community workers. Steps needed to make the present system more effective are:

Norms of treatment

Knowledge of norms for diagnosis and treatment should be updated and disseminated, and ways should be found to assure that they are implemented for all personnel. The MOH should

consider (a) updating formal curricula; (b) using national and regional TB seminars; (c) incorporating information in routine, continuing education sessions; and (d) individual training through periodic supervision visits. Particular attention should be given to searching for active cases and following up on patients receiving treatment. Such an active program would require that health workers be taught to identify individuals who may have tuberculosis and to carry out the required screening tests. Emphasis should be placed on finding ways to keep a diagnosed patient under treatment for the required length of time.

Program support

Logistics, maintenance and supervision should be strengthened to support this program. (See appropriate following sections.)

Eliminate routine use of BCG

There should be a reevaluation of the use of BCG given the recent evidence of its poor performance and the already poor BCG vaccination coverage in Honduras. Any cost savings should be applied toward finding cases and treating them.

Incorporate drugs allowing faster cure rates

Stong consideration should be given to the inclusion of Rifampicine in drug regimes as it has been shown to decrease treatment time significantly. The probability of more patients staying on medication through an entire course of treatment would be improved commensurately with the reduction of the time required for the treatment.

Increase laboratory support to the program

Laboratories and laboratory technicians should be upgraded and trained to handle the huge increase in testing which would result from TB screening and diagnosis improvement.

Increase active case search and follow-up

A revitalization of the capability to seek and identify cases of TB in the population and to effect the required treatment is indicated.

5. Malnutrition

a. The Problem

The nutritional status of the Honduran population was evaluated in a national survey (1966) and later in studies of more limited areas. All the studies document a significant amount of malnutrition.

Tables 12 and 13 provide a general framework for understanding the nutritional situation. It appears that the average daily energy intake expressed in calories has improved in recent years, but for 50% of the population, those with lowest incomes, both protein and calorie intake are markedly deficient. The 1966 survey showed that among the basic foods, corn provided 48% of the calories and 37% of the protein of the diet, while beans provided 11% and 23%, respectively. It was also confirmed that socioeconomic level greatly influenced the quantity and quality of the diet. The higher income strata consumed proportionally twice as much animal-origin foods and six times as much fish. The lower strata consumed only 67% of the recommended amount of calories and 83% of the amount of proteins. In addition the average intake of niacin and riboflavin was low, and of vitamin A, very low.

By the Gomez classification based on weight for age, 45% of children under five years of age suffered first degree malnutrition, 29% suffered second degree malnutrition, and 2% were found to suffer third degree malnutrition in the 1966 survey. Clinical indicators generally showed a less grim picture, with 7.5% of the children less than 5 years classified as malnourished. Only one case of marasmus and no cases of kwashiorkor were presented in the study sample.

Additional facts which help characterize the extent of malnutrition are:

- The departaments in the interior and south showed higher levels of more severe malnutrition than did other departments.
- The levels of malnutrition found in the marginal areas in Tegucigalpa were as high as those in smaller urban and rural areas.
- Children in rural areas and of a low socioeconomic level received relatively less of their daily requirements than adults in the same family.
- During the first three months of life, weight and height are normal compared with appropriate standards; however, by five years of age, average growth delay was 1.75 years.

-- Though average iron intake is adequate, iron absorption is low due to the large amount of vegetable-associated iron. Thus, 32% of the rural population showed some iron deficiency. Rates were higher in women in their second or third trimester of pregnancy.

-- Diet studies in 1966 showed that 50% of the population ate less than 20% of the recommended amount of vitamin A.

More recent studies between 1972 and 1978 in various localities have found deficiencies. Weight for age in children under five years ranged between 57% and 91% of normal. Second and third degree malnutrition ranged from 8% to 46% of children under five. No other studies comparable to the 1966 GOH-INCAP survey in detail and rigor have been done updating the 1966 GOH-INCAP survey. However, those more limited studies done are adequate to indicate that the situation has not improved.

The San Lorenzo Health Area study (1979) has studied risk factors most closely. Among 600 rural and semi-urban families, the family factor that was associated with the highest relative risk of finding a second or third degree malnourished child (6-59 months) was land tenure. The risk was about twice as high for families with less than two manzanas of land than for those with 10 manzanas and over. Significantly higher risk was also found in children of households headed by females, or having illiterate mothers and mothers with closely spaced younger children (3 or more children under 5 years of age). Finally the rural area that was the least accessible (in terms of communication and services) had rates almost double those of more accessible rural areas of similar population size. However, the major town of the area (San Lorenzo) unexpectedly did not have prevalence rates lower than other accessible rural communities. Essentially "rural" levels of living were found in San Lorenzo that help explain this situation.

One of the most important components of basic necessities is the diet, and the family "food basket" concept has been translated into the indicator "average adequate low-cost diet". The methodology is based on the actual structure of the basic Honduran diet (by each food group) and the caloric distribution of each group needed in order to meet the average requirements of the typical Honduran family. The 1978-79 Food Consumption Survey estimated the structure and distribution based on a sample which included a total of 600 families in three regions of the country, in both rural and urban communities, and in pre- and post-harvest periods of the year.*

Based on mean national food prices for 1979, the daily cost of the basic diet for the six person Honduran family was 8.05 lempiras. This is compared to 3.51 lempiras in 1966. The principal difference in the structure of the diet between these two time periods resides in the fact that relatively

*"Definicion de la Canasta Basica de Alimentos para la Republica de Honduras," CONSUPLANE/SAPLAN, May, 1980.

more meat, eggs, and fats were consumed in 1966, and more cereals in 1978-79. Thus the composition of the common diet has deteriorated somewhat as the cost of the basic food basket rose faster than real incomes.

The magnitude of the malnutrition problem could become staggering if present demographic trends and malnutrition prevalence levels remain constant. It is estimated that there were some 330,000 malnourished children aged 0-4 years in 1965, and 490,000 by 1975. Under the assumption of little change in the trends, the number of malnourished could swell to 650,000 by the year 1985. This would represent an increase of 320,000 malnourished children in just 20 years, or a virtual doubling of this high risk population.

Malnutrition is not listed as a major cause of death nor is it recorded as a major cause of hospital admissions, partially because it is mainly an outpatient disease and partially because malnourished people who die or are admitted are frequently diagnosed as having some other disease, e.g. diarrhea, or pneumonia. The synergistic effect of malnutrition and communicable diseases, especially diarrhea, is well known. (See Section G.1.)

b. The Existing Response

(i) SAPLAN

Since the early 1950's attempts have been made to identify and resolve nutrition problems. The 1966 GOH-INCAP nutrition survey focused additional attention on nutrition, and was followed by national seminars and the creation of the National Council on Food and Nutrition (CNNA). In 1976, a new system, the National System for Nutrition Analysis and Planning (SAPLAN) was established within of the National Economic Planning Council (CONSUPLANE). It is composed of representatives of the MOH, Ministry of Education (MOE), Ministry of Natural Resources (MNR), the National Agrarian Institute (INA), and the IHSS, with the Department of Nutrition of CONSUPLANE as its technical council. Each institution has a representative who works with the SAPLAN core staff for the purposes of policy definition, planning, coordination of institutional interventions, evaluation of policies, plans and interventions and stimulation of research and training in the food and nutrition field.

Under the first five year plan for 1974-1978 SAPLAN, organized with the assistance of A.I.D., initiated a series of projects including aquaculture, soya and sorghum production and consumption, rural water and waste disposal, nutrition surveillance, income and consumption survey, nutrition education and family food production projects. Under the second Five Year Plan for 1979-1983, SAPLAN is continuing its evolution and development into a meaningful nutritional institution. (For more information, see "Analysis of Nutrition Related Activities in Honduras", Community Systems Foundation, December, 1979.)

(ii) Ministry of Health (MOH)

The MOH sees its role primarily as one of detecting and treating the more severe malnutrition cases; however, activities which prevent or cure disease contribute to the improvement of nutrition and are important factors in SAPLAN's model. These factors include clinics for growth and development of children, vaccinations, health education, the extension of water and waste disposal means, and vector control.

The MOH representative to SAPLAN was originally the chief of the Maternal Child Division, which includes the MOH Office of Nutrition. This two-person unit develops nutrition norms, as are part of the MCH guidelines, and it has some responsibility for programming supplementary food distributed through MOH facilities, though, in fact, it does little in this regard. (Hospitals receive food from the European Economic Community but distribution problems have limited the effectiveness. By June 1979, only 20% of the planned distribution for CY 1979 had occured.)

Seven Education and Nutrition Recuperation Units (SERN's) have been established; three in Tegucigalpa and one each in four other regions. Poorly nourished children may be referred to these units for supplementary feeding and family nutrition education. Since they are open only in the day, their usefulness is limited to families within walking distance. Poor administration and under-funding of these centers have also limited their usefulness.

The actual implemention of most norms depends upon the regional health offices and personnel, but is ultimately the direct responsibility of the auxiliary nurses in the CESAR's, the staff of the CESAMO's and hospitals, and the village volunteers. The auxiliary nurse is the main purveyor of personal services which affect nutrition -- partially because of numbers, partially because of location. A list of selected nutrition-related activities taken from the MOH document "General Norms for Attention to Rural Communities" lists 13 items directly related to nutrition which the auxiliary nurse should do in addition to all her other tasks. In a survey made by the MOH, the auxiliary nurses stated that they thought they carried out nutrition and community participation activities poorly because of weak training in these aspects of their work. As a result, they spent relatively little time on these activities.

Some centers and posts determine weight for age in child clinics for those who attend, but no effort is made by local health units to obtain information on all children in an area . The use of a weight/age card which the mother keeps has been established in only one area of the country. Four auxiliaries of nutrition and one fully trained nutritionist are located in five of the eight regions.

(iii) Coordination

Observers have noted that there is little coordination among nutrition programs at the field level. Often nutrition activities of other branches of the Government (feeding centers, agricultural projects) take place in the vicinity of MOH health units; but the coordination needed to make

these different programs complement each other is lacking. (The USAID has submitted a Nutrition Systems Improvement Program to be financed under PL 480 Title II, Section 206 (Project No.522-0163) which describes the various supplemental feeding programs and the means to improve them.)

c. Discussion

The enormous size of the nutrition problem is matched by the lack of commitment in the various sectors which have the resources to combat it. In the case of health, the present five year health plan gives less importance to this area than the previous plan did. It appears that since the establishment of SAPLAN the MOH has decreased its efforts to mainly providing attention to clinically malnourished individuals. The Ministry has not mobilized the necessary efforts and leadership to effectively contribute to prevention of this problem. Within the MOH, promotion of nutrition actiities is minimal. The Nutrition Department, which had three professionals last year, has been reduced to just its Chief and, in the eight Sanitary Regions, there are only one professional and four auxiliary nutritionists. Thus, the technical and normative level within the MOH, even if it wanted to promote its own activities, is too small to do so. It tends to work in isolation, with little contact with other units that carry out important nutrition activities, such as Epidemiology. Nursing, Planning, and even Maternal Child Health.

The operational and infrastructural capacity to carry out and supervise the adequately formulated list of nutritional norms is weak. Promotion of community gardens, breastfeeding, and hygiene is only sporadic; SERN, are poorly supplied and supervised; the program basically reaches only those who go to the "well-baby" clinic; technical control and information flow are weak; and the related food supplementation program has had serious logistic and operational problems.

Such have been the recognized limitations in the Ministry's operational capacity that the World Food Program has stipulated that one of the preconditions for the initiation of their recently approved $8.0 million food supplementation program was the improvement in the presence of nutrition personnel at the regional and area level as well as in the logistics system of food storage and distribution.

d. Recommendations

Increase MOH committment to nutrition

Efforts must be made to increase the number of professionals in the MOH Nutrition Office and the participation of the central MOH planning office in nutrition in order to better plan, coordinate and program nutrition-related activities. The use of seminars and workshops in the MOH with SAPLAN collaboration would assist in highlighting this need within the MOH. Resources provided under A.I.D.'s proposed Title II, Section 206 Nutrition Systems Imporvement Program could be used for these purposes as well as to increase the volume of food transferred to the target group by the MOH.

Strengthen the MOH capability to formulate, implement and evaluate nutrition efforts

Parallel with the increase in central level personnel professional nutritionists should be located in each sanitary region and nutrition auxiliaries should be placed in high priority health areas. In addition, the basic training of the auxiliary nurse and community volunteers must be strengthened and the continuing education component in nutrition must be developed. Emphasis should be placed on breastfeeding and the use of simple anthropometric measurements in the areas of influence of the CESAR or other facility to measure nutritional status and changes in that status.

Since the auxiliary nurse may be directing time to her nutrition related work, a study needs to be undertaken to determine what auxiliary nurses and VAW's actually should be doing to improve nutrition and to adjust their assigned tasks accordingly. Given the number of activities which must be undertaken of the community level, increasing the number of auxiliary nurses at the CESAR level should be considered.

Improve the role of the MOH in supplementary feeding

The role of supplementary feeding in the formal health system needs to be established and the Ministry needs to direct additional attention to the programming of the food at the field level. The USAID's Nutrition Systems Improvement Project, if approved, will help in this repect.

Develop MOH capability to carry out or contribute to important investigation and evaluation work

Studies and evaluations to be considered are:

-- Early detection of malnourished families - An operational research project to train the community primary health care team (auxiliary nurse, guardian, representative, trained midwife and promoter) to do periodic household screening and referral of malnourished children and high-risk pregnancies. The degree to which this method increases health system coverage should also be evaluated.

-- Evaluation of Nutrition Impact of Health Programs - Nutrition programs in the health sector that need to be evaluated are: (i) food supplementation; (ii) the SERN; and (iii) nutritional diagnosis. They should be evaluated both as isolated programs and as part of a primary health care package. (SAPLAN should undertake this effort with MOH cooperation.)

Again, such activities could be financed by the proposed Nutrition Systems Improvement Project.

6. Pregnancy and Birth Related

a. The Problem

The management of pregnancies largely determines the health of the baby and its mother. Many possible problems could be prevented or reduced through spacing of children, reducing family size, proper attention to the mother during pregnancy, and to both the child and mother during and after delivery.

An estimated 160,000 live births will occur in Honduras in 1980 and possibly an equal number of pregnancies will produce non-viable offspring (such as spontaneous or induced abortions and still-births). Approximately 30% of the deliveries in rural areas and 15%, in urban areas will produce premature or underweight babies.* These deliveries contribute significantly to the high rate of deaths within the first seven days of life (neonatal mortality rate of 59.5/1,000 live births in 1970-72) and also within the first year of life (infant mortality rate of 117/1,000 live births).

The rural population suffers most. For example, the neonatal mortality rate in rural areas is 67.6/1000, while the urban rate is only 33.9/1000. Part of the neonatal deaths result from infections such as tetanus due to unhygienic delivery practices and home environments. The low level of immunization of the group of reproductive age females prevents many mothers from passing the immunity, which they could acquire through vaccination, on to their offspring. Furthermore, the total fertility rate is high, seven children per woman. Frequently associated with large families are closely spaced children. This in turn contributes to (i) the maternal depletion syndrome, present in all areas of Honduras, and (ii) increased malnutrition in the family, particularly noticeable as the number of children approaches four. Young women (less than 20) or older women (more than 35 years of age) bear 36.6% of children born. Births at these ages increase risks to both mother and child.

Studies in other Latin American countries have documented a large number of illegal abortions. While illegal abortion has not been studied in Honduras, information from neighboring countries indicates that much hospital morbidity related to pregnancy (the main category of hospital admissions in Honduras) is due to complications following or attendant upon such abortions.

Moreover the excessive incidence of poor nutrition, especially in the rural areas, has resulted in a larger percentage of women biologically at greater risk of complication of pregnancy.** This, combined with a high

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* These estimates are based on hospital deliveries which include no more than 22% of all deliveries.

** i.e., physically less adequate with less biological reserve, e.g., those who are already anemic or borderline anemic before pregnancy.

incidence of chronic disease (especially TB and malaria) means that women with lowered strength and resistance undergoing the additional stress of pregnancy are contributing to the elevated maternal mortality (17/10,000 live births in 1972). Detrimental folk practices are also practiced. Perhaps the most serious of these is the use of non-hygienic materials to cover the severed umbilical cord, which produces neonatal tetenus and other complications either at the advice of the traditional midwife or as a general practice of the family or community.

b. The Existing Response

(i) Health and Nutrition

The MOH accords high priority to the need to address the problems of pregnancy and child birth. Its practice is to integrate health, nutrition and family planning concerns into a single package, rather than to operate vertical programs in any one area, and it has organized these programs under the Maternal and Child Health Division. This division sets program norms, and assists the Division of Human Resourses to develop training courses for auxiliary nurses and village volunteers, who provide the majority of this type of service.

By 1981 each of the projected 462 CESAR's is to be staffed by an auxiliary nurse; some 6,000 out of an estimated 20,000 practicing traditional midwives will have received a short course of training; and about 6,000 village volunteers will have received training in a range of medical subjects including nutrition and recognition of possible complications in pregnant women who should be referred to a nurse or doctor. Through these efforts, coverage of the target population should have increased to at least 60%. Presently the auxiliary nurse and volunteers must depend on their clinical abilities to diagnose complications, as it may, for example, require two weeks to receive the laboratory results of a urine examination in suspected toxemia. The services which improve health related to pregnancy include health and nutrition advice, well-baby services, supplies of vitamins and iron for pregnant women, and food supplements as well, in some areas. Simple treatments for such conditions as malaria and intestinal parasites are also provided and are of value. Contraceptives to assure a desirable spacing of children are perhaps of greatest potential benefit. Some auxiliary nurses provide pills and condoms.

For the majority of pregnant women, delivery will occur at home. Responsibility for each mother's care is supposed to be a shared between the formal health system (providing pre-and postnatal care) and a traditional midwife assisting in the actual delivery. However, in many cases only the midwife provides any services.

Mechanisms have been designed for continuing education in pregnancy-related subjects. However, actual continuing education is reported to be sporadic. Traditional midwives are receiving a five day course with a one-day-a-month refresher to enable them to deliver a better level of care. Referral mechanisms are being initiated so that any complication of pregnancy may be treated at a more sophisticated level.

(ii) Birth Spacing

Family planning services sometimes are provided for health reasons in the MOH's maternal and child health programs. But aside from this, the Government has no stated population policy. Contraceptives are available from several sources to married couples who actively request or buy them. IUDs, pills and foams are made available under a doctor's supervision in MOH clinics. The MOH does not have an active outreach program in family planning but is considering ways of developing one based on health concerns. While demonstrated demand exists, the number of continuing users serviced through the MOH program is small. Statistics are not kept to allow the size of the program to be determined accurately, but there are an estimated 20,000 continuing users. The MOH is receiving assistance from UNFPA and A.I.D for improving family planning programs. Twelve MOH hospitals have sterilization services and to date some 9,000 procedures have been done.

PVO's play an important role in providing family planning services in Honduras . In fact, they provide more family planning services in Honduras than does the MOH. For example, the Honduran Family Planning Agency (HPFA), has been working successfully for some years with international agencies to develop family planning programs. HFPA, with Pathfinder assistance, has developed a community based contraceptive distribution system which provides services to some 28,000 continuing users. ANACH and Family Planning International (FPIA) have been struggling to develop a system for the ANACH members. HPFA and the Association for Voluntary Sterilization (AVS), with MOH approval, have introduced sterilization into the Ministry system. AVS and the main teaching hospital of Tegucigalpa are expanding a program begun by HFPA and AVS. Current AVS affiliated programs will provide about 6,000 sterilizations per annum in 1980 and subsequent years. Development Associates has provided training opportunities for numerous individuals in many different agencies. The Ministry of Education, HFPA and World Vision teach responsible parenthood through adult literacy courses. Despite such activities, important Honduran groups, agencies and individuals remain indifferent or opposed to such efforts. (See the USAID/Honduras Multiyear Family Planning Strategy.)

c. Discussion

The intentions of the GOH and the MOH are excellent. Policy gives priority to women and children, and initial programming directions are appropriate. Actual implementation depends heavily on auxiliary nurses, village volunteers and the traditional midwives. With the continued implementation of the policy of service integration, auxiliary nurses are being given additional tasks such as vaccinations, which allows less time for each task. Training programs have been developed for all of these workers, but the effectiveness of the workers and the training programs are in doubt. Since continuing education and supervision of the rural health worker are known to be very weak it is unlikely that the graduate's knowledge is complete or current. Courses for volunteer and midwife training are short and a large number of items are taught, allowing insufficient time for reinforcement of basic themes, even in such high priority areas as maternal-child care. Too frequently, appropriate application of the information is hindered by a logistics/supply lapse.

While considerable efforts have been made to develop medically correct interventions, very little consideration has been given to assuring that the interventions are culturally acceptable. Lack of "fit" is probably part of the reason that many individuals do not use the formal health system.

d. Recommendations

Evaluate programs

A means should be developed to evaluate periodically the effectiveness of services related to pregnancy, birth and child care. Possible alternatives include: (a) development of a central evaluation capability in appropriate normative offices or in the Planning Office, combined with a responsibility to undertake such evaluations; or (b) development of the evaluation capability at the regional level and at teaching institutions (so that there would be direct feedback into the curricula).

Strengthen family planning programs

Strengthen the family planning component of the MOH because of its importance as a health measure.

Coordinate nutrition and prenatal programs

Coordinate nutritional efforts with pregnancy management, i.e., determine ways to provide supplementary food for pregnant women and to help them develop their own adequate diet. (See Nutrition Section.)

Supervision and continuing education

Strengthen the systems of supervision, continuing education, and supply related to pregnancy and births especially for the trained empirical midwife, since this person has such a key role.

Increase education messages

Develop formal and informal educational methods and messages sensitive to cultural factors which support the acceptance of improved pregnancy-and birth-related practices. Methods could include radio, posters and meetings; messages could include the importance of pre-and postnatal care, nutrition, family planning and new practices taught to the midwife.

H. SELECTED ISSUES IN HEALTH SERVICE PROGRAMS

1. Spatial Organization of Regionalized Health Services

a. The Issue

Honduras' ability to provide Basic Health Services is substantially limited by a shortage of budgetary resourses, administrative capacity, human resources, and facilities. Therefore, it is essential that existing resources be used judiciously to maximize access to, and use of, services.

Crucial factors which can increase these benefits are the spatial and regional organization of health facilities and services. But the more important issue involves selecting the proper mix of simple and more complex facilities and their organization into a workable whole, or an integrated, regionalized system of health care.

Such a system can increase access since simple facilities are cheaper and can be located at more points. The system can also improve efficiency, since simple services tend to cost more when provided at more complex facilities. However, simple facilities alone cannot meet all health care needs, and therefore an effective referral system is desirable.

The regionalized structure of the MOH was described above (in Section I.E.1). This section will consider 1) whether, and to what extent, funds should be allocated to extend the system, and 2) at what levels should the system be expanded in order to increase access to services and the efficiency of the system as a whole.

b. Decision Criteria

(i) GOH budgetary limitation

The principal constraint on financing health services is operating costs. It has been estimated that, for each dollar invested in health facilities, one to two dollars of annual operating costs are generated. Thus a significant rise in MOH budget for recurring costs has followed its investments in facilities since 1974. For investments to be justified, therefore, the GOH must be able to afford to operate the new facilities at full capacity.

(ii) Capacity limitations

Providing a facility in an area only provides coverage to the population to the extent that it actually has the capacity in terms of size, quantity, and quality of services actually provided to meet the needs of the population.

(iii) Coverage limitations

Each facility should serve no less than a specified minimum number of people in order to maintain efficiency and maximize the coverage provided by the limited budget.

(iv) Regional organization

The facilities in a region should be organized into an interlocking system to allow the referral of patients and the supervision of staff at each lower level facility.

(v) Other factors

For political reasons the Government may want to distribute facilities widely by political units, to construct facilities with the most visibility. If either rural or urban populations are able to bring political pressure to bear at a given time, construction of facilities in the corresponding area may be favored. For example, most principal municipal towns (Cabeceras Municipales) in Health Region 5 have been allocated a CESAR.

The medical (and pre-medical) communities also apply pressure for the MOH to favor hospital facilities in urban areas. Because student pressure has led UNAH to adopt an open door policy of Medical School admissions, the number of physicians in Honduras is growing more rapidly than the ability of the MOH and private sector to absorb them. The large number of new physicians produced will place a great deal of pressure on the MOH to invest in hospitals and clinics.

c. Evaluation of the Criteria

(i) Operating costs

Since 1974, the MOH budget has been growing more rapidly than the central GOH budget. In the period 1974-1980 the MOH budget grew from $14 million (8.5% of the central budget) to $62 million (11.1%). Honduras now invests relatively more of its GDP in health programs than most other countries in Latin America*. This budgetary growth has been stimulated in large measure by significant investments in facilities financed by loans from the IDB.

The operating costs of the MOH were analysed in detail for the health planning project in order 1) to estimate unit costs for facilities and the extent to which these had been growing and 2) to be able to project operating costs.* GOH guidelines specify that the MOH budget may grow by up to 18% per year since health is a priority sector. However, unit costs for existing facilities have been growing at an annual rate of about 15% per year. (About half of this increase may be due to inflation, and half due to increased quality or complexity of care.) Thus only an additional 3% growth is available for extension of other programs. If this could be maintained,

* Much of the budget, $25 million in 1980, is actually spent by SANAA for water projects.

the MOH could at least keep up with population growth. Translated into facility units this level would allow an additional: A) 1.5 small (100 bed) hospitals; OR B) 22 CESAMO's with one physician; OR C) 87 CESAR's; OR D) some combination of the above to be added per year. The analysis suggests that the MOH could afford an investment of about $800,000 per year, and still meet its operating expenses (and maintain the rate of increase in preventive, village based coverage). This level of expansion is far below what the MOH has proposed in its Five Year Plan and careful consideration must be given to reevaluating that plan and revising downward levels for new construction.

(ii) Capacity

The ratios between MOH service units and the Honduran population show that the number of personnel and facilities in every category is below what might be considered a reasonable norm. In this sense there is a clear need for more capacity at all levels. Moreover, it is clear that, in urban areas and small towns, the facilities provided by the MOH are often used above designed capacity. However, as shown below, this is often not the case in the more rural areas.

(iii) Coverage requirements

In spite of the capacity limitation described above, many MOH health facilities are often used far below potential capacity. As recently as 1977, many hospitals operated at half capacity. Moreover, some hospitals have very high staff to bed ratios, suggesting that staff is not being used as fully as possible, thereby increasing unit costs through inefficiency.

The same problem occurs at the other end of the health care hierarchy. Many midwives actually attend only a few births per year because of the limited number of people living near them. Preliminary results from the MOH/CONSUPLANE study of the location of health facilities indicate that in some areas CESAR's actually have as few as 750 people within their services area, rather than the 3,000 they are designed to serve. To some extent this may be caused by poor location, but more generally it appears to be due to the extreme dispersion of the population. Sometimes geographical barriers simply do not allow people to get to facilities, even when they are nearby in straight-line distance. For example, in the study area, there is one CESAR or CESAMO for every 3,824 people, and if each facility actually covered the GOH norm of 3,000 people, then 78% of the population would be covered. However, only 31% of the population has reasonable access* to a facility (and only 31% has limited access.*)

* Reasonable access is defined as living within 45 minutes walking time (3 Km) of a CESAR or CESAMO; limited access, as between 45 minutes and 90 minutes. The data indicates that existing roads would have limited impact on total coverage, even if most of the population had access to cars, simply because of the limited extent and poor quality of the roads. If all had access to cars the corresponding number would be 36% and 69%.

(iv) Referral system

The functioning of an adequate referral and supervision system is limited by the same spatial impediments as those mentioned for CESAR's. Many of the areas in which the MOH has facilities are too sparsely populated to allow the functioning of a referral system. That is to say, patients often have limited access to CESAMO's and hospitals, even when thereis a CESAR nearby. While the extent of the spatial limits has not yet been documented as concerns the referral system it is clear that it is a critical variable.

d. Discussion

Given the above facts, it is clear that the MOH must reevaluate its expansion plans for the next five years and scale them down to a reduced level of expansion which can be supported within the budget likely to be available. This will require decisions as to how much of the expansion will be at the community, CESAR, CESAMO, and hospital levels.

One alternative that the MOH should consider is the possible relocation and/or reorganization of inefficient facilities to allow expansion in other areas. For example, MOH data on Hospital costs shows that annual costs per bed vary by as much as 200% between hospitals. Unit costs for specific services vary even more. If a part of this inefficiency were eliminated, additional funds would be available to operate more efficient units and programs. The study of health facility location mentioned above indicates that 20% of rural CESAR's in the study area could be eliminated while reducing coverage by only 10%. It seems likely that the auxiliary nurses in these isolated posts might be better used in those CESAR's in areas which must cover more people than one nurse can handle. This might be one way to deal with the recommendation of many consultants that CESAR's need two auxiliary nurses to function well.

The MOH faces choices as to whether to invest more of its funds in clinics or in hospitals and between rural or urban locations.

An alternative, one which the MOH has tended to follow in recent years, is to concentrate on extension of services at the lowest (Community and CESAR) levels, in order to try to achieve an equitable, although minimal, coverage for the entire population. As laudable as the principal behind this strategy is, it is to some extent inefficient. The strategy appears to have produced (or left in operation) CESAR's which serve a very limited population, and which are too far from higher level facilities for effective referral, supervision, supply, or other support.

Honduras has made substantial investments to achieve health service coverage. Future growth, while it may not be as large as the MOH has planned, could go a long way toward meeting the basic health needs of all but the most isolated Hondurans if hard decisions are made now to further improve the efficiency of health sector investments.

It is recommended that the MOH consider the relocation of CESAR's now located in very sparsely populated areas. Any new locations selected should be in areas of middle to high population density, and should be close enough to a higher level facility to allow adequate referral and supervision.

The extreme alternative to the above strategy is to concentrate on extending hospitals and clinics in urban areas since facilities are most likely to be used to capacity in urban areas, thus avoiding the high cost of underutilization. However, hospitals themselves are extremely expensive, and therefore, to the extent that investment is focused on urban areas, it is recommended that the MOH invest in clinics and community outreach programs.

A third alternative, midway between the above is to concentrate on providing basic health services in areas of medium population density. In such zones, a cluster of facilities might be planned as a unit, built upon existing facilities. CESAMO's and CESAR's could be reorganized through selected closings and new investment. Ideally this would be done so that each CESAR would have a sufficiently large service area, and would be close enough to a CESAMO to make referrals and to receive supervision and supplies. Such a unit might consist of four to six CESAR's for each CESAMO. Moving new investments in this direction may improve significantly the efficiency of existing operational investments while allowing for efficient expansion of services in rural areas as well.

Implementation of this alternative does not rule out some new investment in the hospital sector. Moreover, if operational efficiency were effected in hospitals, the saving could allow significantly more growth there as well.

e. Recommendation

It is recommended that the MOH undertake a nationwide study of the spatial organization of its facilities to evaluate coverage, functioning of the referral system, and the impact of location and supervision. This should be done using the methodology established in the current study being carried out by CONSUPLANE, the MOH, and A.I.D. No additional health service facilities, beyond those already financed, should be built until such a study is completed.

2 Interface of Health System and Population

ISSUE No. 1

A number of related problems are encountered in the health sector, all of which can be subsumed under the general issue of the difference between traditional health systems (described briefly in Section C) and the Western ("modern") health system. The intended beneficiaries of the modern health system are immersed in a traditional health system. They exhibit a number of practices which are defined as problems by the modern medical system. Medical professionals feel that they are more interested in curative than in

preventive measures. They are said to wait too long to seek professional care, often arriving in the last stages of serious diseases which cannot be treated successfully by traditional curers. They resist hospitalization, thinking that it is a condemnation to death. They do not follow prescriptions and advice which involve diet, rest, or exercise, but they demand pills and injections to relieve symptoms. They do not return for checkups as needed. They rely heavily on the advice of pharmacists and other non-medical personnel who may prescribe harmful, or at best ineffective, medicines. Finally, they are said to be "hard to reach" because of their indigenous beliefs concerning health and disease. While these behaviors and attitudes are considered problems by health professionals, they are not seen as such by the target group.

A number of social, psychological, and cultural explanations have been offered in public health literature for the behavior described above, which is a common characterization for non-industrial cultures elsewhere. One explanation is fatalism and the absence of a feeling of responsibility on the part of the individual as a causative factor. Another explanation stresses social distance between medical personnel and beneficiaries, which impedes communication between doctors and patients. The most common explanation in anthropological studies is simply the difference in culture, which shows that there are different and contradictory methods of treatment for a given disease. The anthropological study conducted for this analysis points to both social distance and cultural differences as factors in rural health. Little evidence of fatalism was found. Rather, there is strong evidence that rural people make considerable sacrifices to seek cures for their health problems.

a. The Existing Response

As a means of bridging the gap between modern and traditional health systems, the MOH has established a broad program of extension of health coverage to provide basic health care to the rural population. This program has adopted a number of innovations which seek to bring the traditional and the modern health systems together for better coverage is sought. Principal among these innovations is the CESAR which is designed to provide easy and quick access to basic health care by being located in rural areas and serving a number of rural communities. The auxiliary nurse is placed as a kind of "barefoot doctor" with one year's formal training and with enough skills and supplies to treat certain illnesses and to know when to refer others. Another innovation is the training and equipping of midwives, providing them with instruments, supplies, and knowledge with a view to reducing the complications resulting from childbirth. A third innovation is the training of guardianes de salud, who receive six days of training, a first aid-kit, and medicines for simple treatments in the villages.

While this system is similar in some ways to Chinese responses to the health problem, it is more akin to the simplified medicine approach adopted in Venezuela since 1962. It is based on a network of village dispensaries, each one staffed by an auxiliary nurse who has been trained for the job. The auxiliary nurse supervises midwives who have received some training. The

auxiliary health worker is supervised by the nurse at the rural health post, which in turn is supported by health centers and specialized hospitals. It is a pyramidal system designed to provide basic health care for a dispersed rural population.

b. Constraints

The extension of coverage has had some success in curative medicine. However, it has been less successful in preventive medicine, and in extending its curative coverage to the entire target population. The cultural constraints to successful implementation of the program are numerous. The most important are discussed below.

In a seminal article on the topic, Unschuld* discusses the possible forms of structured coexistence that can exist between Western medicine and traditional healing systems. In most cultures, the interaction of Western and traditional medicine has given rise to situations resulting in the unstructured coexistence of different medical subsystems within one health care delivery system. Policies that foster structured coexistence may result in structured competition, structured cooperation, or structured integration with respect to four dimensions of medical subsystems. The dimensions, in order of their increasing resistance to structured coexistence, are drugs, techniques, manpower, and concepts. It is relatively easy, in most cases, to integrate drugs and techniques from different medical systems. However, manpower becomes more difficult and medical concepts are the most difficult to structure into one system.The anthropological field study of interaction between traditional culture and the public health care system, conducted for this health analysis, concludes that there is, at best, a relationship of unstructured cooperation between the two systems in rural Honduras. In the area of pre- and postnatal care, there is an incipient relationship of structured cooperation between the two systems. Unstructured cooperation exists because of the uses to which the two systems are put by rural people. They move between both systems, using drugs, techniques, personnel, and concepts from both. The following is a typical case:

> A 38-year old woman suffering from frequent severe headaches and nausea went to the local CESAR, then to the local curandero, then to a local pharmacy, and finally to a private doctor. The doctor diagnosed her problem as being caused by high blood pressure and prescribed medicines for it. The headaches were relieved, although they recurred periodically. She then went to a private doctor in Tegucigalpa who took her blood pressure; according to her account, she has been completely cured since she heard the first "hiss" of the sphygmomanometer.

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* Unschuld, Paul. "Western Medicine and Traditional Healing Systems, Competition, Cooperation or Integration" Ethics in Science and Medicine Vol. 3, pp 1-20, Pergamon Press, Great Britain, 1976

This case study is typical of many described in the study. Personnel from both systems are used in search of an effective cure. The woman took drugs prescribed by the CESAR and the pharmacy, herbs prescribed by the curandero, and medicine prescribed by the doctor. The techniques used in her case are from both the traditional and the modern system, and she accepted them both. She had no problem in consulting personnel from either system. Interestingly she interpreted all her treatment in terms of concepts from the traditional system. Thus, the final cure satisfied her because she saw it as the letting of aire in terms of her belief concerning disease causation.

The above case shows that there is considerable wastage because of crisscrossing back and forth between the systems. Valuable institutional and individual resources are expended in the unstructured individual search for a cure, because there is no systematic coexistence of the two systems. The exception to this rule, in many parts of rural Honduras, is the midwife system. The MOH extension of coverage program has taken personnel from the traditional system and is introducing modern drugs, techniques, and concepts through these midwifes into the health system. However, a similar approach has not been taken for general health care. Thus, curanderos and other traditional healers are excluded from the system in a way that the midwife is not.

c. Recommendation

The principal recommendation to be derived from the above analysis is that the extension of coverage program be amplified to include other traditional healers besides the midwife, thus systematizing for the whole health system the structured cooperation that exists in pre-and postnatal care.

ISSUE No. 2

The second issue to be discussed within the general subject of the interface between health worker and the population to be served is the communication of health programs to the target group. The problem, stated broadly, is how do messages in both preventive and curative health get translated for and transmitted to the potential beneficiaries.

a. The Existing Response

The rural health delivery system presently sees the village health worker as the last link in the communications chain between the MOH and the rural population. The village health worker, a volunteer with some training and materials works under the supervision of the auxiliary nurse at the CESAR, who in turn is responsible to the CESAMO. The communications link for preventive and curative programs devised for national programs, thus, is from all central divisions of the MOH to the region, from the region to the CESAMO's, and from there to the CESAR's. Conversely, the referral system is designed to work in the reverse order, from village worker to CESAR and so on up the chain, and back down.

b. Constraints

This system is constrained, at present, by a number of flaws in the chain of communications and control. The referral system does not work as it should. A number of duplicatory and confusing programs deliver their messages from the national level directly to the local level, outside the prescribed communications system.

c. Referrals

One of the cornerstones of the integrated rural health delivery program is supposed to be the referral system, by which auxiliary nurses refer health problems that they cannot treat to doctors at the CESAMO or regional hospital or higher levels. Conversely, these levels should refer patients to facilities closer to their homes for treatments that can be administered at a lower level. The doctor, after seeing and treating the referred patient, is supposed to fill out a counterreferral which the patient takes back with him, since the permanent health record for an individual is his file at the CESAR. Data from the anthropological study of health delivery indicate that the referral and counterreferral system is not working. In the four CESAR's that were studied, the following data were obtained:

Table 1.
REFERRALS AND COUNTERREFERRALS
IN FOUR CESAR's

CESAR	NUMBER OF REFERRALS TO CESAMO OR HOSPITAL	PERIOD (in years)	NUMBER OF COUNTERREFERRALS TO CESAR
Ojojona	78	6	0
Santa Ana	18	2	1
Las Cabanas	13	2	0
Jutiquile	74	5	2

The behavior of physicians who ignore this referral system is a factor that influences the delivery of health services. Both the auxiliary nurses and rural beneficiaries note the futility of the system. Persons who have been referred to doctors by the local auxiliary nurse note that the doctor does not pay any attention the referral slip. Doctors tend to make disparaging comments to patients, such as, "Who does so-and-so (the auxiliary nurse) think she is, that she can make diagnoses." This attitude makes patients question the utility of visiting the auxiliary nurse. It demonstrates to them that the system is not vertically integrated, since doctors ignore or disparage communications they receive from auxiliary health nurses.

Auxiliary nurses are made to feel that they are not truly considered a part of the health delivery system when their referrals are systematically ignored by physicians. They are handicapped in further treatment of patients they refer when they do not know the nature of the

diagnosis provided by the physician or of the treatment prescribed. They are once again reminded of the social and intellectual distance between them and the physician, since they are neither heard by nor do they hear from the doctors to whom they refer patients.

The MOH delivers health services through two different avenues. One is the routine pyramidal system already described. The other is through special programs with single purposes. Among the latter are programs to vaccinate children and pregnant mothers, control infant diarrhea, install water and sanitation systems, control tuberculosis, and control malaria. These preventive programs have their own administrative and promotional staff within the pyramidal health delivery system but retain vestiges of vertical organization. The end result of this is a great deal of confusion at the local level as to authorities and priorities of the MOH. The following example illustrates the confusion:

> A promoter from the malaria program arrived in the community of Jutiquile last year to take blood samples. This year he returned with four plastic bags full of pills. He left the medicine at the CESAR with no explanation of how it should be used. Without consulting the auxiliary nurse as to trained village health workers in the area, or other knowledge of the area, he went out looking for village leaders, trying to set up community meetings. After a fruitless week he observed that the people in the area were "somewhat hard and ignorant" and, annoyed by the lack of support, he left.

This incident, which is probably duplicated many times over, illustrates the confusion created by duplicatory channels for communicating health services. Rather than deliver the malaria message through the local auxiliary nurse, who lives in the area and has rapport with local village health workers and leaders, the promoter goes directly to the populace. This is an inefficient way to communicate, since villagers are reluctant to communicate with outsiders whose bona fides are not established by reference to some local authority. It also undercuts the position of the auxiliary nurse, who is supposed to be the voice of the MOH in the rural areas and, worse still, it produces ineffective, wasteful programs. There is little possibility for follow-up in preventive and curative measures in these programs when no knowledge or information is communicated to the local auxiliary nurse.

In many cases where the MOH does use the auxiliary nurse as the communication link to rural beneficiaries, communications errors take place because the messages do not take into account the level of her knowledge. For example, a circular was sent to all CESAR's with a list of diseases, four of which were marked with stars as being especially important, and which were to be reported immediately if they appeared in the area. The problem arose from the fact that the symptoms of these diseases were not described and the auxiliary nurses did not have any basis on which to detect them.

d. Recommendation

The communications links between the MOH and local village health workers should be systematized in order to avoid duplicatory and confusing communications channels. Single-purpose programs should, to the extent possible, communicate with villagers through the auxiliary nurse at the CESAR. This will require coordination of information and programs at the local, as well as the regional and national, levels. The local knowledge and resources of village health workers and auxiliary nurses, which is not now being used in a number of health development programs, is a valuable resource to be incorporated into other programs.

ISSUE No. 3

One of the basic problems in the delivery of health services is the poverty of rural beneficiaries. While this has ramifications for all aspects of health delivery, only one aspect of it will be considered here: the ability of villagers to pay for health diagnoses and treatments.

a. The Existing Responses

One response of the MOH to the problem of rural poverty has been to provide all diagnoses and medicines free of charge to the rural population served in the extension of coverage programs. It is believed that this will assure equal access to health services by all rural poor.

b. Constraints

One constraint to utilization of free health delivery is that rural people tend to think that medicines that are provided free are either less effective or ineffective. The rural populace does not have a welfare mentality and consequently does not feel that the state is obliged to provide health services free of charge. The anthropological study conducted for this analysis found that large numbers of villagers continue to spend significant amounts of money buying services from traditional curers, private pharmacies, and private physicians, since they perceive the medicines provided free by the auxiliary nurse to be ineffective. The provision of free services thus does not appear to reduce the amount of funds spent on health. However, as people continue to spend in pharmacies they will continue to buy medicines unnecessarily, since most rural pharmacies sell many kinds of expensive drugs without first making a clear diagnosis.

c. Recommendation

The MOH should consider allowing token fees to be levied by village health workers and auxiliary nurses. This would cause their services to be valued more highly by villagers. At the same time, it would offset the direct MOH costs of medical supplies and give the MOH budget a greater degree of flexibility.

ISSUE No. 4

One of the factors that is an obstacle in the interface of health workers and villagers is the social distance between professionals and patients. Insults are frequently traded between peasants and health professionals, according to the anthropological field study, and this can only reinforce the tendency to resort to other, often less effective, health practitioners.

a. The Existing Response

There seems to be no existing response to the above problem. Indeed, it is not seen as a problem by most health professionals.

b. Constraints

The intellectual and social distance between patient and practitioner causes a number of problems. Professionals tend to denigrate the quaint beliefs of patients and their lack of understanding of modern medicine. Patients are made to feel that all their health beliefs and practices are bad while modern beliefs and practices are good. This contradicts the experience of villagers, most of whom believe they have received adequate health care for many of their health problems from traditional beliefs and/or curers.

From the point of view of many health professionals, the constraint is that villagers tend to get angry at health personnel without reason. However, in most cases this is a result of a lack of understanding of the system, which most health professionals consider to be beneath their dignity to explain to a patient.

Poor attention to and abuse of individual patients has a multiplier effect. Villagers who have been denigrated by health professionals tend to be less apt to return. Since his experience is recounted among his peers, the ripple effect in his social group tends to be large. One example observed in the anthropological field study was the CESAMO in Marcala, which is underutilized by villagers it is supposed to serve because its ill repute as a place with abusive professionals is spread widely throughout villages in the area.

c. Recommendation

The problem of social and intellectual distance can be overcome by rigorous enforcement of procedures for courteous and polite attention by health professionals at all times, as befits their status as public servants. Training in cultural sensitivity should be a prerequisite for all health professionals who are in direct contact with the public, to make them aware of the problem of distance as well as techniques for resolving it.

3. Effectiveness of Volunteer Workers

a. The Problem

The MOH has trained more than 5,000 village health workers (VHW's) since the beginning of its program for extension of coverage. Of this number, only about 40% are reporting on a monthly basis. The other 60% have either deserted the program or are still giving services in the community (as is the case of the midwife), but not reporting services rendered or problems encountered.

Because of the short (six day) training courses given initially to all these volunteers, their skills are extremely limited. In the initial training course only the most basic and important concepts are taught. In the case of the representatives, strong emphasis is on developing self-awareness and self-confidence for their leadership roles in their communities. The midwife is trained to improve her procedures in delivering babies, especially in the area of hygiene. The guardian is taught how to treat simple diseases such as colds and diarrhea, and given instruction on how to use five basic medicines.

Based on the dearth of formal reporting and the empirical observations of auxiliary nurses and volunteers it would appear that less than full use is made of the large number of workers available for extension of coverage and the numerous tasks that program comprehend. One prime example of the potential utility of these workers could be the immunization program. Guardians on many occasions have asked to be taught how to give shots, but instruction in this area has been omitted for fear that injections given by these workers would lead to infections. Such fears would, of course, be unfounded if proper training were given and supervision were effective. At the very least guardians could dispense polio vaccine, since injections are not required and, given the guardians' large numbers, polio could cease to be a serious threat in a short period of time. Moreover, even if the guardians are not trained to give injections, they could still be used to help organize and coordinate mass immunization efforts by auxiliaries but this is not done now to any appreciable extent. Another important factor contributing to underutilization of guardians is the fact that people remain largely ignorant of their existence and of the duties they are to perform. No concerted effort has been made to inform the public of who their guardian is and what he is to do, so that he is often passed by as a link in the referral chain. Further contributing to the underutilization of guardians is the ineffectiveness of the logistical system which commonly fails to supply the few medicines and supplies the guardian is trained to use. Finally, the supervision that should be provided by the auxiliary nurse is lacking for several reasons. Foremost is the weakness of training in supervision. Next is the long distance between the auxiliary and the guardian, combined with the fact that travel and perdiem funds are not available to permit the auxiliary to go to the guardian or vice-versa.

Empirical midwives are important figures in their communities and are known to most who would require their services. Although they tend to fail to report their activities to the same extent as guardians, they are probably more active because they traditionally charge for their services.

Their MOH training teaches them to identify possible complications early enough for the referral system to function, and to use more hygienic procedures than they were accustomed to before their training. However, there have been reports that some mothers have rejected some of the new techniques, and have insisted on the time-honored ones, an example being the application of cow manure to the severed umbililical cord. As in the case of the guardian it would appear that the empirical midwife could be made more effective if public information campaigns were to make known her duties and build confidence in her techniques. Again, although midwifes require fewer supplies, improving the logistical system could increase the effectiveness of midwife services. The midwife also needs supervision and the same problems apply as in the case of the guardian.

b. The Existing Response

After VHW's are trained they and the auxiliary nurse assigned to the CESAR schedule monthly meetings at which the VHW's are to report their activities. These meetings are to be attended by the health promoters, who meet with the health representative; the auxiliary nurse, who meets with guardians and midwives; and, occasionally, the area supervisor. In addition to reporting their monthly activities, the midwife and guardian are to be issued their supplies. The guardian is supposed to get five basic medicines and the midwife a few supplies to replenish the midwife kit issued during training. The representative may also get cement or other commodities for latrines or wells. The midwife is to be given additional training, either new knowledge or additional material on a part of the curriculum that was weak during the initial six-day course. The guardian also may have the opportunity to review information on the application of one of the medicines he administers. Attendance at these meetings is not remunerated in any form.

c. Constraints

Due to lack of knowledge of supervision, lack of transportation and per diem and lack of time, the auxiliary's supervision of the village workers is sporadic and weak at best. Weak supervision makes the village volunteers less enthusiastic and less effective than otherwise would be the case.

The length of VHW training is too short, particularly for the guardian, who could be taught more difficult tasks, such as vaccinating, or could learn more about family planning which is one of the most effective public health interventions he could learn. Although guardians are taught the recipe for homemade oral rehydration, they are not taught to monitor carefully a child that is being rehydrated.

Illiteracy is an impediment to reporting, particularly among midwives who are generally older and less likely to be literate, but who nonetheless are expected to record the births they attend and to report them. Unless they are highly motivated and ask a literate person to enter information for them, reporting is not done. The system does little to motivate them.

Once incorporated into the health system, the volunteers get little or no recognition. Despite the official importance attached to the referral system, MOH doctors attach little or no importance to referrals by the volunteers. This tends to make patients believe less in the volunteers and demoralizes both volunteers and patients. Doctors do not treat the village workers as part of the health team because they are generally unaware of the philosophy of using community people for extension of coverage. Some doctors view the use of volunteers as a means of perpetuating traditional medicine and, since doctors' training is mostly clinical, they do not understand the public health impact that using village workers can have. Most doctors still believe that the health system should work for the community but not with it. The volunteers rarely get recognition from their superiors for doing outstanding work. The lack of recognition also contributes to lack of motivation.

Probably one of the biggest constraints is the fact that the extension of coverage program was designed with the village workers serving as volunteers. A great deal on uncompensated work is expected of the village worker, but volunteer work is not a Honduran tradition. Most doctors, nurses, and other health personnel refuse to work overtime because there is no additional compensation. The same personnel refuse to travel unless they have per diem money before they leave on their trip. Nevertheless, they expect villagers to volunteer their services.

Training of large numbers of new volunteers is being done at the expense of continuing, on-the-job training of volunteers who already are in place, but who need refresher training and additional skills in order to do their work effectively. Additional training is scheduled only after all the initial training needed to provide coverage is completed for a given area. Of all volunteers trained since 1977, only about 25% have had follow-on training, which may account for the high rate of attrition and, ironically, the need to train new VHW's.

Instructors of auxiliary nurses and nurse trainers of village volunteers have had no training themselves in community participation or teaching methodology. Thus,they have to teach a subject about which they know little, and they teach it poorly.

d. Recommendations

Increase on-site supervision of village volunteers by the auxiliary nurse.

The auxiliary nurse should visit those midwives that have not attended monthly meetings regularly and offer on-site training. The auxiliary should also visit the guardian, check his medical supplies, determine if the guardian is detecting problems like malnutrition and diarrhea, encourage attendance at monthly meetings and generally assure that the guardian is active. The MOH should implement the supervision system that was recently designed and provide the necesary funds to allow the auxiliary nurse to travel. To permit this, the recommendations regarding assignments of additional auxiliary nurses and relocating and consolidating CESAR's (Sections H.6 and H.1) should be implemented.

Lengthen training for guardians

If the MOH increases the training of guardians, a more capable health agent could be placed in the community. However, teaching the guardian to give injections could cause problems if they do not have sufficient instruction. (Certainly in a six-day course they will not.) However, if time were alloted for such training, the auxiliary nurse could travel to each village and, with the help of the guardian, give door-to-door vaccinations, thus extending coverage, probably to the level required for general community protection. The guardian could give follow up injections of medicines prescribed by doctors or nurses, and could be taught to work effectively against diarrhea

Train professionals in the extension of coverage philosophy

As has been discussed in other sections of this document, the MOH recognizes that most health professionals are ill-prepared to serve in the public health system outside the major hospitals. Doctors in training and those already trained, along with all others who are unaware of the MOH policy should be indoctrinated in the extension-of-coverage program. This can be done by providing in-service training to doctors and nurses already in the field and by including the extension of coverage philosophy in the Medical School, Teaching Hospital and the nursing school curricula. Professors from the Medical School and nursing faculty should themselves have knowledge of the extension-of-coverage philosophy. This recommendation is probably not an easy one to implement, but it can help to promote the success of a public health program.

Train teachers

Teachers who can design and implement an effective curriculum are needed to produce better trained auxiliary nurses and VHW's. Trainers of VHW's are nurses who have duties collateral to training. Therefore the MOH should concentrate on training all of its instructors in teaching methodology. A teaching certificate eventually should be required for instructors of nursing students, and once a nurse receives this certification, her salary should be raised commensurately.

At the regional level, trainers of village volunteers should learn the skills needed to teach campesinos who have little or no formal education. PRONAEEH, a unit of CONSUPLANE established for non-formal training of campesinos, may be able to provide technical assistance in this area. In a few parts of the country PRONAEEH promoters have worked with area nurses, but the linkage is unofficial and sporadic. The methodology employed by PRONAEEH should be evaluated for its applicability in VHW training.

Provide increased recognition of volunteers

In order to provide greater recognition of VHW's, three strategies could be followed:

(1) A mass-media program could be established as an in-service education tool to help the volunteers increase their health knowledge. The program could be broadcast in the vernacular of the villagers and not the polished language of the city dweller. The radio program also could prepare the community to accept the volunteer as an actual member of the health system and to accept changed midwifery practices. Most importantly, radio spots could be used to inform the public of the name, location and services provided by the VHW's and to commend them for their services to the community, by pointing out special cases of excellent performance. This kind of recognition would serve to motivate the volunteer, will help to reinforce his/her position of leadership in the community and will increase confidence in their services.

(2) Village volunteers could be given I.D. cards identifying them as part of a team and entitling them to preferential treatment by doctors and nurses in the formal system.

(3) VHW's could be compensated for attendance at monthly meetings and other training sessions. A symbolic L.10.00 ($5.00) would serve to compensate them for travel expenses when volunteers report to the health center once a month. It also could provide an incentive for attending and reporting.

Improve the supply system for VHW's

Guardians and midwives should be supplied consistently at the planned levels. If supplying the guardians with medication is not possible for budgetary reasons, the guardian should be allowed to sell his products to his patients. Most patients will pay for medicine, and often pay outrageous prices at pharmacies. Among the additional medicines provided, birth control pills and condoms could be included, and the guardian could keep a portion of the money from this sale for himself as a distributor of the HFPA community distributor program.

In-service training of existing volunteers

The MOH should focus its near-term training goals on additional, follow-up training of existing VHW's with secondary emphasis on training new VHW's. The retraining should be a full six days and volunteers should be pretested at least a month before their retraining is scheduled in order to indicate to the trainers where the volunteers are deficient. If there

is a difference in the knowledge that the volunteers retained, they should be separated into small groups so that each group receives appropriate reinforcement

Improve methods of community participation

In order to strengthen the community participation component of the training, serious thought should be given to contracting a social scientist to help develop the auxiliary nurses' curriculum and the curriculum of the VHW's. Auxiliary nurses should be prepared for what they will encounter working with campesinos in the CESAR . The social scientist could be assigned about 60% of the time to work at the training centers and the remaining 40% in the different regions with the continuing education group.

4. Control of Costs and Recurrent Cost Analysis

a. The Issue

Extensive recommendations for action by the MOH are found in this assessment, and in a number of other documents. The ability to implement these recommendations, however, is limited by the financial resources available. A critical question thus arises as to the extent that MOH programs can be expected to grow over the next 5-10 years and whether the MOH has the funds needed to implement the recommendations. This question is complex because it asks whether the programs can grow at all and, if they can grow, how the additional funds should be allocated between investments in infrastructure and human resources operating costs, environmental sanitation, personal health care and other potential uses. There are, of course competing requirements within each category of potential use.

This section will will examine (1) the extent to which funds are likely to grow, and (2) how far these funds might reach if put to various uses. The more detailed questions are discussed separately in various sections of this report. ~~In Part III, the reader will find a further discussion of a range of investment options.~~

b. The Existing Response

(i) Background

As in most developing countries, Honduras has only a small amount of funds per capita to invest in health care. The MOH budget for 1980 included only about $ 16 per person to provide both health care and some sanitation services in the rural areas. Including Social Security, about $21.50 per person per year is available. In most developed countries the expenditure for health care is several hundred dollars per person per year. Thus, in absolute terms, Honduras' investment in health is small. However, Honduras invests a relatively large proportion of its GDP in Health Care. In a recent conference on financing health care which included eight Central American and Andean countries, only two spent a larger share of their GDP on health care.

Honduras is thus faced with the classical dilemma of developing countries: Its needs are great and it resources are small. To resolve this dilemma, Honduras has developed a policy of extension of coverage to rural areas based on the use of auxiliary personnel. From a financial point of view, this policy per se is essential to achieving equity in coverage and is consistent with the resources available.

(ii) The Health Sector Budget

In 1979 the health sector budget including the MOH, the Social Security System, and SANAA was $ 71.205 million. About 75% of this amount is the budget for the MOH (including transfers to SANAA). The Social Security program provides services to a selected group of relatively priviledged workers. As a result we have given it little attention, and have focused instead on the larger budget of the MOH.

(iii) Growth of the MOH Budget since 1970

The MOH budget has been growing rapidly for most of the last decade. This growth corresponds to the period during which the Government as a whole has given increased emphasis to the rural areas and during which the MOH has followed its extension of coverage policies.

As the following table illustrates, the MOH budget grew slowly through 1974. During this period the annual compound rate of growth was only 9.34% per year. Such low growth was barely adequate to keep ahead of inflation. However, in the rest of the decade (1973-1980) the budget grew at an average annual compound rate of 27.3% per year, a rate much higher than the public sector as a whole. Taken together, the slow initial growth and rapid growth at the end of the decade produced an average compound growth rate for the decade of 20.2% per year. This is a substantial amount, and indicates that the Government has given high priority to the health sector.

MOH Budget Growth 1970-1980

Year	MOH Budget (000s of Lempiras)	Simple Year to year Growth Rate	Average Compound Growth Rate Base 70	Base 73
1970	19,682			
1971	21,441	8.94	8.94	
1972	22,381	4.38	6.63	
1973	23,010	2.81	5.34	
1974	28,140	22.2	9.34	22.2
1975 *	49,658	76.5	20.3	46.9
1976	52,228	5.17	17.6	31.4
1977	67,436	29.1	19.2	30.8
1978	84,539	25.4	19.9	29.7
1979	109,460	29.5	21.0	29.6
1980	124,674	13.8	20.2	27.3

* Includes transfer to SANAA for the first time; this explains much of the extremely large increase.

Investment was a large component of total expenditures during the period of rapid growth. For example, in 1978 investment (mostly construction) accounted for nearly 20% of actual expenditures of the MOH. It is this investment which has stimulated the growth in the MOH budget because new facilities required staff and equipment to keep them operating. Thus invesment has produced an even more rapid growth of the operating budget.

Since 1974 the MOH has been increasing the proportion of the budget allocated to primary health care (clinics and preventive activities). In 1974 the MOH spent only 15 cents in primary care for every dollar spent in Hospital care. By 1978 that rate had increased to 46 cents. However, it is not now clear that the MOH plans to maintain this trend. The new Five Year Plan proposes to increase the proportion of the budget assigned to hospitals.

Another notable feature of the growth is that expenditures for support and administration have not kept up with overall budget growth. In real terms, after adjusting for inflation, the budget for administration actually decreased over the decade from 1.54 million lempiras per year in 1970 to only .9 million in 1978 (the last year for which data is available).

(iv) Growth of Cost of Health Sector Programs

Despite the growth in the health sector budget noted above, actual programs have grown at a slower rate. General inflation and increases in costs of health sector inputs have limited the growth of programs. To estimate the extent of this factor, we have estimated the average rate of growth in the annual cost of hospital beds and rural clinics (CESAR's) of the MOH. These estimates are somewhat crude. For example, the cost per hospital bed includes outpatient services provided at the same hospital. Nevertheless, these measures do provide some idea of the extent to which costs have been growing. (The methodology used is described in the background document for this section.)

The results indicated that the cost of both hospital beds and rural clinics has been growing at an annual rate of between 15 and 16 % per year since 1976. About half of this growth was due to general inflation. The rest represents either higher inflation in the health sector, or provision of more sophisticated and more intensive care for each patient.

The implications of this high rate of growth of costs are serious. During the same period, the MOH budget grew at only 24.2 % per year. Thus two-thirds of the increased budget was consumed by existing facilities. Since the number of new facilities is growing rapidly, this indicates that the growth was not adequate to operate the new facilities at optimum levels of effectiveness. As we will see below, this trend may continue in the future.

(v) Efficiency of MOH programs

The issue of efficiency is a critical factor which could influence the balance between income and expenditures. The data available indicates that the MOH could significantly increase its efficiency.

In the Mid'70s the MOH conducted a study of hospital costs by units of service for its various hospitals. The results show a wide variation in the unit costs for almost every service. In many cases the same service costs over six times as much in some facilities as in others. One must assume that the facilities with higher unit costs are to some extent inefficient. No single facility type was consistently inefficient, indicating that all levels could reduce waste in some departments.

A MOH study of the production of consultations in CESAR's from 1977 indicated that they are closed 60% of the time, and that only about seven or eight consultations are provided on an average day the facility is open. Closures are due to pregnancy, staff-turnover, and other problems. Clearly, on an average the CESAR's are under-utilized, resulting in inefficiency. However, many of them were used beyond capacity, again indicating wide variation in efficiency, as was the case for Hospitals.

The calculations of costs per bed mentioned above were also done by level of hospital on the assumption that costs would be higher in the large national hospitals providing sophisticated care. However, exactly the opposite was found. The average cost per bed in CHE's, the smallest hospitals, was about 30% more that the cost in National Hospitals where presumably better care is available. While more detailed study would be useful, the analysis indicates that the MOH should evaluate its policy of increasing the number of such small hospitals.

In summary, while the GOH has invested significant and increasing amounts of funds in the health sector, increases in costs and some inefficiency in operations have combined to consume nearly two-thirds of the growth. The maximum increases projected increases in budgets have not been adequate to support the growing number of facilities being operated by the MOH.

c. The Constraints

(i) Projected Growth of the MOH Budget in Real Terms.

The growth of the MOH budget is impossible to predict accurately. Nevertheless, some idea of probable future growth can be gained from GOH policy and resources.

Firstly, the entire public sector budget and the GDP have both been growing at about 6.5%-7% in real terms (i.e., after adjusting for inflation), or about 13%-14% before adjusting for inflation. Thus the growth of the MOH budget at a more rapid rate would imply that other programs must grow more slowly. Given the GOH investments in the El Cajon electrification project, and extensive investments in wood and pulp production, it is clear that the MOH will have to compete strongly if it expects higher growth.

Secondly, GOH policy limits growth of even high priority sectors (including health) to a growth rate of 18% before inflation. This policy is based on the assumption of an 8% rate of inflation. If this were the case, real budget would grow at 10% per year. However, the effect of

current high rates of inflation is to limit growth to a few per cent. For example, if the budget actually grew at 18% per year, and costs per hospital bed and CESAR continue to grow at 15-16% per year, this would leave less than 3% real growth. For 1981 this would amount to only $1.9 million in new funds.

It could be argued that the budget will grow at a rate higher than 18%, since it has recently been growing at a rate of nearly 30% per year. However, this seems unlikely for several reasons. The GOH has already begun to reduce the growth of the MOH budget. For 1980 the budget grew only 13.8%. Also, it should be remembered that the growth rate for the entire decade was only 20%. Finally, it should be noted that some of this growth results from GOH funds that appear in the MOH budget only as a transfer to SANAA for water programs; thus the real growth for the MOH was smaller than 20% for the period 1970-80.

Thus, it is reasonable to conclude that, after inflation, the growth of the MOH budget will be between no more than 6% per year in the foreseeable future.

(ii) Comparison of Projected Growth to Existing Plans

This current Five Year Plan projects significant investment in facilities at the level of regional and emergency (CHE) hospitals. Increased investment in sanitation programs and in other areas is also projected.

In order to investigate the feasibility of these plans, the unit costs mentioned above, along with the historical growth rates, were used to project the budget implications of the Five Year Plan. The result showed that full implementation of the Five Year Plan would require a growth rate of 31% year (including inflation of 16%) in the MOH budget in order to meet operating costs. Such growth is highly improbable. Most of the projected budgetary gap is due to planned expansion of Hospitals which consume large amounts of operating funds and compete with higher priority programs for all resources. Given the existing budgetary constraint, it would be unwise for the MOH to undertake further hospital expansions. Other reduced alternatives were analyzed; the analysis indicated a budget shortfall with any significant implementation of the plan.

(iii) Efficiency and MOH Budget Constraints

Given the fact that the MOH will most likely operate on a more limited budget over the foreseeable future, and given the rapid rise in unit costs, it would be highly appropriate for the MOH to consider ways to increase efficiency. Efforts should be implemented as soon as possible to monitor costs per facility and service unit, and to reduce these costs to the maximum extent possible, while maintaining quality. The MOH policy of using auxiliary personnel to extend services in rural areas is an important step in this direction. Hospital costs must also be tightly controlled however, since they are a much larger part of the overall budget.

In summary, it is likely that the MOH budget will grow less rapidly in real terms in the near future. In fact, the MOH budget could

decline slightly in real terms as it did in 1980. Therefore, the MOH will have to consider its expenditure and investment options very carefully in the near future.

d. Conclusions and Recommendations

The GOH will have difficulty financing operating costs of additional facilities over the foreseeable future

The preceding analysis indicates that unless the GOH causes resource allocations to the health sector to grow more rapidly than foreseen by economic planners, there will be a budget gap. The MOH will not be able to afford to expand all its programs to the extent proposed in the National Development Plan. Even a moderately restricted plan still leaves a significant gap in annual recurrent costs. In summation, the GOH must closely review the Five Year Plan to determine just where adjustments should be made in order to bring proposed expenditures more in line with what reasonably can be expected in budgetary resources.

The MOH should not make investments that will entail heavy additional recurrent expenditures.

Expansion in the hospital sector should be curtailed. Expansion of beds should be slowed. Construction of new hospital facilities (other than that which is currently in progress) and other expansions should be postponed until steps have been taken to fully staff, equip, and train personnel for existing facilities. This will result in a more orderly and effective health service coverage.

The MOH should study alternative uses for hospitals under construction. One important use of a redundant installation might be as the site of a school to produce licenced practical nurses.

The MOH should analyze efficiency of medical services and where costs are above an acceptable range, take steps to reallocate resources in order to reduce cost.

Analyses similar to the 1976 Informe del Sistema del Costos by UNINDESA on hospital costs should be required at frequent and regular intervals for the various health delivery units. Reporting must be improved and regular analyses undertaken if costs are to be curbed. Such analyses should identify hospitals CESAMO's or CESAR's where costs per unit of service are out of an acceptable range for similar services.

They then should be studied more comprehensively and plans should be developed and implemented to bring down their costs. To facilitate these studies, automatic data processing should be used.

Use more detailed accounting codes and more sophisticated analyses, such as cost-effectiveness analysis, as data permit.

Improved accounting procedures would provide much of the necessary information for undertaking more sophisticated analyses, i.e. cost-effectiveness analyses, which would improve decision-making and help set priorities among those activities with the greatest potential payoff in terms of health service delivery. More sophisticated analyses (which require better information) will help identify which activities these are. To facilitate this effort, the budget should be maintained on computer equipment (rather than by manual methods) for more timely analyses.

Expand patient fees for care and other revenue sources.

Opportunities for increasing resources available to the MOH need to be identified. Charges for visits are made in some facilities; they could be expanded to all facilities. Charges for drugs is another possibility. This would provide funds for acquiring or transporting drugs and supplies when needed. Income from drug charges could support a rotating fund for purchasing medicines. New taxes might be contemplated - such as a surcharge on hospital beds or discharges in private hospitals. A payroll tax for private hospitals is another possibility. Health insurance schemes have been tried and found successful in other countries. They might be contemplated here.

The MOH should not increase the proportion of its budget allocated to hospitals

While hospital care is important for a full health program, the services are very expensive. In rural areas the population is often too sparely populated to make good use of hospitals. Most of Honduras' health problems are simple and can be treated effectively on an outpatient basis by auxiliary health personnel. Thus the MOH should continue its policy of extension of coverage, and provide this program with enough budgetary and technical support to assure that it works.

5. Water and Waste Disposal Program

a. Objective

Where water and sanitation services are insufficient or inappropriate, disease transmission is enhanced, diarrhea is more common (see diarrhea section), and specific disease agents causing amoebiasis, typhoid fever, intestinal parasites, infectious eye diseases, hepatitis, and skin problems are contracted more frequently. More readily available water supplies and sanitation facilities reduce such risks and lessen the drudgery of transporting water, thus freeing time for other personal, family, and community duties. The objective of the water and waste disposal program is to provide adequate amounts of safe water and appropriate means of human waste disposal for all of the people of Honduras.

b. National Commitment to Safe Water and Human Waste Disposal Systems

A recent study conducted for CONSUPLANE indicates that, by early 1979, 30% of the rural population and 79% of the urban population had easy access to water supplies from community wells or more sophisticated systems while only 18% of the rural and 50% of the urban populations had latrines or other alternative waste disposal facilities. Under its Five Year Plan for 1979-83, the GOH aims to provide easy access to water for 75% of the rural population and some form of human waste disposal system for 38%, more than doubling its accomplishments to date. Given present coverage and population growth, these goals imply a target group of 1,200,000 for new water and sanitation systems. Since experience indicates that such systems have a 20 year life, an additional 170,000 people would need repaired water systems during this period. The overall coverage attained and the GOH target for the next five years and the remainder of the decade, expressed in percentages of rural people served, is shown in Table 14.

c. Executing Agencies

The principal organizations with extensive water supply and sanitation programs are the MOH's Department of Environmental Sanitation (DES) and the autonomous National Water and Sewer Service (SANAA).

The MOH Program of Basic Sanitation (PROSABA) administers and promotes rural environmental sanitation outreach programs as activities of the Department of Environmental Sanitation. PROSABA's main activity is the construction of wells and latrines in dispersed rural communities with populations of less than 200 inhabitants. This activity is implemented by rural health promoters. The promoters assigned to work with the villages are from the area in which they work, and are expected to be knowledgeable about local customs and beliefs. Through their efforts, communities are organized for self-help in each locality where water and sanitation systems are to be established. PROSABA has established personnel levels and operating procedures which will permit it to install at least 1,000 wells and 9,000 latrines a year as part of a new A.I.D-GOH Rural Water and Sanitation Project (522-0166).

SANAA responds to needs for piped water systems and sewers. Its rural activity has been directed mainly toward the construction of gravity flow aqueduct systems in rural communities having populations of more than 200 inhabitants. Its responsibilities include financing, designing and supervising construction, and maintaining the completed systems. Community volunteer labor is required for all unspecialized work during construction. SANAA is charging user fees for maintenance and system expansion and to amortize the costs of rehabilitation of existing systems. Treatment units consisting of chlorination and/or filtration units are being installed for the systems which require them. With external financial assistance, SANAA is constructing or supervising the installation of approximately 100 rural or small urban gravity flow aqueduct systems annually and the rate of installation is increasing.

A.I.D. Project No. 522-0166 is providing long term management assistance to increase the established capacity of both DES and SANAA and to strengthen management, coordination, and maintainance capabilities at the regional and central levels.

The National Municipal Bank (BANMA) provides loans to municipalities to finance infrastructure and services, including water systems. The municipalities then operate and maintain the systems and repay BANMA from charges for water or from other revenues. Since 1975, eight systems have been built or repaired in medium sized communities, the smallest of which had a population of 6,000 inhabitants. This activity is expected to continue as viable opportunities for BANMA financing present themselves. A.I.D. is currently financing a $5.0 million Municipal Development Loan through BANMA (522-0165) to assist the smaller municipalities with their development efforts. A major component of that loan will finance water systems.

d. Overall GOH Investment in Water and Sanitation.

The GOH is committed to providing improved sources of safe water and sanitary disposal systems to the rural poor as indicated by its more than tripling budgetary allocations for this purpose in the present five-year period, as compared to the 1974-78 period. (See Tables 15 and 16.) This investment is essential to improvement in the health status of the rural poor and has ample support from A.I.D. and other donors.*

e. Discussion

There have been improvements in the institutional capacity to install rural water and waste disposal systems and further development of this capacity is underway to help meet established GOH targets in water supply and sanitation. As indicated, by 1983 the GOH expects to provide 74.6% of the rural population with water and 38.3% with some form of excreta disposal

* Other donor financing includes: IDB $7.5 million for 175 rural aqueducts; EEC $4.0 million for wells, latrines and aqueducts in the Department of Olancho.

system. This projection seems ambitious when compared to the slow progress made in the past but the overall capacity is increasing rapidly through the addition of human resources, appropriate equipment and supplies and improved logistical support. Planning and management are being improved to assure complementarity between programs and to reach the maximum number of beneficiaries. Supervision and maintenance capabilities are also being expanded.

The absence of comprehensive planning for multiple uses of water e.g., for irrigation, industry, recreation, and human consumption has not been a critical problem in the past, but it will be in the future. As population density increases, watershed and water resource management will be vital elements in the maintenance of the quality of life. As irrigation and industrial systems develop, their impact on health should be of great concern to health planners, and institutional arrangements need to be established now to deal with problems that will soon be at hand.

Maintaining a water system is not enough to lower disease rates, and many local water and sanitation programs have failed in the past because they failed to include an educational component. The population must be made to understand the relationships between health, clean water, and hygiene. Without the proper education, a waste disposal system may not even be used, or may be used inappropriately. Institutional training within both major agencies is now planned and financed to upgrade the technical capacity of field personnel to promote and supervise projects and, most particularly, to promote hygienic personal habits needed to make water and waste disposal systems worthwhile.

f. Technical Factors

Until very recently the GOH concentrated solely on water supply without considering its quality. Under current programs however, safe water standards have been adopted, and all new or renovated systems will provide water with the following characterstics: (1) 10 or less Jackson units (turbidity); (2) standard (color) units 10 or less; and (3) coliform count, 20 or less. A.I.D. is financing equipment for eight regional laboratories to allow for water quality testing of a full range of variables which will affect all systems, eventually helping bring them all up to standard, though it may be about two years before the laboratories are testing water routinely and many more years before safe water is generally available.

g. Sociocultural Problems

Poor rural Hondurans generally do not understand the concept of safe or potable water or relate it to health. Even after a safe water supply has been provided and water is readily available from a hand pump or even from individual family taps, people may still drink water from a nearby river or lake, for convenience or because of taste preferences. There is a tendency to be careless in the handling of water, and safe water often becomes contaminated before it is actually used.

The difficulties of introducing latrines to locales where promiscuous defecation is practiced are well known. Latrine use may be

shunned for aesthetic reasons or out of sheer habit. Furthermore, mobility associated with agricultural and marketing activities, and the omnipresent threat of diarrhea means that a household latrine may not be always accessible when needed.

h. Recommendations

The A.I.D./GOH Rural Water and Sanitation Project (0166) seeks to reduce or eliminate the limitations noted in the discussion section. However, the following recommendations are reemphasized:

Continue to Fully Support Existing Programs

The GOH should give high priority to accelerating the implementation of current water and sanitation projects with heavy emphasis on community education in the importance of safe water and its uses, so as to assure attainment of stated health goals, i.e., the actual reduction of morbidity and mortality from water-borne diseases.

Institutional Development

Current institutional development efforts, particularly, in management, coordination, and training should be supported strongly.

Improve Water Quality

As planned, high priority attention should be directed toward developing a systematic approach to improving water quality in existing systems with regular, systematic testing as a basis for action.

Comprehensive Water Resource Planning

Comprehensive water resource planning should be instituted to assure adequate supplies of water for multiple uses and the inclusion of health considerations in planning industrial and agricultural programs.

6. Effectiveness of Rural Health Centers (CESAR and CESAMO)

The CESAR and CESAMO are the medical services institutions most readily accessible to the campesino. These two types of centers are designed to be responsive to the people of the community in the hope that the community will identify them as their own and use their services. Often, however,

health centers are viewed with suspicion and mistrust. Only rarely do communities consider them their own.

a. The Problem

(i) Operating time

The CESAR's and, to a lesser extent, the CESAMO's are frequently closed. In the first half of 1977 a MOH study found CESAR's operating only 60% of the required time, and CESAMO's only 72%. The reasons for closing a CESAR are many, but the main reason is on the absence of the auxiliary nurse for a wide variety of professional and personal reasons, including: visits to higher headquarters, supervisory visits to volunteer workers, work in the community, vacation, maternity leave, and illness. Patients coming during those absences are not attended. Auxiliary nurses, in an effort to accommodate the large number of duties to be performed, typically set up rigid schedules to give various clinical services at very specific times. Consequently, a patient who does not come at the appropriate time for a given service is turned away. Because there is little supervision, the auxiliaries reportedly are not always available at prescribed times. Scheduling is responsive to the auxiliary nurse and not to the community.

(ii) Staff Continuity

The turnover of staff in CESAMO's, and to a lesser extent CESAR's, is high. CESAMO's usually are assigned a physician who is doing his required year of social service. These doctors generally have no interest in working in rural areas; nor are they trained to do so. Because of the strong clinical focus in their training the doctors find themselves frustrated when placed in ill-equipped and ill-supplied health centers. Because of their weak public health background they tie themselves to the clinic, and attend only patients that are obviously ill. During their social service, doctors do little or nothing in preventive medicine. Therefore after their year of service is completed they rush to the city to specialize or to work as general practitioners. A doctor rarely remains in a CESAMO after his first year.

Nurse supervisors working in rural areas normally do only their one year of required social service. Although extensions are not unusual, permanency of nurses in a rural center is not the norm. Auxiliary nurses working in CESAR's generally tend to remain in place somewhat longer; however, some request transfers after they have served two to three years. Marriage is a common reason for leaving.

(iii) Supplies

Supplies are short in most health centers. CESAR's often seem to be provided with medicines which are not appropriate to the problems that they have to address. For example, they may have a year's supply of expectorant and not a drop of diarrheal medicine when diahrrea is

the major problem. In one center in Region 2, a particularly motivated area doctor and area nurse designed a logistical supply system that resupplies the auxiliary nurses with those medicines that have most demand as determined by diseases reported in the monthly reports. This of course requires some analytical work by the area supervisor and doctor, but it does provide the auxiliary nurse with drugs appropriate for her community. This is a rare example, of what can be done (and in fact, what should be done, at the central level) to support the primary health care system.

(iv) Supervision

Norms and training for supervision of the auxiliary in the CESAR are weak. Area supervisors also lack means of transportation and per diem to be able to visit CESAR's as frequently as is necessary, given the many needs of the auxiliaries who run them.

(v) Salaries and incentives

The salaries of physicians (particularly beginning physicians) and nurses are low. As a result, doctors working in CESAMO's, have been known to work in private practice after hours. This is so lucrative that they are often in a hurry to leave the health center for their private office. In some locations auxiliary nurses, in addition to working in the CESAR, are also small business owners. They become the official pharmacy, and sell medicines from their home. Some auxiliaries also work for the HFPA as distributors of contraceptives; the contraceptives are sold at modest prices with the nurses keeping part of the proceeds.

The auxiliary nurse is the key person in the MOH extension of coverage program. She is assigned too much work: her job description is hopelessly complicated; and she is asked to perform work that a doctor would be very reluctant to do, e.g., to work in communities, to supervise VHW's, and to fill out voluminous reports. Worse for the morale of auxiliaries is the fact that there is no career ladder for the auxiliary nurse. No scholarships are available to permit auxiliary nurses to enter nursing school or the University to study at a higher level, even if they turn in a consistently high performance.

b. The Existing Response

Recently the MOH contracted an advisor to design a supervision system focusing on the area and extending to the CESAR and the community. The MOH has started training its personnel in the use of this system, and it is expected that by the end of 1980 all health personnel involved in community work will know how to conduct supervisory visits effectively. At monthly meetings of VHW's, supervision is increasing and area nurses and doctors are becoming more aware of health conditions in the communities. The 1980 budget has provided for additional medicines to supply the increased number of personnel. There is hope that the CESAMO's and CESAR's will be the major beneficiaries of this measure.

The MOH's Office of Human Resources has designed a continuing education program that in turn has a person in each region assigned the duty of establishing continuing education programs for everyone in the region.

c. Constraints

One of the major obstacles to greater effectiveness in the basic health system has been the lack of a strongly supported policy for the extension of coverage. The policy is praised in the abstract but, in reality, sufficient resources and guidance have not been brought to bear to make it effective.

Knowledge among supervisors at each level about how health services are being provided in rural areas is based on conversations with field workers and not on on-site supervision of the work done. Supervisors will not travel unless money for per diem is available. Since funds for this activity are always lacking, supervisory visits are few and far between. Because there is little real contact with field workers, normative personnel are not well informed about the needs of the outlying areas, capabilities of field personnel, and field working conditions. These personnel plan tasks to be performed by health workers without being able to estimate reasonable time requirements. Totally unrealistic plans are the result.

Because medicine is costly, appropriate amounts of the types needed are not purchased to meet the needs of the communities. Basic items such as cotton, gauze, syringes, needles and rubber gloves, are always in short supply and so the medical services provided by auxiliary nurses are less effective than would be possible otherwise.

Salaries for health personnel are abysmally low. Nurses and auxiliary nurses get particularly low salaries ($325 and $120, per month, respectively) for the difficult work they are supposed to do. With the low salary comes the low prestige of the nursing profession in Honduras and low morale and moonlighting.

Transportation is a critical weakness of many MOH programs. Without vehicles, supervision cannot be conducted, people cannot be vaccinated, and supplies cannot be delivered to the health center or to the communities.

d. Recommendations

Increase support of basic health programs

The policy of extension of coverage has been defined and should be supported strongly by the policy makers. Supervision and material support of the CESAR and CESAMO should receive priority attention at all levels.

Realistic assignment of duties

The Normative Offices should do a detailed task analysis of existing activities combined with integrated programming of auxiliary time to establish realistic norms for the performance of auxiliary nurses. This task analysis should be used by auxiliary nurse instructors to revise the curriculum for auxiliary nurse training, and should be used to strengthen the relationship between the teaching staff and graduate auxiliaries. Thought has been given to placing two auxiliary nurses in each CESAR with one responsible for community work and the other be responsible for clinical work. While this is probably ideal, another alternative is to have three auxiliary nurses assigned to two health centers with one responsible for the community work of both. The duty could be traded periodically. With this arrangement, CESAR's would not have to be closed as often.

Supply and transportation

Since transportation is an important constraint the community auxiliary should be provided with a mule or motorcycle for mobility to enable her to meet her scheduled commitments.

Increase motiviation

To attract more doctors and nurses to work in rural areas, the MOH should set up an effective continuing education program through its Office of Human Resources. There are many knowledgeable health professionals in Honduras who should be invited to travel to the regions to help conduct workshops for field personnel. Pediatricians, gynecologists, nutritionists, ophthalmologists, physical therapists and others can give relevant education to field workers.

I. SELECTED ISSUES IN PROGRAM SUPPORT

1. Management and Administration

a. The Problem

The MOH is a large, complex organization employing over 6,000 people and spending over $60,000,000 per year. Any organization of this size is extremely difficult to control and direct. The health sector as a whole is even less managable.

The objective of the management units* of the MOH is to make decisions about the overall direction which the MOH should move, to guide the various facilities and units in this direction, and to give these units sufficient information and goods so that the entire MOH can function as a unit. To the extent that this difficult objective is met, the MOH will be able to operate efficiently to reach its overall objective of improved health for the Honduran people. In fact, however, the MOH has considerable difficulty with this task.

Of the people employed by the MOH, about two-thirds work in the 11 largest hospital facilities. The other third are spread among several hundred CESAR's, CESAMO's, regional offices, and small hospitals. The nature of the large hospitals (they are few in number, divided into manageable functional units, spatially concentrated, operated under a traditional hierarchical system of control) makes these facilities relatively easy to direct and manage. Not so for the other facilities. There are many of them, and they are spatially dispersed. Thus, supervision and supply requires stronger transportation support, and time must be invested in travel. Communication is more difficult. Finally, because these units are often non-traditional, custom does not specify how they are to be managed. Thus, as the MOH increased its emphasis on dispersed facilities in the last five years, the job of management and administration became much more difficult and complex.

Over this same period, the MOH has adopted a policy of integrating its various health programs into a unified structure. This action reflects a worldwide trend toward integration which has been carried out under the technical advice of WHO and many other international agencies. An "integrated" program is the opposite of the vertical programs in vogue previously. In the past the MOH operated vertical programs in hospitalization, clinical services, malaria, tuberculosis, family planning, immunization, and other areas. These vertical programs had their own directors and staff, special offices, purchasing system, and other support systems. The smaller, relatively focused programs were much easier to manage than the integrated MOH. However, they were criticized because it was said that there was insufficient coordination among the programs, and that this led to waste. In fact, the supposed benefits of integration have not been realized in the MOH, largely because the management and normative units of the MOH were not reorganized effectively to control the integrated structure.

A recent survey of the divisional and regional level managers of the MOH illustrates the problem. These managers were asked who they supervised and who supervised them. In many cases they could not agree on who

*Management units are the central level of the MOH including the Secretariat, the Directorate General, the Administrative Officer, the Normative officer, the Regional Management officer or the Regional Director and Hospital Directors.

was responsible to whom. Moreover, 35% of the respondents indicated that their office was not reflected appropriately in the administrative structure of the MOH. The resulting uncertainty about lines of authority and responsibility creates an interia which slows the process of decision-making in the MOH. Since persons are not sure if they have authority to take decisions, and they don't know who else might have the authority, they continue doing whatever they have been doing to avoid mistakes. This situation resulted from an absence of clear written guidelines establishing the flow of authority and responsibility within the MOH. This lack of guidance prevents MOH managers from exercising the leadership required for effective operations. In addition, many MOH managers are seriously overextended. For example, the Director General has supervised some 25 major units of the MOH over the last five years. Such a broad span of control is normally beyond the capabilities of any individual.

Beyond the MOH, the overall coordination of the health sector is also weak. Responsibility for coordinating the sector rests with a small office of three persons in CONSUPLANE who have no authority over the agencies whom they are supposed to coordinate. As a result, there is some, but not enough, overall coordination in the health sector. In practice, the Minister of Health effects a certain degree of coordination through his role on the Boards of Directors of SANAA and PANI.

c. The Existing Response

To a large extent the above problem has gone largely unnoticed within the health sector. Little budget has been allocated for management and administration, and no clear lines of authority and responsibility have emerged. One particularly undesireable result has been the incresing necessity to devote management time to handle numerous crises, a practice which allows policy makers precious little time to consider how to organize to avoid crises.

d. Financing Health Sector Management

Since 1970 the amount allocated for administration and management of the MOH has dropped from around 10% to 2% of the MOH budget. In absolute terms the budget for administration and management has remained at slightly under $1 million per year throughout the last decade. Thus, at the same time that management problems were becoming more difficult, the MOH was not increasing its investment in management to keep up with its overall expansion. In its current budget, the MOH has proposed a sorely needed increase in this important area by requesting about 10 additional positions in central administration. However, this increase was opposed by various decision makers in the MOH and Ministry of Finance. It is not clear at this time whether or not the increase will be granted.

d. Responsible Agents

As was noted in the section on problems, the actual flow of responsibility and authority within the MOH is not clearly defined. To some extent this stems from the lack of a firm legal basis for the structure of the MOH. When the General Directorate of Health was created in 1973 to unite hospital and clinic programs, the law specified that the internal structure of the MOH would be spelled out in a later document. This has not occurred. Instead, offices have grown by internal memo, and often by oral understanding. Frequently, one office may be given several different names within the MOH.

Organigrams of the MOH are published periodically as part of the annual budget, and in other reports. Figure 1 is a recent example. To be more complete, this chart should include hospitals as line units responsible to the General Director. The most notable feature of the chart is that almost all the offices are staff offices, without line responsibilities. None of the technical offices have authority over actual implementation of programs, making effective functioning of these offices extremely difficult and calling into question the very need for them in their present form and position within the structure. It should also be noted that the position of Director of Medical Attention has not been filled since its creation several years ago and does not exist in fact.

Between 1974 and 1978 the MOH Unit for Administrative Development prepared a number of manuals and guidelines to facilitate budgetary planning and other aspects of administration. These norms have not been utilized to any great degree. In 1978 the MOH Office of Planning carried out a study which documented many of the problems noted here. The recommendations of this study have not been implemented.

e. Constraints

-- The principal constraint to resolving these problems is a combination of the lack of recognition of their existence and a failure to appreciate their importance. There is a clear need for written regulations establishing lines of both authority and responsibility within the MOH.

-- Budgetary allocations for administration are inadequate.

-- Trained decision-makers are lacking. (This is discussed in more detail in the section on human resources.)

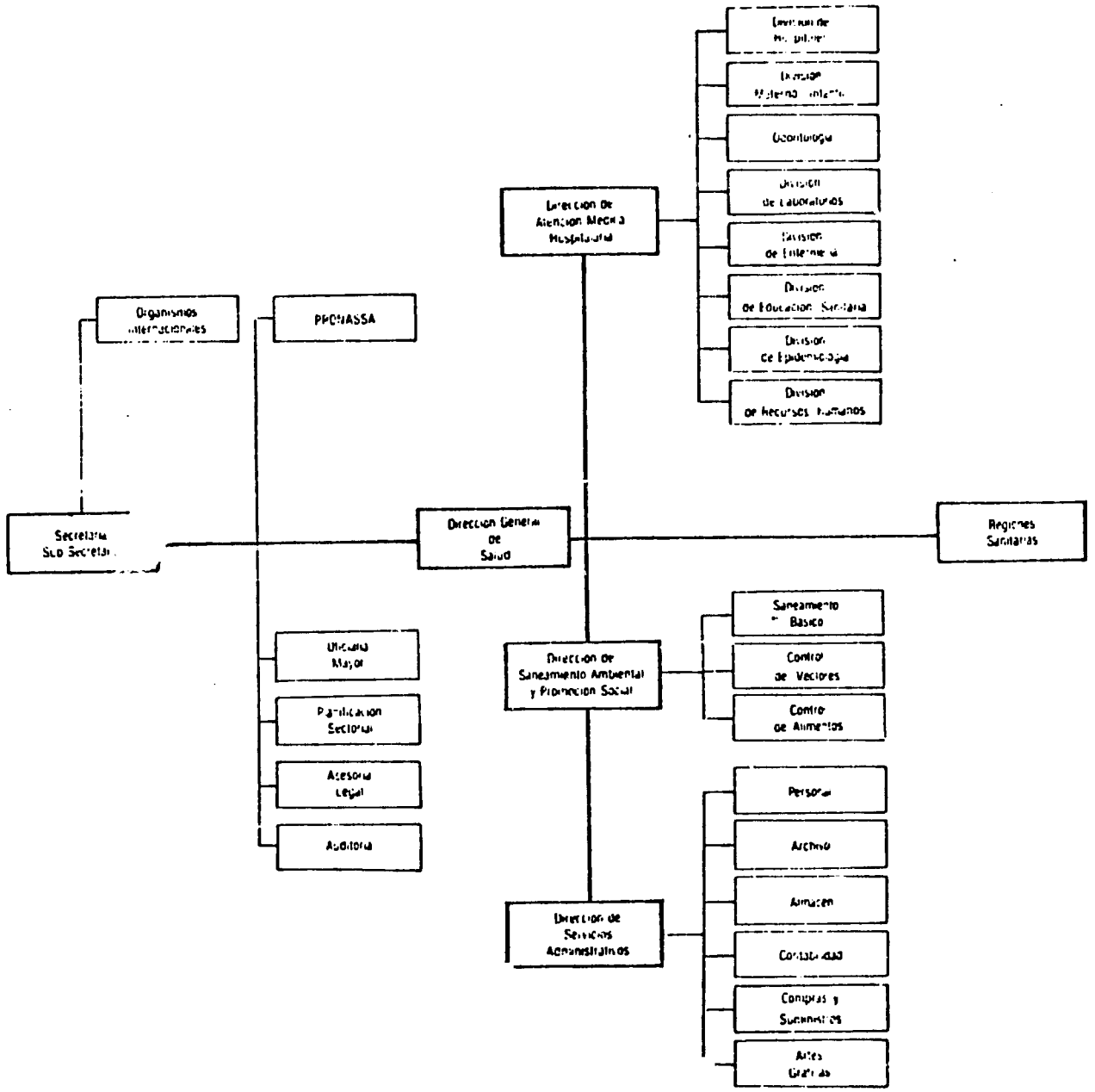
-- At the technical level, techniques of management and administration are inadequate. For example, a great deal of resources are invested to collect information. However, automated processing of this information has not been applied to the extent necessary and possible.

-- Regional management is inadequate. Although the regional directors theoretically have authority over all programs in the

FIGURE No. 1

ORGANIGRAMA

SEGUN EL PRESUPUESTO APROBADO PARA EL AÑO FISCAL 1979



region, in fact the hospitals are quite independent of them. Hospital directors administer their own budget and report directly to the Director General. Moreover, the regional management staffs (which consist of the regional doctor, a nursing supervisor, a bookkeeper, a statistician, and a few clerks) are too short-handed and undertrained for the their administrative functions. Moreover, staff turnover is high, and it is difficult to get qualified persons to work in the rural regions.

f. Recommendations

-- Either the recommendations of the 1978 planning office study of MOH organization should be adopted by the MOH, or another suitable plan should be adopted. It is important that this be done in a formal way which leaves clear written regulations delegating authority and responsibility. This reorganization should be effected step-by-step over the next year and a half. As necessary, new positions should be created to effect the changes.

-- The reorganization should include strengthening the regional offices of the MOH. If the hospitals are not placed under the regional directors, then an appropriate central management office for hospitals should be created.

-- Likewise, a central office is needed to coordinate the actions of the MOH normative offices. At present, about twenty such offices exist, but they have no clear mechanism for influencing programs implemented in the regions. These offices are responsible for program norms, in-service education, program evaluation and, to some extent, technical supervision. It is recommended that a central office of program support be created, with offices in each region, to link these normative offices to regional programs. Such an office would coordinate the activities of the normative offices at the central level, and communicate plans to the regional level through its regional offices. The central office would report to the Director General. The regional offices would serve as staff offices to the regional directors for budgeting and planning, in-service education, program evaluation and direction of supervision programs in each region. The regional offices would report to the central program support office. If this plan is not adopted, then a suitable alternative means of increasing central technical support of the regional offices should be developed.

-- The MOH should increase significantly its budget allocation for management and administration. While it is difficult to estimate how much is needed, expert judgement indicates the increase should be about 200%, or to about 6-8% of the MOH budget.

-- The MOH and should undertake a program to train top level managers in decision-making and the organization and direction of large organizations. This should include in-service education and some scholarships in addition to the training program for managers mentioned in the section on human resources.

2. Logistics

a. The Problem

The objectives of the supply system of the MOH are to procure and distribute the materials and equipment needed by the MOH on a timely basis in order to allow the efficient operation of health programs. In spite of various measures which have been taken to meet this objective, at the beginning of this study the MOH identified supply problems as a cause of particular difficulty. Therefore it has been given special attention.

The extent of existing supply shortages is perhaps best documented by a survey of 23 CESAR's made in 1978 in health Region 4*. The study concluded that 61% of the CESAR's had insufficient medical equipment and that 96% had insufficient amounts of medicine. Likewise, almost every visitor to the village level programs of the MOH had heard health promoters tell the story of being unable to provide materials for wells and latrines after the community had already made the necessary excavations. These shortages of supplies cause serious waste of scarce human resources. Personal services account for nearly two-thirds of the operating budget of the MOH. These costs are fixed and accrue whether or not supplies and equipment are available. Yet when these personnel are under-supplied and poorly equipped, they cannot possibly produce services at full capacity.

Frustration and apathy on the part of personnel is another result of lack of supplies. Most MOH personnel are poorly paid as compared to the private sector. Those working in rural areas are often frustrated by their sense of isolation and lack of importance. These problems are exacerbated by the lack of supplies which diminishes the respect and support of the community. Moreover, it weakens the necessary bond of respect between them and their superiors. The resulting apathy and poor motivation further reduces the value of funds expended on human resources.

Finally, the lack of supplies produces bad publicity for the MOH and the GOH. The Minister of Health has been troubled repeatedly by articles in local newspapers criticizing the MOH for not providing medicines and other supplies to its health facilities. This source of frustration could be eliminated by making the supply system work smoothly.

b. The Existing Response

(i) Expenditure for supplies and equipment

In 1979 the MOH expended $10.5 million on supplies and equipment. This was nearly one-third of MOH operating expenditures, a ratio of expenditures on supplies to total operating costs which is well within the

* Miriam Yolanda Chang Zelaya, Como se Efectua el Suministro y Equipo en los CESAR de la Region Sanitaria No. 4, Universidad Nacional Autonoma de Honduras, Facultad de Ciencias Medicas, Tegucigalpa, 1978.

normal range and which should be sufficient to support all health programs. Moreover, the ratio has been relatively constant over the last decade.

(ii) Responsible agents

The existing supply system was described in more detail in the special study prepared as a background paper for this analysis. Therefore, only a summary will be provided here. However, it is worth mentioning that the prior study identified many exceptionally motivated and hard-working individuals within the supply system, even though the staff at all levels consists of persons generally without specific training for work in logistics and many are unaware of how their actions influenced the overall supply process. A brief description of responsibilities for supply at each level in the MOH system follows:

(iii) Central level

The key component of the supply system at the central level is the Directorate of Administrative Services. Within it is the Division of Procurement and Supply which controls the central warehouse. The Division of Procurement is responsible for gathering information, forecasting needs, and preparing the major annual procurement order of the MOH. Procurement orders are executed by the General Procurement Office (GPO) which is responsible for procurement for all line agencies of the GOH. The central warehouse is responsible for the storage and distribution of supplies for which it has a fleet of eight trucks. Internal control is maintained through a continuous inventory using the kardex system. In addition, a physical inventory is taken monthly to verify the kardex entries.

(iv) Regional Level

Each regional hospital has a pharmacy or storeroom which supplies its internal needs. In addition, there is a separate warehouse where supplies for the remainder of the region's facilities and personnel are stored. Except in Region 5 each region has a three-ton truck and one or more pickups. Because of the bulk and weight involved, cement, pumps, and other construction materials are delivered directly from the regional warehouse to the communities. Internal control of expendable supplies is effected through a kardex file. When the sub-regional facilities order supplies they are supposed to indicate the quantities which have been consumed and those that remain on hand. The regional warehousemen are to consolidate this information for their entire regions when they request supplies from the central warehouse. Regional Medical Directors are authorized to make some "emergency purchases" locally if supplies are not available at the central warehouse. They also are responsible for making annual forecasts of supply requirements and for forwarding them to the central Office of Administrative Services.

(v) Area level

Most health areas are not yet functional as administrative units, and thus most CESAMO's and CESAR's are supplied directly from regional warehouses. Where this is not the case, the area level scheme is similar to that described for the regional level.

(vi) CESAMO and CESAR levels

Storage facilities at CESAMO's and CESAR's are simple shelves and cabinets. Distribution usually consists of providing medicines directly to patients. However, these facilities are also responsible for supplying VHW's. Kardex files are maintained at this level for control of supplies, and periodic requests for resupply are supposed to reflect stocks on hand and consumption.

In summation, the MOH already has established many of the elements essential for an effective supply system. Moreover, the MOH is investing substantial funds in supplies and equipment which should be sufficient to supply its health programs. The next section will consider reasons why the existing supply system does not meet its objectives as well as it might.

c. Constraints

The detailed study of the supply system concluded that the main constraint limiting the supply system is its compartmentalization. This has resulted in much energy being wasted as the offices work against each other, rather than together, in trying to make the supply system work. The cause of this problem has been a lack of sufficiently clear policy guidelines as to how the supply system should function, and how the various parts should interrelate. The system also is limited to some extent by technical problems. These constraints will be discussed below.

(i) Policy level constraints

As part of a loan/grant for expanded facility construction (which has been implemented over the last five years) the IDB financed technical assistance for the development of norms for the operation of the supply system. These norms included a basic medicine list (based on norms of treatment) from which medicines were to be ordered, and a methodology for forecasting supply needs for timely procurement. In spite of the fact that these technical norms are judged to be important to the operation of the supply system by consultants of the IDB, A.I.D and the MOH, they have not been implemented. There are many reasons for this; but the most important reason may be that the MOH has neither endorsed the norms, nor provided an alternative.

One reason for the lapse may be that the day-to-day operations of purchasing and distribution of supplies is viewed as either

simple or unimportant. Much more attention is given instead to "front line" health care activities such as the operation of hospitals and clinics. Thus, relatively few trained people have been assigned to operate the supply system, and they have been given little guidance. Another factor is clearly that the policy levels of the MOH are seriously overextended. (This problem is discussed further under administration and planning.) Therefore, they give little attention to the supply system except when failures produce crises.

A third factor is an apparent resistance by physicians to any limits on their autonomy. An efficient supply system requires some standardization of supply for various MOH service units, principally a list of basic medicines. This is desireable in order to avoid buying expensive, name-brand drugs, to reduce the amount of paperwork, to simplify control and distribution of supplies, and to allow bulk purchasing at lower prices. However, every effort to implement a basic medicine list has been resisted by physicians, who cannot agree on the norms of treatment.

A fourth reason is that there has been no one in the MOH with responsibility for the whole supply system. For example, the technical office that developed the new norms had no authority to see that those norms were applied. Meanwhile, those norms were not accepted by procurement office personnel who felt that their job was to provide physicians with the supplies they requested. And as noted above, the physicians resisted the norms, probably without realizing that they thus jeopardized the ability of the MOH to supply them effectively.

In summary, the supply system is not likely to function well until a clear policy is established on how the system will run; until the system becomes the responsibility of one office and director; and until sufficient training has been given to supply system staff and users (physicians) to gain their collaboration.

(ii) Technical constraints

The technical constraints are rather straightforward compared to the policy considerations noted above. However, dealing with them is likely to have little impact until the policy level problems are dealt with.

(iii) Lead Time in Procurement

The current MOH procurement system requires substantial lead time in ordering commodities since the MOH must order most of its supplies through the GPO. This arrangement has created serious delays in the arrival of supplies. Moreover, purchased items have often failed to meet technical specifications. One view of the problem is that the GPO itself is the constraint and that the MOH should be allowed to do its own purchasing. However, it has yet to be shown that the MOH is capable of doing a better job than the GPO. Moreover, the GPO itself was created to assure that Government procurement regulations are implemented. Thus, one should consider carefully

any alternative which circumvents this process, even if a legal way could be found to do so.

Another view of this constraint is that the MOH has not learned to live within the limits of the necessarily long purchasing horizon. If the MOH were to order most of its supplies two years in advance on a regular, planned basis, then the long purchsing horizon would no longer be a constraint. Perhaps then, this problem is more a reflection of the tendency toward crisis management than of an outside constraint. In either case, it further stresses the need for stregthening long range planning and implementation capacity in the MOH.

(iv) Warehouse Space

The storage and distribution of supplies is handicapped by inadequate and disorganized warehouse space. The existing warehouses are often in dilapidated buildings. For example, the central warehouse is in the old San Felipe Hospital building which was constructed in the last century. Because of shortage of shelf and bin space, much of the material is stored in halls and courtyards. Moreover, this is only one of three central level warehouses. The resulting disorganization makes control of supplies, maintenance of reliable inventory, and effective loading of trucks for distribution more difficult. Larger, unified warehouses with adequate storage and office space could resolve several problems now affecting the supply system.

(v) Transportation

The MOH needs more vehicles to operate the supply system, and needs to schedule the more efficient use of the vehicles which it already has.

If the purchasing component of the logistics system functioned smoothly so that supply items were continuously available, then distribution could make full use of existing vehicles. The vehicles could be sent fully loaded on regular distribution routes. However, vehicles now spend a considerable part of their time on emergency runs to deal with immediate shortages. This increases the demand for vehicles unnecessarily and makes regular scheduling impossible. Furthermore, many of the vehicles of the MOH are not in service due to mechnaical failures (see section on maintenance). This increases the demand for new vehicles. Even if these constraints were overcome the MOH would still need some additional vehicles for the supply and distribution system. However, this need cannot be quantified at the present time because of the confounding variables mentioned above.

(vi) Personnel Development

The basic constraint here is that supply system personnel have no specific training or qualifications for their work.

Upgrading is needed at all levels, including full time supply system staff, and part-time staff such as clinic and hospital directors who must order supplies. One view of this constraint is that training is needed to upgrade existing personnel. Another is that upgraded positions should be created for better qualified personnel to direct the system. In all likelihood, a combination of these strategies should be employed.

Specific skill areas where existing staff are particularly weak include: i) forecasting of supply needs; ii) control and storage of stocks; iii) compliance with reporting requirements; iv) purchasing procedures; v) preparation of technical specifications for procurement; vi) the rationale for norms such as the basic medicine list; and vii) the overall articulation of the logistics system.

To some extent the above efforts are dependent on the resolution of the policy constraints raised in the prior section, and the problems need simultaneous treatment.

(vii) Information system

Peripheral units seldom comply with the requirement that they report existing stocks. This jeopardizes the overall operation of the supply system by making forecasting much more difficult, and limiting the extent to which the supply system can be controlled. To a degree this may be an intentional effort on the part of hospital directors and regional directors to retain their autonomy. They perhaps hope to hoard supplies, a natural response to an unrealiable supply system. While such hoarding would be a rational response from a parochial point of view, the failure to document use affects negatively the arrival of future supplies. However the situation also probably is the result of the lack of clear policy and of staff training. Thus resolving these prior constriants would help to resolve this one as well.

d. Discussion

The logistics process embraces the following activities:

- Recovery and processing of information on inventories and consumption
- Forecasting supply requirements
- Procurement of supplies
- Storage of supplies
- Control (accountability) of supplies
- Distribution of supplies
- Reporting of consumption and inventory

The essence of good logistics is continuity. It is not enough to make an initial delivery of medicines and equipment. Subsequent deliveries must be made on a regular basis. Since different components (departments, divisions, offices, and clinical facilities) perform different activities, good communication between these components is necessary for proper sequential performance of logistics activities.

The process is one in which each succeeding step depends on the timely performance of the previous one. If these activities are not performed adequately, and in sequence, the process will be disrupted. For example, if information on inventories and consumption of supplies is not supplied on time, needs will be forecast on an inadequate data base. The result may be purchase of supplies which are already in stock or failure to purchase ones which are needed.

e. Recommendations

There is no need to increase greatly the relative expenditures made for supplies

The solution to the existing supply problem does not require great relative increases in expenditures for supplies, especially if the standard list of medicines is adopted and enforced, allowing supply levels to be increased as their cost is reduced. Rather it requires improvement in the efficiency of the supply system.

Adopt supply system norms

The policy levels of the MOH should either adopt the supply system norms which have been developed by the planning office, or develop and adopt other norms.

Assign responsibility for the entire supply system to one office

Responsibility for the entire supply system should rest either with the Directorate of Administrative Services or with some other appropropriate office. A qualified manager for the supply system is needed. In addition to responsibility, this office and the supply system manager should have sufficient authority to make the supply system work.

Training in logistics management

The MOH should carry out a program of human resource development for supply system personnel through in-service training, and through upgrading of positions for new, more

qualified, supply system managers. Training should also extend to physicians and others who influence the performance of the supply system.

After action has been taken on the above measures, the MOH should consider the following complementary recommendations:

Supply system investments

The MOH should develop a program of investment in warehouse and office space for the supply system. This should include construction of a new unified central warehouse and a number of regional and sub-regional warehouses. Some increased staff for the new warehouses may be needed.

The MOH should develop a program of investment in trucks to provide adequate fluidity to the supply system. Transportation via motorcycles or pack animals is also needed at the level of rural facilities.

After the above measures have been initiated the MOH should request a one-time doubling of its supply system budget to allow it to deal with the long purchasing horizon. By thus "priming the pump", and with careful management of the supply system, it should be able to supply its facilities and personnel reliably.

3. Maintenance of Facilities and Equipment

a. The Problem

The objective of the MOH maintenace system is to provide preventive maintenance, repair, and overhaul of MOH facilities and equipment so that the equipment will be available to support MOH health programs. The rewards of a good maintenance program are the same as those discussed under the supply system; namely, full utilization of human resources, conservation of physical resources, better motivation of personnel, and avoidance of bad publicity. In addition, the maintenance system facilitates better supply by assuring the functioning of vehicles for transport and refrigerators for storage.

Unfortunately, the maintenance system of the MOH is in an embryonic state. Before 1977, the MOH maintenance program was limited to repairmen working in individual facilities. Since then the MOH has obtained space and a limited budget for a more general maintenance system. Although this is a good beginning, much is still left to do. Because of the weaknesses of the maintenance system, an estimated 50% of the trucks, automobiles, and

motorcycles of the MOH are not functioning. Refrigerators often break down or run out of fuel, resulting in the spoilage of vaccines. Bio-medical equipment, such as X-ray machines, is often out of service. In short, the maintenance system is in critical need of vitalization.

b. The Existing Response

(i) Financing maintenace activities

The maintenance program of the MOH does not have a separate budget. The costs most clearly assignable to maintenance are those for miscellaneous parts and supplies, and for fuel and lubricants. In 1979, $106,000 was budgeted for these items. It is reported (but not documented) that only about $40,000 of this was actually spent. The rest reportedly was transferred to other areas. If, from other budget items, double this amount was actually spent on maintenance staff, then a total of only $120,000, or 0.2% of MOH expenditures, would have gone for maintenance. Although what is spent for maintenance is not known with precision, the amount is clearly inadequate. A more appropriate allocation for maintenance would appear to be 1-2% of the budget. Thus is appears that the MOH should thus invest five to ten times as much as it presently does in this area.

(ii) Responsible agents

(a) Central level

The Department of Maintenance and Engineering of the MOH is a unit of the Division of Hospitals. Nevertheless, this Department has overall responsibility for maintenance of MOH facilities and equipment outside of hospitals as well. Under the Department of Maintenance are two units--the maintenance workshop and the automotive repair shop. The maintenance shop employs 30 persons in electrical and electronic appliance repair, x-ray equipment repair, welding, plumbing, carpentry, bricklaying, and painting. This staff is additional to that specifically assigned to most hospitals. The automotive repair shop employs 28 mechanics. It has overall responsibility for maintenance of MOH vehicles. In the judgement of consultants who prepared the background papers for this analysis, both of these workshops are reasonably well organized internally, and their staffs are qualified.

(b) Regional level

Each regional (and national) hospital has a few skilled workmen (the number varies) who are responsible for maintenance. Typically, these include an electrician, a plumber, a carpenter, an auto mechanic, and a janitor. Although practices vary, these workers usually serve only the hospital to which they are assigned. The background paper on maintenance found little organization of maintenance activities at the regional level. The various workmen are supervised directly by the facility administrator who has no training in supervision of maintenance activities.

(c) CESAR and CESAMO level

No maintenance personnel are assigned to CESAR's or CESAMO's. The importance of preventive maintenance, which should be performed by the operators of equipment, has not been stressed; and so it is not consistently done. No specific provisions have been made for other maintenance. The facilities do not receive a periodic visit by repairmen, nor can one be expected to come for emergencies.

(d) The community level

The community, under the guidance of the village health representative, is supposed to maintain its latrines, wells, and aquaducts. The most vulnerable piece of equipment is the hand pump. In spite of special efforts to provide parts, the maintenance of pumps is still extremely weak, a failing which is to be corrected under the current A.I.D. Rural Water and Sanitation Loan Project (522-0166).

c. Constraints

(i) Financing

The limited expenditures being made for maintenance were noted above. The program now functions in inadequate buildings. For example, both central workshops are located in the old San Felipe hospital building. While the staff previously made trips to regional hospitals to provide repair services, this is now impossible for lack of transportation and parts. The technicians who prepared the background study in this area also judged that, with the tools available, these shops could not perform many of the services for which they otherwise would have time and skill.

(ii) Policy constraints

The maintenance program, like the supply system, suffers from a lack of policy level attention. Unlike the supply system, technical norms have not been developed adequately for the maintenance system. If budgets are increased in this area, more policy level attention will be required, and norms will have to be established.

(iii) Administrative position

The background paper for this section shows that the administrative position of maintenance programs is anomalous. The operation of a maintenance program is intimately linked with the supply system. The maintenance section repairs vehicles for the supply section, and supply provides parts for maintenance. Nevertheless, the two programs are now divided administratively. Supply is in the Directorate of Administrative Services; maintenance is in the Division of Hospitals. The administrative position of maintenance programs within hospitals is also questionable since the maintenance program should serve all MOH facilities, not just hospitals.

It has not been demonstrated definitively, however, that its current administrative position really hinders the operation of the maintenance program, although it does appear to be illogical. It would seem reasonable that the units would function better together.

(iv) Preventive maintenance program

For a preventive maintenance program to be effective, preventive and first echelon maintenance would have to be carried out by the personnel who actually operate the equipment, i.e., by lab technicians, X-ray technicians, auxiliary nurses, and health promoters. At present, this maintenance does not occur. It is not within the job descriptions of these workers, nor has it been included in their training. As a result, the level of breakdown in existing equipment is unacceptably high. This is a serious problem since much of the equipment used at the field level needs care. Such equipment includes motorcycles, kerosene refrigerators, laboratory equipment (such as centrifuges), fumigating equipment, and buildings.

(v) Training of maintenance personnel

As noted previously, personnel at the central level of the maintenance system are trained reasonably well. However, this is not the case at the regional level. Not only do regional level facilities lack qualified maintenance personnel, but those personnel lack adequate direction and organization. Given the importance of rural health facilities to the extension of coverage effort, this situation should be corrected.

(vi) Lack of norms

Technical norms are missing in a number of areas required by the maintenance program, including preventive maintenance schedules, control of supplies and equipment, projections of supply needs, and staff requirements.

d. Recommendations

Financing

The MOH should increase substantially both investment and recurrent spending in maintenance programs. Failure to do so will reduce the value of previous investments and result in inefficient use of operating funds. The shortage of funding for maintenance has left the program with inadequate buildings, tools, and parts, and without transport to enable the staff to service regional facilities. The background study for this section concluded that the MOH should invest at least $1.3 million in workspace, tools, and training over the next few years. Financing of recurrent costs for parts would be additional.

Preventive maintenance

The MOH should develop and enforce a program of preventive maintenance to be carried out by equipment operators. This will require training of the operators, supply of parts, and supervision of the maintenance schedule. All of these functions should reside with the Department of Maintenance. Sanctions should be established to enforce the maintenance shedule.

Enhance regional maintenance capability

The MOH should provide adequate supervision and training of regional maintenance personnel, probably by central maintenance staff. Travel funds and per diem would be necessary to implement this action. Finally, regional maintenance personnel will require travel and per diem funds in order to maintain CESAMO and CESAR facilities.

Technical norms

The MOH should develop technical norms to guide the operation of the maintenance system. Technical assistance will be required to support this effort.

Coordinate supply and maintenance

The maintenance programs should be the responsibility of the Division of Administrative Services, and should be closely coordinated with logistics.

4. Budegetary Procedures

a. The Problem

(i) Budget Preparation and Review

The development of the annual MOH budget begins in each of its subordinate institutions or facilities. Most units program activities within a budget and submit a proposed budget document to the next highest administrative level for review and approval. Thus, CESAR's prepare their budgets and submit them to the CESAMO's. The CESAMO's, in turn, review CESAR budgets' consolidate them with their own; and submit the consolidated budget to regional headquarters. The regional offices then prepare regional budget proposals and pass them on to the central MOH. In the past, budget proposals were prepared on a line item basis rather than a functional basis, e.g.,

personnel, materials and equipment. However, in fiscal year 1980, most of the regions prepared budgets by proposed activities, e.g. maternal-child health and immunizations.

By contrast, hospitals prepare their budgets and submit them directly to the Planning Office of the Ministry. Hospital budgets are not uniform, nor is it clear that all necessary items are being accounted for, since the hospitals do not report on an activity or service basis.

Budget review and revision is done by the Office of Administration, the Division of Hospitals, the Office of Planning, heads of individual programs, the Central Accounting Office and the Director General of Health. After approval within the MOH, a committee consisting of representatives from the MOH, the Ministry of Finance and Public Credit (MOF) and CONSUPLANE discuss, revise and approve a final budget which is then presented for formal, national approval. The approved document then becomes the functioning budget for the fiscal year, which includes international loans and grants. Modifications may be needed in the course of the year, and each requires varying degrees of approval up to the level of the MOF, if the modification affects the overall amount allocated to the MOH.

Table 17 summarizes budgeted costs and actual expenditures for the years 1976 through 1979. The modifications shown may be of two types: internal transfers from one line item to another which do not affect overall budget totals, and those modifications arising from accrual of additional income, loans, donations on other unforeseen factors which combine to increase the amount of resources available. The most common modification is due to hospital income accruing from charges to patients. This income is not taken into account by the hospitals during the budgeting process, probably because the amount is unpredictable, but they do spend the income to defray operating costs; accordingly, such income appears as a modification to the budget. Actual expenditures include those made against income derived from loans and donations. The percentage column shows the percentage of the approved (rather than the modified) budget that was actually spent (or transferred to another agency). Obviously, the increase in the MOH budget over the past few years is not matched by an increasing capacity to use it.

(ii) Budget Performance

An analysis of actual expenditures against planned budgets, by program, performed for the years 1976-1979 by the MOF reveals that, in general, the tendency is for hospitals to spend slighlty more than their budgeted share while expenditures for other programs lag behind projected amounts. The hospital sector was able to spend its entire budget allocation in addition to its own income in every year but 1977. By contrast, the environmental sanitation program expended its full budget only in 1978. A similar situation exists for support programs, with 1976 as the only year in which expenditures met budget goals. Finally, in the areas of communicable disease prevention and basic health, there has been no year since 1976 in which the programs were able to expend their entire budget allocation.

(iii) Background to current situation

With respect to the budget work in general, detailed cost analyses were prepared by the MOH Unit for Administrative Research and Development (UNINDESA) shortly after that unit was formed. Those analyses were not continued in subsequent years. Furthermore, budget preparation manuals written by UNINDESA do not appear to have included instructions for overall budget projections. The effects of such deficiencies can be seen in the widening gap between annual budgets prepared by the MOH and actual costs incurred as recorded by the MOF. In fact, the above differences between budgets and amounts expended are symptomatic of a series of problems, both procedural and organizational in nature, which have troubled the MOH for some time.

Legislation passed in 1976 requires that all state agencies execute and manage their budgets according to a predetermined annual operating plan which must be designed by programs and activities. In order for the MOH to abide with the requirements expressed in this law and in the National Development Plan, it became necessary to develop a series of manuals to guide the financial operations of the Ministry. The UNINDESA was created in 1976 to develop those manuals under the supervision and direction of the Office of Planning. Among the various manuals that were developed, the Manual de Operacion del Sistema de Costos para Establecimientos de Salud, 1976, and the Manual de Operacion del Sistema de Administracion Presupuestal, 1978 were most prominent in assisting the MOH to develop a financial basis for analysis. While these manuals did not deal with specific tasks that had to be accomplished in order to complete any of the activities described, they became the conceptual framework for the design and evaluation of the annual operating budget and the annual operating plan.

The development of the annual operating plan was supposed to consolidate all the elements necessary to assign human, financial and material resources needed to execute and achieve the specific objectives set for a particular year. With the new demands for a more scientific development of program planning and budgeting, it became apparent that the budget and operating plan would have to be developed in a decentralized manner and not by the administrative office alone, as had been the case in earlier years. It was decided that the Regional and Hospital Directors, who were the most familiar with the problems of their respective operations, would be responsible for developing the annual operating budget and plan. It would be their responsibility to develop, implement and evaluate their own programs and activities with the help of the Office of Planning and the technical normative offices.

An analysis of subsequent developments in the formulation of the budget cycle show that the Office of Planning and the Office of Administration entered into serious conflicts over the mechanism, methodology and management of the budget. A period of confusion resulted during which there were no clear lines of authority, responsiblity, or accountability for the development of the budget. The Regional and Hospital Directors were not kept advised or instructed as to their responsibilities or obligations with respect to developing the new budgets. These managers

resorted to the budget manuals prepared by UNINDESA which were (and still are) the only guidelines available to assist in the preparation of the budget. As was mentioned earlier however, the manuals are deficient in certain respects, and have not been explained fully to, or understood by, many of the field managers who are responsible for the preparation of the budgets. Unfortunately, counsel is no longer readily available as the technical staff of UNINDESA have either resigned, terminated their consulting assignments or transferred. Furthermore, within the past year, personnel changes have occurred in the directorship of the Office of Administration and the Office of Planning. As a result of this turmoil, the 1979 and 1980 budgets were prepared under adverse conditions. Several programs or activities (i.e., dental, nutrition) were excluded from the budget in some of the regional areas as these figures were not submitted on time. The budget proposals, which are scheduled for review at the national level each April, arrived in September, 1978, and August, 1979, respectively.

(iv) Current responses to financial management problems

-- The Vice Minister assumed the leadership role in the preparation of the 1980 budget. The Office of Planning participated in coordinating the work schedules, committee meetings, and invited the normative, regional and hospital directors personally to explain and justify their respective recommendations. The Office of Administration and the Vice Minister were active participants in consolidating the budget with the MOF and CONSUPLANE.

-- The Vice Minister and the Director of Administration were in close contact with the MOF during April 1980 to establish operating guidelines for the development of the 1981 budget.

-- The Office of Administration has agreed to provide the Office of Planning with information on expenditures by regions, programs and facilities on a monthly basis in order to permit the analysis and evaluation of health programs. This should allow the Office of Planning to work closely with central offices and Regional Directors and to adjust financing on a timely and continuous basis.

-- The MOF and the MOH recognize the need (and are willing) to change the budget format to establish a system wherein expenditures can be identified by programs, activities and facilities, although nothing has been done to date.

-- The Office of Administration is in the process of purchasing a computer for use by the accounting and purchasing offices. This should facilitate the management and dissemination of information and increase the effectiveness of decision making.

-- The Accounting Office will be transferred to new facilities which should provide better working conditions, allow the contracting of addition manpower (the positions have already been approved), and increase productivity, efficiency and employee morale.

b. Constraints

-- At present, there are no clearly defined areas of responsibility, authority, or accountability among central MOH units for the development of the annual budget.

-- There is no compatibility between the instructions given by the MOF on the methodology of preparing the budget and the way it actually is prepared by the several MOH units.

-- There are no up-dated manuals with clear definitions of terms, methodology, or systematic explanations of how to develop a budget by programs and activities either within the MOH or the MOF.

-- The formulation and presentation of the budgets vary among the regional and hospital directors. The Office of Planning must receive, interpret, and adjust the preliminary budget recommendations into a homogeneous format for presentation and review by the Central Budget Committee.

-- There are no preliminary work sessions held with regional or hospital budget managers to review and assist in the planning and development of the annual budgets. Indeed, in some cases, there are no regional budget managers with whom to consult.

-- The Office of Planning has limited human resources that are trained to perform in-depth quantitative and qualitative analyses of budget expenditures in relation to program accomplishments.

-- The calendar which stipulates the time frame for the development of the annual budget is not observed.

c. Recommendations

Clarify responsibility and authority for budgetary processes

The Vice Minister or other appropriate official should be designated formally as the Chairman of the Central Budget Committee of the MOH and the primary representative of the MOH in all technical working meetings with other agencies.

The Director of Administration or other appropriate official should be designated formally as the Executive Director of the Central Budget Committee of the MOH. The primary responsibilities of this position should be:

-- to establish a calendar of events for the development of the annual budget;

-- to assure strict compliance with the budget calendar;

-- to research and provide, on a timely basis, the administrative, technical, and legal information and

assistance required for the preparation of the budget to all persons involved in its development;

-- to provide the administrative and logistical support for the preparation of the budget; and

-- to participate in the determinations of the allocation of financial resources in the administrative and general support services of the MOH.

The Minister and Vice Minister, Director General of Health, the Sub-Director General of Health, the Regional Health Director, the Hospital Directors, the Directors of Health and Sanitation activities and the Director of Planning should be the principal agents in identifying, formulating, and coordinating the development of health programs, sub-programs, and activities which should be included in the budget; and they should participate in the determination of allocation of financial resources in each of the health-related categories and support systems.

Use professional technical assistance

The professional services of a budget development analyst should be secured to work with the MOF, CONSUPLANE, and the MOH to design, develop and implement a budgetary format that would allow line items to be identified clearly in the health and administrative areas by programs, sub-programs, activities and facilities.

Provide training for MOH budget managers

Budget analysis experts, equipped with up-dated materials and instructions, should hold technical training work cessions with institutional and regional managers prior to their preliminary budget preparation to assure uniformity in the final preparation of budgets.

Reinforce regional level budget management staff

In those cases where the position does not exist or a person has not been appointed, steps should be taken to assign regional budget managers to assist regional administrators in budget/plan preparation.

5. Formation of Human Resources

a. The Problem

The analysis of human resource development is presented in two sections because of the complexity of the issues involved. This section, on the formation of human resources, deals with what might be called investments in human resources--that is, the training of new health workers. The objective of programs to train human resources is to produce enough personnel of the right kind to meet the health sector's ability to support them up to the level of actual need. While this objective may seem straightforward, its implications are often overlooked. For this reason, its three components are examined in more detail below:

There should be enough personnel to meet the health care needs of the Honduran people.

Needs are hard to define precisely. WHO and other organizations have developed "minimal" standards for the number of staff per 1,000 population which would be required to meet the theoretical needs of populations in the developing world. Although the WHO definition of need is somewhat arbitrary, it does provide a useful rule of thumb. In those terms, it is clear that Honduras lacks the human resources needed to solve the health problems of its people. The ratio of nurses, auxiliary nurses, technicians, sanitarians, and others to population are all below standards. However, Honduras already has three times as many physicians than are judged necessary. The cost of training the needed workers is within the reach of the GOH and the standards could be met in the next 15 to 20 years.

Money should not be invested in training personnel that the public and private sectors cannot afford to employ.

While this condition may seem obvious, it is often overlooked. For example, the consultants who analysed human resources for the background paper for this assessment recommended that training programs for various categories of health workers should be expanded to meet the "critical shortages" of workers (defined by the WHO criteria, discussed above). In so doing, they overlooked a significant fact: The cost of employing the existing human resources in the MOH already accounts for two-thirds of operating costs. Thus, while Honduras could afford the relatively small cost of training the health workers it needs, it may not be able to afford to pay them. As discussed in the financial analysis section, the GOH would be hard pressed to finance growth in operating expenditures above 18% a year, and this is barely adequate to meet the growing costs of existing manpower and facilities. In fact, Honduras already spends more of its GDP on public sector health programs than all but two other countries in Latin America. Moreover, it seems unlikely that the private sector could absorb more than a fraction of the "needed" manpower. Thus, greatly expanding investments to increase the numbers of health personnel would do little to resolve the basic constraints on adequate staffing of health sector programs.

The kinds of workers trained and employed should be appropriate, i.e. they should lead to efficient and effective operation of the health system.

If Honduras cannot afford to meet the minimal standards that have been set by WHO and others, it may continue to meet the needs of only a relatively small percentage of the population who gain access to the limited supply of overburdened health workers. The standards are based upon a certain strategy of health care with a fixed ratio of physicians to nurses to other types of workers. A decade ago the standard would have included a higher proportion of doctors and nurses, and a lower proportion of auxiliary health workers under a strategy modeled on the health care systems of developed countries, which were later found to be inappropriate for less-developed countries such as Honduras. The present strategy was adopted because informed public health opinion shifted to favor the use of auxiliary personnel to perform tasks that once were reserved for doctors. To the extent that Honduras can find a cheaper and more efficient mix of such manpower to meet health needs effectively, there is hope that the health needs of the Honduran people can be met. Thus, the kind of health workers being trained in Honduras is a critical factor its ability to staff its health programs adequately.

The problem confronting the institutions training new health workers in Honduras is not how to increase the number of graduates to meet demand. Rather, it is how to develop workers who can meet the health care needs of Honduras more efficiently within the limited budget available.

b. The Exisiting Response

Honduras has already done much to provide the basic human resources that it can afford for the health sector. The country has a medical school, two nursing schools, and three schools for auxiliary nurses. Moreover, in 1974 the MOH adopted a policy of expanded use of auxiliary health personnel to staff its rural health facilities. This policy is a significant step toward developing an adequate manpower structure for the health sector. To support this policy, the MOH formed a division of Human Resources in 1975 for the purpose of analyzing human resource needs, developing an overall MOH policy, and executing needed training programs. As a result, and because it is by far the largest employer of health workers, the MOH is qualified to take on a leadership role in the development of human resources in Honduras. Unfortunately, the creation of the Human Resources Division notwithstanding, no agency has assumed the role to date. As a result, and because of the large number of training institutions and employers involed, there are no consolidated statistics on the existing numbers of personnel or the cost of training them. Therefore, most of the comments in the following discussion will be qualitative, rather than quantitative.

(i) Financing training

The UNAH alone employs over 100 physicians in the Medical School. Since 1976, USAID has invested $1.2 million in training auxiliary nurses and village health workers. Given the magnitude of these investments and considering the other activities being carried out in Honduras, it is clear that the cost of training health workers is large, perhaps equivalent to 5-10% of the budget of the MOH. However, the initial investment in training is probably far below the annual operating cost (including salaries, supplies,

equipment, facilities, and supervision) required to support new workers. Whatever the cost, it is largely met by the public sector which finances the University, the Teaching Hospital, and training programs for many auxiliary nurses and other personnel. Although many private voluntary organizations and private hospitals do train staff as well, they do not train as many personnel as they actually employ. And because they pay higher salaries, they can compete effectively with public sector agencies for manpower.

(ii) Responsible agencies

Table 18 summarizes information about 15 principal agencies responsible for training various types of workers employed by the health sector. Of these, the MOH, the National University, and the other nursing schools train most of the "front line" health workers needed by the health sector. The other agencies train general purpose administrators, engineers, and other non-health professionals. Nevertheless, their graduates form the pool from which the health sector draws these kinds of workers. Most of these agencies will be discussed below under the headings for the type of worker they train.

Table 19 summarizes standards for the training of auxiliary health workers most used in Honduras. These are presented for reference, since these standards vary widely throughout the world.

Given the above introduction, the training programs for the main types of health worker will now be discussed.

(iii) Physicians

In 1978, a new medical school curriculum was developed which established three basic teaching units within the Medical School--curative services, clinical medicine, and basic medical disciplines. Each of these is taught within the context of maternal-child health, mental health, occupational health, contagious diseases, and nutritional deficiency diseases. Internal resistance to the new curriculum and to other attempts to develop a community medicine focus have been great, in spite of the commitment of the Dean of the Medical School to these areas. Most of the medical faculty was trained in basic or clinical sciences abroad. They lack training in community medicine which is more appropriate to Honduras. Those who are aware of the principles of community medicine lack specific training in public health planning, administration, epidemiology, and other disciplines related to community medicine. Most professors lack effective teaching skills since they have not received training in this area. Training materials are often inadequate.

In the mid-70's the Medical School dropped entrance requirements in the face of student pressure. As a result, enrollment in the six year course tripled in the first year of open admissions, and has remained high. The Medical School will soon be producing about 150 physicians per year, at an estimated cost of about $200,000 per graduate. Honduras already has three times as many physicians as WHO considers necessary. The students in the program are not being failed at the rate that could be expected, again,

mainly because of student pressure. This has serious implications for the MOH which has an informal agreement with the medical school to provide employment for medical school graduates.

(iv) Nurses

The curriculum of the university's nursing school was revised in 1976 after an examination of the role of the nurse in the community and health system. At the National University the course of study for a nurse is four years (including a year of social service). However, for full qualification, an additional year of research is required. The curriculum includes clinical practice, nursing theory, nursing practice, problem solving, communication, adaptation, community work, maternal and child care, and administration. The implementation of this curriculum has been resisted in much the same way as the medical school curriculum. In addition, however, production of nurses in Honduras faces a unique problem. Only four nurses will graduate in 1980 out of an entering class of 60. This trend is not expected to change for various reasons which include:

-- Inadequate prior preparation of students

-- The low pay and status of nurses after graduation

-- The greater attractiveness of the Medical School, especially with its open admissions policy which means that with only one more year of study a student could have the prestige and pay of an MD rather than those of a nurse.

In addition to the nursing program at UNAH, a private nursing school in La Ceiba provides an equivalent three year program producing about 20 graduates each year.

(v) Nursing Auxiliaries

Under the A.I.D./GOH Grant (522-0148), three new training centers have been built, and a special curriculum has been developed for nurses who will work independently in rural CESAR's rather than in hospitals where most auxiliaries are still employed. All auxiliaries are now trained in the new centers. The ten-month curriculum, for approximately 200 auxiliaries trained each year, includes mathematics, Spanish, hygiene, the family, health education, anatomy, physiology, microbiology, adult care, family planning, maternal-child health, public health, nutrition, principles of nursing, mental health, and other topics. The graduate is now called a Health Auxiliary and will be able to work in both urban and rural areas. The cost of each graduate is about $1,125.

(vi) Village Health Workers (VHW's)

Since June of 1977 the MOH has trained nearly 4,000 VHW's with financial assistance from AID and UNFPA. VHW's consist primarily of trained empirical midwives (60%), but also include health guardians (30%) and

representatives (10%). The decision was made early in the program that the initial training for VHW's would be limited to six days. It was thought that this would allow more equitable coverage of the rural areas, and that retraining could be used to reinforce the initial training. In fact, however, only about one in four of these workers has received any retraining, and in these cases the training lasted only an additional three days.

The total cost of the above training was less than $120,000, including $80,000 for student per diem. The average cost per volunteer was less than $30. Most courses have been kept small (10-20) in order to improve participation and increase learning, although some have included over 50 students. Most have been conducted in the rural CESAR's (70%) and CESAMO's (25%), and the rest in hospitals. The curriculum was developed independently in each region. The training was done by existing regional staff including health auxilliaries and registered nurses, none of whom were trained instructors. In general, the training is believed to have had positive results considering the resources devoted to it; however, follow-up training is needed to produce optimum results.

(vii) Administrators and managers

Given the lack of training in administration and management for physicians at UNAH, the preparation of non-physician managers could be of special interest to the health sector. Unfortunately, the type of training needed does not exist in Honduras, and so there is tremendous competition for trained managers or for other persons who can use their initiative to manage and direct, since the private sector is able to attract the best qualified candidates by paying higher salaries.

The MOH tends to employ practical accountants or high school graduates to fill most of its administrative positions. While the ability to keep accounts is an important skill, it does not qualify these employees to understand the health sector, to make decisions, or to direct other workers. Thus, these employees must depend on their natural skills to perform these important tasks. Nor are the MD's who occupy management positions trained in any way for such responsibilities. The result is poor administration and management of MOH programs.

c. Constraints

(i) Cost of training

The cost of training health workers is not a dominant constraint to adequately staffed health programs. Rather, the dominant constraint is the ability to finance the recurrent costs of salary and support of health workers. This implies that major increases in training capacity are not needed, and that the MOH should continue its policy of employing the less expensive auxiliary health workers to perform the maximum possible number of services. This implies maintaining and expanding their skills through in-service training, and there is, as yet, no cohesive, reliable system for such training.

(ii) Imbalance in the production of MD's and nurses

The Medical School will soon be graduating more physicians (150/year compared to 50 now) from the national university than the economy can absorb. It is unlikely that the MOH will be able to honor its agreement to hire them at the salary levels medical students have learned to expect. Not only would it produce severe financial problems, but the MOH would have too many physicians relative to its facilities and other staff. If the MOH does not hire these physicians, it seems unlikely that the private sector can absorb them. Thus two options would seem to be open to them. Either they emigrate or they find other work. In either case, Honduras stands to lose the benefits of a significant training investment.

With only one nurse for every three physicians, Honduras has a serious shortage of professional nurses; but, in most other health specialties, the production of graduates is more or less in balance with the country's ability to absorb them.

The imbalance in terms of numbers of doctors and nurses was noted above. More importantly, medical school prepares graduates for work in hospital and clinic-based private practice, not for work in community medicine programs involving administration, prevention, health education, or supervision of auxillaries and VHW's. Thus the graduates are not well suited to work in MOH programs. This is not because either the MOH or the Dean of the Medical School want it that way. Both are aware of the situation, and are working actively to confront it. The actual constraints are political, economic, and cultural.

The drastic increase in MD's is the result of political pressure, including student strikes, from upper middle and upper class students for open admissions to the medical school. Their continuation as students stems largely from the same source. The lack of community medicine at UNAH is largely due to the fact that most of the faculty has been trained in traditional medicine in the more developed countries, where community medicine is considered second class. Thus, the faculty places more value on sophisticated medical technology.

The economic constraints are illustrated by the problem of too few nurses. The profession simply cannot attract enough students to use the existing program, largely because salaries are much lower in nursing than in other university fields requiring comparable work. The MOH does not have funds to increase salaries significantly and the more highly qualified are drawn into the private sector.

The cultural constraints can be illustrated by the division between professional and auxiliary workers. UNAH draws its students from the upper and upper middle classes. There is no career ladder by which auxiliary workers, drawn mainly from lower classes can advance their training to become professionals. Moreover, the professionals often feel superior to auxiliary workers. Thus, a formidable cultural barrier divides these two

levels of workers, limiting effective communication and efficiency.* It is also probable that MD's and nurses view auxiliary workers as a threat to their control.

(iii) Auxiliary nurse training

The training programs for auxiliary nurses need continued improvement to consolidate advances of the last five years. The curriculum is perhaps too broad, yet more time needs to be spent in non-clinical areas. In particular, graduates feel unprepared to carry out community activities involving supervision and training of VHW's and promotion of health activities, subjects that are planned to be reinforced in the initial auxiliary training.

(iv) Village health worker training

The training of VHW's is too short to prepare them for their tasks, and continuing education is weak. They do not receive adequate recognition for their volunteer efforts.

(v) Managers and administrators

Honduras as a whole lacks adequately trained managers and administrators. Because there is an excess of bookkeepers, these are the persons most often used as managers. This reduces efficiency of MOH programs. This constraint is of broad concern to the entire public sector. If the MOH makes efforts to train managers, they may well be drawn off by other public sectors or the private sector.

d. Recommendations

Training in community medicine

The MOH and UNAH should undertake an joint training program in community medicine for physicians and nurses employed by the MOH (and possibly the IHSS). This should include practical administration, project management, personnel management, and the role of auxiliaries and VHW's. Over the next five years, this training should be given to all MD's and nurses employed by the MOH, or at least to those in leadership positions, and to the faculty of the medical school. During this period the program should become a part of the Medical School curriculum, and a requirement for employment or advancement in GOH service. If a joint program were impractical, either or both agencies might develop independent programs, a less desireable alternative, from the standpoint of uniformity and economies of scale.

* (See "Universidad, Plan Nacional de Salud, y Facultad de Ciencia Medica - Interrelaciones, Dr. Luis F. Bekker G. and Dr. Hector Murcac Pinto. Nov., 1976. Memo, pp. 4-5.)

Medical School program

Reduce the number of Medical School graduates, improve their quality and expand training in community and preventive medicine.

Develop practical nurses.

The MOH (possibly in collaboration with the IHSS) should develop a two or three year program to produce licensed practical nurses (LPN's). These nurses could serve in rural areas, where professional nurses are more reluctant to serve, as well as in hospitals. Moreover, LPN's could help to reduce barriers between professional and auxiliary staff by providing an intermediate level. Within 25 years, this category of nurse might take over all nursing functions. If so, the MOH should graduate 40-80 nurses per year until it has enough of these nurses to meet its own needs and reduce the general shortage of nurses.

If possible this should not be a university program, since most applicants are likely to come from from the pool of experienced nurse auxiliaries with selections made on the basis of observed capacity, thus allowing training to be shortened and, at the same time, increasing incentives for performance among auxliaries by providing an advancement ladder. If this recommendation is followed, increased production of nurse auxiliaries would also be required.

Increase production of professional nurses

If production of LPN's is not feasible and the MOH must continue to rely on professional nurses equivalent to UNAH graduates, it may be necessary to establish a new nursing school which would produce up to 80 nurses per year in an intensive three year course. In following this option it would be highly desirable to admit a number of auxiliary nurses as students on the basis of performance or equivalency tests, and demonstrated capacity and enthusiasm for a higher level of nursing.

Continue to improve training of nurse auxiliaries, and in particular to make training of the new auxiliaries more appropriate. Provide in-service training for continuous professional upgrading.

Continue the policy of placing auxiliary nurses in CESAR's and using VHW's for outreach. A discussion of the distribution, support and interrelationships of these workers appears in Section H.3 and H.6.

Use of mass media

The MOH should develop and implement a continuous mass media campaign to promote community understanding and utilization of VHW's and CESAR's.

This campaign should provide continuing education for VHW's and should be designed to increase community acceptance and utilization of these workers. This will thus resolve the constraints of lack of training of these workers and their lack of motivation (see section on effectiveness of VHW's).

Managers

The GOH (or MOH) should develop a training program for health program managers. Over the next 5-10 years, graduates of this program should be moved into MOH management and administrative positions. Employees presently on board should be considered as candidates for this training.

Quality of teaching

The quality of teaching in all programs should continue to be improved through instructor training, development and production of training materials, task analysis to tailor training to needs, and better evaluation of training programs.

Continuing education

A continuing education program should be established for all VHW's and auxiliary nurses. The aim of such a program should be to increase the level of sophistication of treatments and the number of conditions and illnesses these workers can treat successfully.

6. Maintenance of Human Resources

a. The Problem

An aspect of Human Resource Development which is often forgotten is the development, maintenance, and expansion of skills in workers who are already on the job. This process is comparable to the logistics and maintenance system which assures that physical resources continue to function. However, it is even more difficult because human beings, rather than machines, are involved.

For the health system in Honduras, development of existing staff is especially critical because:

-- much of the staff was not adequately trained initially;

-- changes in technology have created new techniques such as oral rehydration, which need to be learned;

-- the policy of relying on auxiliary and volunteer personnel to reduce salary costs results in a staff with less overall knowledge, and a need for more technical supervision; and

-- existing workers need to understand what the new categories of workers can do, and how to relate to them. Moreover, because these new workers operate independently in rural areas, a special effort is required to supervise them and to expand gradually the number of health problems they can treat.

One result of inadequate supervision and support is demonstrated by the fact that less than half of the VHW's which have been trained by the MOH are still involved in the program.

b. The Existing Response

When the MOH began its extension of coverage program in the mid-70's, it began a bold effort to bring health care to more Hondurans. The use of auxiliary personnel was being touted by WHO and other health agencies as the best solution to the rising cost of health care. In the resulting enthusiasm, the importance (and cost) of supervision and continuing education for the new health workers was forgotten. In the last section the short duration (six days) of training for VHW's was noted. The subsequent training which was to have supplemented the original training has often not been carried out. VHW's are expected to meet monthly in their CESAR to discuss their work with auxiliaries nurse. They receive no per diem, however, and must provide their own transportation, so they often fail to attend in-service training sessions. (Other reasons for this are discussed in Section H.6 on the effectiveness of CESAR's.) This lack of technical support of health workers compounds the lack of supervision, logistical support and equipment maintenance which is provided and the problem is compounded by the distance between posts. The resulting loss of motivation is the same as that descibed in the section on logistics.

The MOH is aware of these problem, and has begun to study means of increasing and improving supervision. Nursing supervisors have been increased in number at the regional and area levels. Studies have been undertaken on how supervision should be effected. Auxiliary nurses are now required to report monthly to the office of their supervisor to be paid and to discuss their work. The cost of adequate supervision programs is significant. They require salaries for supervisors, transportation, and per diem costs for them to visit rural health posts. The cost is increased by the long distances between CESAR's and VHW's and between CESAR's and the supervisor's workplace. No regular budget is now available for these things beyond the new salaried positions mentioned above.

c. Constraints

(i) The cost of supervision

The principal constraint on adequate supervision is its operating cost. The MOH adopted the extension of coverage program because it seemed to be cheap, indeed, less than $1 million dollars has been spent by the MOH on VHW programs in the last three years (not including training costs). Moreover, since the cost of adequate supervision was not anticipated or accepted when the program began, undertaking it now seems more onerous in the present period of greater budgetary restraints.

(ii) Trained supervisors

The role of supervisors in the MOH extension of coverage program is complex. The supervisors must understand the work of the auxiliary or VHW, and how they relate to other parts of the health system. The supervisor must be a counselor, helping to motivate the person supervised, and must provide continuing education. Existing supervisors are largely unprepared for these roles, and see themselves more as policemen.

(iii) Staffing supervision programs

The actual work of supervising VHW's and CESAR's is arduous and unattractive. It is difficult to find staff who will travel regularly to rural villages which lack hotels and eating places, where they often must travel long distances on horseback or on foot.

(iv) Policy constraints

Since supervision programs do not exist independently as a MOH program or budget line item, it will be difficult to develop adequate programs until the MOH decides that it will support this activity.

d. Recommendations

Human Resource Development Policy

The MOH should create a program of supervision and in-service education to function in each region, providing direct supervision of CESAR's, and training existing supervisors to do a better job. The program should have adequate budget for salaries, per diem and transporation, and it should be the mechanism for in-service education at the regional level and below. This cannot be done overnight. It will require technical assistance in design, establishment of budget categories, and staff training. Therefore the goal should be to have the system operating within 18 to 36 months. While the system is being developed the MOH should increase support to existing supervision personnel, and provide training for supervisors.

Locus of supervision

The locus of supervision should be moved to the employee's workplace to allow supervisors to see the employee in action. In practice, this will require careful selection of supervisors, and a significant upgrading of their salaries and allowances.

Activities should be more problem-specific

Supervision and in-service education should be more directed toward specific organizational and health problems. The information system of the MOH should be used to identify possible problems in advance of supervisory visits. Training should be developed around a logical sequence of training themes.

Organization of facilities

The MOH should attempt to develop a regional structure of facilities more conducive to effective supervision.

Use of mass media

As a supplemental but important adjunct to improved supervision and training, the MOH should develop a cost-effective mass media program for continuing education of VHW's. Such a program would make villagers aware of the VHW system and increase their understanding of it. It should be designed specifically to motivate VHW's by enhancing their status.

Benefits for Volunteers

The MOH should establish a system giving tangible benefits to VHW's in the form of preferential treatment for volunteers and their immediate family at all MOH facilities. A simple I.D. card should be issued to the VHW's which, when presented, would give them priority over all but emergency patients.

7. Disease and Vital Data Reporting Objective

a. The Problem

A system for timely collection, presentation, analysis and distribution of data and information relating to the births, deaths and

diseases is the basis for the development of appropriate public health programs. Such system would include sub-systems which generate data related to: acute outbreaks of disease; vital records; and morbidity in health facilities. It would also carry out specific, non-routine studies to elucidate important health characteristics of the population.

b. The Existing Response

Both the Department of Statistics and Census and the Ministry of Health are concerned with the collection of this data as described below, by function.

(i) Vital data

Vital statistics on births, deaths, fetal deaths, marriages and divorces, as collected in Honduras, are grossly incomplete and those which are collected are often inaccurate. Information is collected by some 282 municipal secretaries who are generally untrained political appointees, subject to frequent change as the result of local or regional politics. They depend on the mayors, the local population, public and private hospitals, and clinics for the information. Their data is not uniformly recorded. Births and deaths are tabulated by year of registration rather than occurance. Deaths are under-registered by at least 40% while live births are under-registered by 10-12% (under-registration of births is less pronounced because a birth certificate is necessary for a national identity card). Only 13% of deaths are certified by a physician; at most 22% of births occur in hospitals, and physicians may charge for death certificates, thereby discouraging requests for them. This information is to be sent weekly to the Department of Statistics and Census where it is supposed to be published at the end of the year, though frequently publishing is delayed up to six months. Hospital admission data e.g., number of patients, diagnoses, discharges is also sent and both the Department and the MOH compile the data according to their particular needs and rules. The effect of the under-reporting is apparent in the comparison of census data versus vital records data for 1972 infant mortality - the first being 117/1,000 live births the second being 68.8/1,000 live births (Table 20). In recognition of this problem, the MOH has included collection of birth and death data in the job description for auxiliary nurses and village volunteers along with the duty of sharing this information with the municipal secretaries. This function is not uniformly understood or carried out, however.

(ii) Epidemiological surveillance

Every month all physician-staffed facilities are required to send to the MOH the numbers of cases by age, sex, and week of occurrance of a specific list of communicable diseases and levels of malnutrition encountered. Auxiliary nurses at the CESAR level are required to send in the same information for 12 specific illnesses (from a longer list) and, more recently, a reporting form which includes diarrhea, cough, rash, paralysis and malnutrition, has been developed for completion by the village volunteers. Such information is to be passed from the guardian to the auxiliary nurse to the CESAMO or hospital and finally to the MOH. Weekly, all services are

required to cable to the MOH information related to a short list of specific communicable diseases which have serious epidemic potentials. This information is tabulated remarkably rapidly in the MOH. The monthly data is collected, machine processed, and available for MOH review within a month of receipt and is published and circulated in an epidemiological bulletin. Reporting is limited, however. Only 50-55% of the services which should report, actually do so.

Each region has an epidemiologist, working alone, with responsibilities for epidemiologic reporting and, where an outbreak or epidemic is noted, for support of the investigation of the physician at the local facility in the affected area. It is also their task to do any epidemiological research their region requires to understand better the actual prevalence of such conditions as intestinal parasites, anemia, and TB. On occasion, the regional epidemiologist can obtain the assistance of central level personnel.

Unfortunately most of the regional epidemiologists are insufficiently trained to do their tasks well. In fact, most are not trained epidemilogists. They are poorly supported in their efforts and are given other, unrelated duties. Assistance from the central division is not always forthcoming or adequate for the situation. In 1977 the Division of Epidemiology initiated an in service work-study program with the assistance of PAHO and the Department of Social and Preventive Medicine at the Medical School to improve epidemiological services. Progress has been slow, because of lack of active support of the program by the MOH, hesitancy on the part of various central and regional offices to participate in it, and insufficient financing.

The diseases selected for reporting are reasonable but the capability for adequate diagnosis is variable at each level. In the case of nutrition only abnormal states are reported, but reporting of both malnourished and adequately nourished children should be done to provide a complete data set. Laboratory confirmation of some disease states have been obtained in specific investigations, but while all of this information is tabulated and circulated there is no system for assuring its timely analysis. This is left up to each individual and the information is used considerably less than it should be.

Moreover, the laboratory services of the country have never been integrated with surveillance activities. Routine reporting of laboratory results related to specific diseases have never been reported to the epidemiology unit. Of the most common causes of morbidity, at least tuberculosis, intestinal parasites, malaria and syphilis require laboratory procedures for proper recognition which, in turn, could contribute to the quality and utility of epidemiological data reporting. Presently many laboratories are inadequately equipped to perform tests useful in surveillance. At times the weak logistics system has provided in insufficient test reagents, and there is an estimated 20% under-staffing of laboratories.

c. Discussion

While health statistics are of interest to many health professionals, it is the epidemiologists who generally have the greatest concern for its quantity, quality and utility. Improvement of actual data collection and reporting and the undertaking of special studies to provide the necessary up-to-date information are the prime areas needing support.

d. Recommendations

Create a group of well-trained epidemiologists with adequate support to conduct investigations and analyze all pertinent data.

The alternatives for accomplishing this include: (a) increasing the capability and number of persons in the central MOH epidemiology department so that it can undertake all national, regional and local investigations, analyze all data; and provide direct support to the regions in this area. (The present regional epidemiologists would become part of the central unit and function under the direction of the chief of this office); (b) continue the present system but strengthen the capabilities of the epidemiologists at both regional and central levels. In either case there should be a redefinition of the tasks of the epidemiologist (relieving him of non-epidemiological duties) and provision of the necessary resources. The regional epidemiologist would be most effective if he has the assistance of a statistical clerk, a nurse, and a secretary, as well as access to an adequate laboratory. Training seminars should be required in epidemiological methods based on Honduran problems for those serving in epidemiology positions, along with sessions for program planners and managers to assist them in analyzing and using this data. Further, a revitalization of the work-study program should be considered. This would require firm MOH backing of the effort, insistance that key MOH personnel participate and adequate funding.

Designate a person or persons to be responsible for improving reporting and give them the necessary authority to assure that it is done. This implies the provision of sufficient resources to do this.

Alternatives for organizing these functions are: (a) make the epidemiologist and his team in each region responsible for reporting; or (b) name one or more assistants in surveillance at the central level who have responsibilities to visit facilities and individuals who are to report and to assist them in doing it. Either alternative will require inclusion of laboratory data into the epidemiology surveillance system. This, in turn, requires that appropriate methods be developed to assure that field health workers correctly collect and send samples; that the right equipment is given to the laboratories; that the supply system for laboratory supplies is improved; and that trained lab technicians are available always. Both alternatives would also require improvement of all supervision, especially that of auxiliary nurses and volunteers, so

that their epidemilogical surveillance data enters the system and the data is given promptly to municipal secretaries. Improvement of nutrition reporting by weight/height and arm circumference would also be needed under either alternative.

Special studies should be undertaken to update health information obtained in 1966 (through a national health survey complemented by specialized studies of specific problems and regions) and to better elucidate specific problems such as chagas disease and leishmaniasis.

Table 1

HONDURAS: SELECTED INDICATORS OF MORTALITY BY SEX

MORTALITY

Indicators	1949-51	1960-62	1973-75
MALES			
Life expectancy at birth	39.9	45.4	53.4
Avg. annual gain (in years)	n/a	0.50	0.61
Infant Mortality Rate (per 1,000)	175.6	148.1	125.8
Child (1-5) Mortality Rate (per 1,000)	140.7	101.3	76.0
Adult (15-65) Mortality Rate (per 1,000)	571.5	505.9	371.3
FEMALES			
Life Expectancy at Birth	42.4	48.8	56.9
Avg. annual gain (in yrs.)	n/a	0.59	0.62
Infant Mortality Rate (per 1,000)	171.2	132.9	86.9
Child (1-5) Mortality Rate (per 1,000)	126.4	95.6	61.6
Adult (15-65) Mortality Rate (per 1,000)	522.2	440.3	354.6

Source: M. Rincon and Z. Camisa (1978) Table 3.

Table 2

HONDURAS: DEMOGRAPHIC INDICATORS ACCORDING TO RECOMMENDED PROJECTION, 1950-2000

Demographic Indicators	1955-60	1965-70	1975-80	1985-90	1995-2000
Absolute Annual Values					
Births	91,805	123,535	159,605	186,545	245,620
Deaths	35,568	39,329	40,060	39,973	40,488
Natural Growth	56,237	84,206	119,545	146,572	205,132
Migration	3,438	17,172	--	--	--
Total Growth	59,675	67,034	119,545	146,572	205,132
Avg. Annual Rate (per 1000)					
Birth	51.19	49.98	47.05	39.36	37.99
Death	19.83	15.91	11.81	8.43	6.26
Natural Growth	31.36	34.07	35.24	30.93	31.73
Migration	1.92	-6.95	--	--	--
Total Growth	33.28	27.12	35.24	30.93	31.73
Age Structure (%)					
0-14 years	45.27	47.23	47.92	45.99	42.80
15-64 years	52.67	50.42	49.41	51.04	53.95
65+ years	2.06	2.35	2.67	2.97	3.25
Other Indicators					
Total Fertility Rate	7.17	7.43	7.14	5.59	5.00
Life Expectancy at birth (both sexes)	44.99	50.89	57.11	62.64	67.79

Source: Rincon, M., and Z. Camisa, (1978) Table 13.

Table 3

HONDURAS: INTERNAL RATES OF IMMIGRATION AND EMIGRATION FROM BIRTHPLACE TO RESIDENCE IN 1974, BY DEPARTMENTS OF ATTRACTION AND EXPULSION

Rates

Departments	Immigration	Outmigration	Net Migration
Attraction:			
Cortes	38.3	10.6	27.7
Colon	42.8	20.3	22.5
Atlantida	40.4	20.4	20.0
Fco. Morazan	20.4	8.2	12.2
Yoro	28.8	19.3	9.5
Islas de la Bahia	20.5	12.1	8.4
Equilibrium			
Comayagua	16.4	20.9	-4.6
Gracias a Dios	5.4	9.5	-4.1
Expulsion			
Ocotepeque	3.0	63.8	-60.9
Valle	7.7	41.3	-34.5
La Paz	6.0	35.5	-29.5
Intibuca	3.9	28.0	-24.2
Lempira	3.7	25.8	-22.0
Copan	14.2	26.2	-11.9
Olancho	9.3	21.0	-11.7
Choluteca	6.2	17.8	-11.6
Sta. Barbara	15.7	25.6	-9.8
El Paraiso	9.4	16.6	-7.2

Source: Special tabulations of the 1974 Census, Working Document, Unidad de Poblacion, CONSUPLANE, 1980

Table 4

HONDURAS: CRUDE DEATH RATES (1970-1972)

BY EDUCATION AND OCCUPATION OF HEAD OF HOUSEHOLD

Characteristics	Crude Death Rate (per thousand)
Education Level	
University	6.2
Secondary	6.6
Primary (4-6)	9.6
Primary (1-3)	13.9
None	15.9
Occupation Level	
Professionals	7.5
Administrative, Directive	6.7
Employees	7.9
Laborers and Others	15.1

Source: Ortega, A. and M. Rincon (1975), Table 17.

Table 5

COMPARASON OF VITAL RATES
CENTRAL AMERICA AND PANAMA

Infant Mortality Rate (a)

	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica	Panama
1965	92.6	70.6(a)		51.6(a)	69.3	44.7
1970	87.1	66.7(a)	117(d)	42.8(a)	61.5	40.5
1975	81.0	58.1(a)		46.4(a)	37.9	31.0

Death Rate 1-4 yrs(c)

	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica	Panama
1965	33.5	15.0		8.4(a)	6.0	7.5
1970	27.0	13.0(a)	19.3(d)	9.5(a)	4.6	7.5
1975	28.0	6.4(a)		3.4(a)	2.1	3.3

Maternal Mortality (a)

	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica	Panama
1971	1.6	1.1(a)	1.7	1.0(a)	.9	1.1

Neonatal Mortality (c)

	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica	Panama
1971	29.2	18.4(a)	59.5	8.1(a)	25.1	19.2

Post Neo-Natal Mortality (c)

	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica	Panama
1971	52.4	34.1(a)	57.5	27.5(a)	31.3	17.9

General Crude Death Rate (c)

	Guatemala	El Salvador	Honduras	Nicaragua	Costa Rica	Panama
1972	12.5	8(a)	14.2(d)	6.6(a)	4.9	4.9

(a) Per 1,000 live births
(b) Vital statistics subregistration is considered high
(c) Per 1,000 of the age group
(d) GOH/CELADE; Vital records indicate numbers considerably less

* INCAP Catalogo de Datos Demograficos Para La Planificacion Alimentaria - Nutricional en Centro America y Panama 1980

Table 6

TEN REPORTED LEADING CAUSES OF DEALTH 1976*

Cause:	Death	
	Number	Percent
Diarrheal Diseases	2,212	12.2
Other Lesions (and those not specified)	934	5.1
Heart Diseases	695	3.8
Ill-defined Diseases of Heart	558	3.1
Pneumonia (not specified)	546	3.0
Bronchitis	392	2.2
Other Cardiovascular Diseases (and those ill-defined)	335	1.9
Other Anemias (and those not specified)	331	1.8
Multiple Injuries (location not specified)	329	1.8
Measles	280	1.5
Other	11,556	63.6
TOTAL	18,168	100.0

Table 7

AGE DISTRIBUTION OF DEATHS, 1976*

Under 1 year	4,166	22.9
1–4 years	2,945	16.2
5–14 years	1,196	6.6
15–44 years	2,962	16.3
45 and older	6,899	38.0
TOTAL	18,168	100.0

* MOH Plan Operativo Nacional Anual 1979

Table 8 (Part 1)

FIVE REPORTED CAUSES OF DEATH BY AGE
AND SEX (RATES PER 100,000 POPULATION) - 1975*

Area and Principal Causes	Total			Male			Female		
	Number	Rate	Percent	Number	Rate	Percent	Number	Rate	Percent
Under 1 Year (a)									
Total Deaths	4364	3368.3	100.0	2408	3614.5	100.0	1956	3107.8	100.0
Enteritis, Other Diarrheal Diseases	1074	829.0	24.6	603	905.1	25.0	471	748.3	24.1
Causes of Perinatal Mortality	353	272.5	8.1	201	301.7	8.3	152	241.5	7.8
Influenza and Pneumonia	315	243.1	7.2	172	258.2	7.1	143	227.2	7.3
Bronchitis, Emphysema and Asthma	229	176.8	5.2	122	183.1	5.1	107	170.0	5.5
Diseases of the Heart	199	153.6	4.6	114	171.1	4.7	85	135.1	4.3
Whooping Cough	187	144.3	4.3	91	136.6	3.8	96	152.5	4.9
1-4 Years (b)									
Total Deaths	3530	924.6	100.0	1746	891.7	100.0	1784	959.1	100.0
Enteritis, other Diarrheal Diseases	960	251.4	27.2	466	238.0	26.7	494	265.6	27.7
Influenza and Pneumonia	219	57.4	6.2	97	49.5	5.6	122	65.6	6.8
Whooping Cough	145	38	4.1	67	34.2	3.8	78	41.9	4.4
Measles	143	37.5	4.1	73	37.3	4.2	70	37.6	3.9
Bronchitis, Emphysema and Asthma	113	29.6	3.2	54	27.6	3.1	59	31.7	3.3
Diseases of the Heart	105	27.5	3.0	57	29.1	3.3	48	25.8	2.7
5-14 Years (b)									
Total Deaths	1474	171.5	100.0	741	175.3	100.0	673	167.4	100.0
Enteritis, Other Diarrheal Diseases	225	27.3	15.9	118	27.9	15.9	107	26.6	15.9
Accidents	153	18.6	10.8	94	22.2	12.7	59	14.7	8.8
Diseases of the Heart	64	7.8	4.5	38	9.0	5.1	26	6.5	3.9
Anemias	60	7.3	4.2	30	7.1	4.0	30	7.5	4.5
Bacillary Dysentery and Amebiasis	46	5.6	3.3	17	4.0	2.3	29	7.2	4.3
Influenza and Pneumonia	46	5.6	3.3	20	4.7	2.7	26	6.5	3.9
Avitaminoses and other Nutritional Deficiency	38	4.6	2.7	22	5.2	3.0	16	4.0	2.4

(a) Per 100,000 Live births (b) Per 100,000 of that age group
*PAHO Health Conditions in the Americas 1972-76, Scientific Publication No. 364

Table 8 (Part 2)

FIVE REPORTED CAUSES OF DEATH BY AGE
AND SEX (RATES PER 100,000 POPULATION) - 1975*

Area and Principal Causes	Total			Male			Female		
	Number	Rate	Percent	Number	Rate	Percent	Number	Rate	Percent
15-44 Years (b)									
Total Deaths	3234	298.6	100.0	1951	379.5	100.0	1283	225.6	100.0
Accidents	1126	104.0	34.8	1020	198.4	52.3	106	18.6	8.3
Diseases of the Heart	312	28.8	9.6	167	32.5	8.6	145	25.5	11.3
Enteritis, Other Diarrheal Diseases	130	12.0	4.0	59	11.5	3.0	71	12.5	5.5
Complications of Pregnancy, Childbirth and the Puerperium	122	11.3	3.8				122	21.4	9.5
Malignant Neoplasms	103	9.5	3.2	27	5.3	1.4	76	13.4	5.9
Cerebrovascular Disease	73	6.7	2.3	31	6.0	1.6	42	7.4	3.3
45-64 Years (b)									
Total Deaths	2627	998.5	100.0	1417	1080.0	100.0	1210	917.4	100.0
Diseases of the Heart	433	164.6	16.5	265	202.0	18.7	168	127.4	13.9
Accidents	255	96.9	9.7	229	174.5	16.2	26	19.7	2.1
Malignant Neoplasms	188	71.5	7.2	65	49.5	4.6	123	93.3	10.2
Enteritis, Other Diarrheal Diseases	146	55.5	5.6	82	62.5	5.8	64	48.5	5.3
Cerebrovascular Disease	134	50.9	5.1	67	51.1	4.7	67	50.8	5.5
Bronchitis, Emphysema and Asthma	73	27.7	2.8	39	29.7	2.8	34	25.8	2.8
65 Years and Over (b)									
Total Deaths	3562	4486.1	100.0	1781	4699.2	100.0	1781	4291.6	100.0
Diseases of the Heart	580	730.5	16.3	280	738.8	15.7	300	722.9	16.8
Cerebrovascular Disease	202	254.4	5.7	102	269.1	5.7	100	241.0	5.6
Enteritis, Other Diarrheal Diseases	189	238	5.3	105	277	5.9	84	202.4	4.7
Malignant Neoplasms	172	216.5	4.8	84	221.6	4.7	88	212.0	4.9
Bronchitis, Emphysema and Asthma	144	181.4	4.0	68	179.4	3.8	76	183.1	4.3
Accidents	113	142.3	3.2	79	208.4	4.4	34	81.9	1.9

(a) Per 100,000 Live births (b) Per 100,000 of that age group
* PAHO Health Conditions in the Americas 1972-76, Scientific Publication No. 364

Table 9

TEN REPORTED PROMARY CAUSES OF INFANT MORTALITY, 1976*

Rank Order	Cause	1976 Deaths	
		Number	Percent
1	Diarrheal Diseases	940	22.5
2	Bronchitis (not specified)	222	5.3
3	Pneumonia (not specified)	218	5.2
4	Whooping cough	152	3.6
5	Immaturity (not specified)	151	3.6
6	Other infections of the Newborn	117	2.8
7	Ill-defined Diseases of the Heart	94	2.2
8	Symptoms Related to the Respiratory System	83	1.9
9	Anoxia and Hypoxia Infections	73	1.7
10	Measles	65	1.5
11	Septicemia	65	1.5

*MOH Memoria, 1977

Table 10

REPORTED MORBIDITY BY PRINCIPAL CAUSE
ACCORDING TO HOSPITAL DISCHARGE, 1975*

Cause of Morbidity	Number	Percent
Pregnancy and Complications	35,093	36
Infections and Parasitic	13,952	14.1
Accidental Poisoning and Violence	10,624	11
Disease of Respiratory Tract	6,746	7
Disease of Digestive Tract	5,182	5.2
Other		26.7
TOTAL	98,330	100.0

*MOH Memoria 1976

Table 11

REPORTED GENERAL MORBIDITY RATES OF COMMUNICABLE DISEASES, 1972-76

	1974		1976		1978		1979	
	Number	Rate*	Number	Rate	Number	Rate	Number	Rate
Diarrheal Disease	77,778	2,906.6	108,901	3,878.2	110,393	3,210.6	134,433	3,773.2
Malaria	7,503	280.4	48,804	1,735.0	33,184	965.1	25,122	705.1
Influenza	29,650	1,108.0	71,231	2,536.7	82,161	2,389.5	117,891	3,308.9
Sore throat (Streptococcal)	15,890	593.8	28,289	1,007.4	48,988	1,424.7	55,029	1,544.5
Amebiasis	12,720	475.4	18,046	642.5	11,804	343.3	11,996	336.7
Bacillary Dysentery	5,265	196.8	n/a	n/a	953	27.7	1,031	28.9
Gonococcal Infections	4,741	177.2	6,101	217.3	5,996	174.4	5,096	143.0
Syphilis	1,873	70.0	3,187	113.5	2,614	76.0	2,459	69.0
Measles	2,346	87.7	4,206	149.8	5,219	151.8	4,895	137.4
Whooping cough	4,407	164.7	3,264	116.2	1,746	50.8	2,451	68.8
Chicken pox	1,759	65.7	2,406	85.7	1,088	31.6	1,343	37.7
Tuberculosis (Respiratory)	n/a	n/a	1,435	46.7	1,323	38.5	1,288	36.2

* Rates per 100,000 total population

SOURCE: Ministry of Public Health and Social Assistance, unpublished 1980.

Table 12

DAILY PER CAPITA INTAKE AND PERCENT ADEQUACY OF CALORIES AND NUTRIENTS IN SELECTED RURAL AREAS OF HONDURAS. 1966

NUTRIENTS	DAILY INTAKE	ADEQUACY
Energy Kcal.	1,832.00	89
Protein Total, g.	58.0	108
Iron mg.	15.5	152
Vitamin A, mg	0.38	34
Thalmine mg.	0.89	109
Riboflavin mg.	0.79	64
Niacin mg	10.3	75
Ascorbic Acid mg	59.0	130

SOURCE: Superior Economic Planning Council (CONSUPLANE), Evaluacion de las Areas de Prioritarias del Problema Nutricional de Honduras y Sus Posibles Soluciones, Tegucigalpa, Honduras, 1976, p.59.

Table 13

ESTIMATED DAILY INTAKE OF CALORIES AND PROTEINS BY INCOME LEVEL
HONDURAS, 1975

Income Level	Population (%)	CALORIES Amount	CALORIES Adequacy (%)	PROTEINS Grams	PROTEINS Adequacy (%)
Low Income	50	1,465	68	33.3	61
Intermediate	30	2,661	123	66.0	119
High Income	15	3,268	152	85.8	196
Very High Income	5	4,590	213	136.8	312
Averages		2,250	104	55.8	102

SOURCE: Technical Secretariat of the Superior Economic Planning Council, Nutrition Assessment: Honduras, Volume I, Tegucigalpa, Honduras, 1975, p. 21

TABLE 14 (Part 1)

PROJECTED COVERAGE BY WATER AND SANITATION FACILITIES.

WATER SYSTEMS

	1973		1978		1983		1990	
	No.	%	No.	%	No.	%	No.	%
Total Population	2,003.5	100.0	2,256.0	100.0	2,529.6	100.0	2,868.6	100.0
Population Served with household connections	134.0	6.7	302.6	13.4	463.1	18.3	613.1	21.4
Population Served with easy assess*	95.0	4.7	380.4	16.9	1,425.0	56.3	1,968.6	68.6
Total Population Served	229.0	11.4	683.0	30.3	1,885.7	74.6	2,581.7	9.0

Source: Consejo Superior de Planificacion Economica, Estudio del Sector Abastecimiento de agua y Saneamiento en Honduras, Tegucigalpa, Honduras, 1979.

*18.3% piped water systems and 56.3% wells.

TABLE 14 (Part 2)

PROJECTED COVERAGE BY WATER AND SANITATION FACILITIES.

HUMAN WASTE DISPOSAL

	1973		1978		1983		1990	
	No.	%	No	%	No.	%	No.	%
Total Population	2,003.5	100.0	2,256.0	100.0	2,529.6	100.0	2,868.6	100.0
Population served with household connections	1.0	0.1	1.1	0.1	1.5	0.1	1.5	0.1
Population served with latrines or other methods	215.1	10.7	412.9	18.3	970.0	38.3	2,149.9	75.0
Total Population Served	216.1	10.8	414.0	18.4	971.5	38.4	2,151.4	75.1

Source: Consejo Superior de Planificacion Economica, Estudio del Sector Abastecimiento de agua y Saneamiento en Honduras, Tegucigalpa, Honduras, 1979.

TABLE 15

GOH RURAL WATER AND SANITATION EXPENDITURES, 1974-1978*
(Includes Honduran and external funds.)
($000,000)

By Activity

	1974	1975	1976	1977	1978	TOTALS
Water	.15	.2	.55	1.50	1.70	4.1
Sanitation	-0-	-0-	-0-	.05	.15	.2
TOTALS	.15	.2	.55	1.55	1.85	4.3

BY AGENCY

	1974	1975	1976	1977	1978	TOTALS
SANAA	.15	.2	.55	1.35	1.5	3.75
PROSABA	N/A	N/A	N/A	.15	.3	.45
TOTALS	.15	.2	.55	1.55	1.85	4.3

Source: CONSUPLANE Five Year Health Plan 1979-1983.

TABLE 16

PROPOSED GOH RURAL WATER AND SANITATION EXPENDITURES 1979-1983
(Includes Honduran and external funds.)

($000,000)

By Activity

	1979	1980	1981	1982	1983	TOTALS
Water	2.55	3.40	2.95	3.50	3.1	15.50
Sanitation	.15	.35	.25	.45	.3	1.55
TOTALS	2.70	3.75	3.20	3.95	3.4	17.00

By Agency

	1979	1980	1981	1982	1983	TOTALS
SANAA	1.8	1.85	1.9	1.90	1.95	9.40
PROSABA	.9	1.90	1.3	2.05	1.45	7.60
TOTALS	2.7	3.75	3.2	3.95	3.40	17.00

Source: CONSUPLANE Five Year Health Plan, 1979-1983.

TABLE 18 (Part 1)

HEALTH SECTOR MANPOWER TRAINING INSTITUTIONS

INSTITUTIONS:	GOH	PUBLIC	PRIVATE	TYPE OF WORKER TRAINED	Work Area After Graduation				Number of Graduates in 1979
					GOH	PUB	PRI	OWN	
1) THE MINISTRY OF HEALTH	X								
-Human Resources Division	X			-Nurse Auxiliary	X				80
				-Rx technicians	X				5
				-Anesthesiology technicians	X				12
				-Lab technicians	X				12
-Maternal-Child Health Division				-Community health workers	V				156
				-Practical Midwives	V			X	890
				-Village Sanitation workers	V				566
-Environmental Sanitation Division				-Health Promoters	X				44
-Food Control Department				-Food Inspectors	X				4
2) THE NATIONAL AUTONOMOUS UNIVERSITY OF HONDURAS		X		-Physicians	X	X	X	X	50
				-Dentists	X	X	X	X	49
				-Pharmacists	X	X	X	X	?
				-Nurses	X	X	X		25
				-Microbiology lab technicians	X	X	X		30
				-Engineers	X	X	X	X	?
				-Business administrators	X	X	X		?
3) THE HONDURAN SOCIAL SECURITY INSTITUTE		X		-Nurses	X	X	X		20
4) HOSPITAL VICENTE D' ANTONI			X	-Nurses	X	X	X		?

Table 18 (Part 2)

HEALTH SECTOR MANPOWER TRAINING INSTITUTIONS
Continued.

INSTITUTIONS:	GOH	PUBLIC	PRIVATE	TYPE OF WORKER TRAINED	Work Area After Graduation				Number of Graduates in 1979
					GOH	PUB	PRI	OWN	
5) THE POLICLINIC HOSPITAL			X	-Auxiliary Nurses			X		?
6) THE PROFESSIONAL TRAINING INSTITUTE		X		-Middle managers	X	X	X		?
				-Statisticians	X	X	X		?
				-Construction workers	X	X	X		?
7) CIVIL SERVICE	X			-Personnel Administrators	X				?
8) MIDDLE SCHOOL		X		-Administrators	X	X			?
9) NATIONAL VOCATIONAL INSTITUTE Luis Bogran		X		-Technicians:					
				Electronics	X	X	X		25
				Mechanics	X	X	X		56
				Chemistry	X	X	X		8
				Civil Engineering	X	X	X		15
10) VOCATIONAL INSTITUTE OF HONDURAS		X		-Technicians	X	X	X	X	?
11) GERMAN TECHNICAL CENTER OF HONDURAS		X		-Technicians	X	X	X	X	250
12) MENONITE VOCATIONAL INSTITUTE		X		-Technicians	X	X	X	X	?

Table 18 (Part 3)

HEALTH SECTOR MANPOWER TRAINING INSTITUTIONS
Continued.

INSTITUTIONS:	GOH	PUBLIC	PRIVATE	TYPE OF WORKER TRAINED	Work Area After Graduation				Number of Graduates in 1979
					GOH	PUB	PRI	OWN	
13) SUPERIOR SCHOOL FOR TEACHERS		X		-School teachers	X		X		?
				-Accountants				X	?
14) SECRETARIAL SCHOOLS			X	-Office Managers	X	X	X	X	?
				-Secretaries	X	X	X	X	?
				-Typists	X	X	X	X	?
15) UNIVERSITY OF JOSE CECILIO DEL VALLE			X	-Architects			X	X	?
				-Engineers			X	X	?
				-Lawyers			X	X	?
				-Administrators		X		X	?

Table 19 (Part 1)

TRAINING PROGRAMS FOR AUXILIARY HEALTH PERSONNEL, 1978

POSITION	AGE	SEX	Education	Sponsor	Course Length	Capacity	Training Site	Service Requirement	Degree
Nurse Auxiliary	18+	B most F	Plan Basico	MOH or other health institution	1 year	370	five centers	2 yr w/ funding else 1 yr	Certificate
Health Promoter	21-35	M some F	Teaching or comercial degree	MOH or other health institutions	45 days	50	Academic setting	Work in Rural Areas	Certificate
Health Inspector	18+	B	Plan Basico & 1 yr rural experience	MOH or other health institutions	6 mo	15-25		1 year	Certificate
Nutrition Assistant	18+	B	Plan Basico	MOH or other health institutions	3 mo	10-25	CESAMO, SCHOOLS, SERN	1 year	Certificate
X-Ray Technician	18+	B	Plan Basico or 3 yrs experience	MOH or other health institutions	11 mo	5-12	National Hospitals	2 years	Certificate
Anesthetic Assistant	18+	B	Teaching nurse and Experience	MOH or other health institution	1 year	5-12	National Hospitals	2 years	Certificate
Health Statistician	18+	B	Plan Basico	MOH employees preferred	3 mo	10-20	MOH statistics dept.	1 year	Credited Health Statistician

Plan Basico = 6 years of Primary Education and 3 years secondary
Teaching Degree = 3 years beyond Plan Basico

Table 19 (Part 2)

TRAINING PROGRAMS FOR AUXILIARY HEALTH PERSONNEL, 1978
continued.

POSITION	AGE	SEX	Education	Sponsor	Course Length	Capacity	Training Site	Service Requirement	Degree
Health Educator	18+	B	High school or teaching degree	MOH or other health institutions	1 year	1-12	Academic & field	2 years	Certificate
Laboratory Technician grade 1	18 to 30	B	Plan Basico & Exam		5 mo	25-46	MOH	2 years	
Maintenance Technician			Diploma in some area of repair		variable	34	MOH		
Medical Secretary	18+				1 mo	20-30	MOH		
Laboratory technician Grade 2	18+	B	High school degree & Exam	MOH	1.5 yrs	20	UNAH	1 year	
Dental Assistant	15 to 25	F	Plan Basico		9 mo	17	UNAH	1 year	
Medical Records Assistant	18+	B	Secondary	MOH	1.5 mo	20-30	MOH	1 year	

Plan Basico = 6 years of Primary Education and 3 years secondary
Teaching Degree = 3 years beyond Plan Basico

Table 20

PERCENTAGE OMISSION IN VITAL STATISTICS FOR INFANT AND CHILD MORTALITY RATES AS COMPARED TO DEMOGRAPHIC SURVEY, 1970-1972, HONDURAS

Age group	Mortality Rates (per 1000) Demographic Survey (1971-72)	Vital Statistics (1970-71)	Omission (%)
Infant Mortality	117.0	68.8	68.8
Under 1 day	24.1	0.6	97.5
1 - 6 days	16.8	3.8	77.4
7 - 27 days	18.6	4.9	73.7
28 days - 5 months	29.1	14.8	49.1
6 - 11 months	28.4	12.4	56.3
Child-Mortality (1-4)	19.3	9.6	50.3
1 - 1.9 years	36.3	14.7	59.5
2 - 2.9 years	21.8	10.0	54.1
3 - 3.9 years	12.8	7.3	43.0
4 - 4.9 years	5.0	5.7	-14.0

Source: Ortega, A. and M. Rincon (1975, Tables 5 and 8