HEALTH MANPOWER AND MEDICAL EDUCATION IN LATIN AMERICA

REPORT
OF A
ROUND TABLE
CONFERENCE

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The Report which follows was prepared for the Milbank Memorial Fund and for the Pan American Health Organization by the eight Participants listed on page 13.

FOREWORD

The conference convened on September 30th under the auspices of the Milbank Memorial Fund and the Pan American Health Organization. Doctor Alfredo Arreaza Guzman, Director of the School of Public Health, Faculty of Medicine, Central University of Venezuela, was appointed Chairman. The meeting was opened by Doctor Alexander Robertson, Executive Director of the Milbank Memorial Fund, who welcomed the participants and observers. He stated that all those present were free to enter into the discussions, although the report would be the responsibility of the participants alone. He explained something of the background of the conference, how supporting selected conferences concerned with major health problems fitted logically into the long tradition of the Milbank Memorial Fund and that although the Fund's concern with medicine in Latin America was new, the problem of how logically to develop health manpower through an epidemiological approach to the problems involved had a direct appeal to the interests which the Fund had fostered over the years.

Doctor Abraham Horwitz, Director of the Pan American Sanitary Bureau, expressed his great pleasure in this cooperation between the two organizations and paid tribute to the past achievements of the Fund. He endorsed the terms of reference of the conference.

In his introductory remarks, the Chairman of the conference, Doctor Arreaza, pointed to the current danger of the disintegration of social structures throughout the world under the impact of three major developments. These are:

—the attainment of self-government by many emerging nations with all the multifarious problems involved;

—the developments in world communications which had the effect of emphasizing the statement in the Constitution of the World Health Organization that what happened to one nation was of immediate concern to all;

—the twin demographic problems, the "population explosion" and the migration to the cities (urbanization).

All of these developments were creating grave health problems with which it was the responsibility of medicine—in its broadest sense—to contend. Doctor Arreaza stressed the serious lag in applying existing knowledge for the benefit of mankind, particularly in the developing nations, and pointed out that an examination of how to overcome this should begin by an analysis of existing situations and resources and of how effectively they were being used. He pointed out that it was not sufficient to do this on a broad national scale, the different needs in rural and urban areas had to be given a prime place, as had the heterogeneity of populations within a given country.

Doctor Arreaza called for new tools to investigate the old triad of poverty, ignorance, and disease; to measure and to evaluate old problems; and to estimate the quality and quantity of resources and personnel available and required to serve both old and new needs. He questioned the value of many conventional indices. He looked to the conference to lay down lines of research which might lead to the extension of the benefits of modern health sciences to the whole populations of the countries of Latin America, especially to the rural

populations who had hitherto been sadly neglected. He suggested that the redeployment of health personnel, and more particularly the utilization of auxiliaries, might go far towards making this possible.

INTRODUCTION

The various governments of the Latin American countries are currently engaged in a great continental effort for their social and economic development.[1] Latin American medical schools, universities and related institutions of higher education are greatly concerned with what their contribution to this enterprise should be.

To obtain the greatest degree of well-being for their people, following upon increase in economic capacity, the governments participating in the Alliance for Progress have set themselves specific goals to be reached within the next decade. In order that these goals may be achieved, the Ten Year Public Health Program of the Alliance for Progress has set forth measures that the participating governments are recommended to adopt, measures which emphasize the necessity for special efforts in the training of medical and health personnel to meet at least minimum requirements.

The Charter of Punta del Este[2], establishing the objectives of the Alliance for Progress, in its Resolution A.2, specifically recommends:

"1.d. To give particular importance to the education and

training of professionals and their assistants who engage in activities related to the prevention and cure of diseases. To this end it will be necessary:

i. To determine the number of experts required in the various categories for each activity or profession;
ii. To provide in-service training to present staff members, and progressively train a minimum number of additional personnel; and
iii. To expand or create the necessary educational centers."

In planning these efforts it is of great importance to establish some criteria to determine:

a. the number of physicians that the countries need,
b. the principles that are to guide the practice of medicine and hence the direction to be given to medical teaching,
c. the prevailing methods and concepts,
d. the relative importance to be assigned to the various subjects of the curriculum and the consequential organization and administration of medical teaching.

Recently the Milbank Memorial Fund has been involved in a series of discussions with the Pan American Health Organization, concerning the urgency that exists for making a comprehensive study of the medical education problems of Latin America. These discussions led to the conclusion that a definite need does exist to plan and conduct studies analyzing medical education within the framework of the social and economic changes that this region is going through and the rising need and demand for skilled personnel in the health professions.

Before such studies are launched the Pan American Health Organization and the Milbank Memorial Fund agreed that it would be very valuable to conduct, jointly, a Round Table Conference on Medical Education in Latin America, at which an attempt would be made to design an appropriate research approach to the problems of physician needs and of medical education, to discuss the methodologies to be used and to define the appropriate emphases and parameters of the studies.

Such a Conference should clarify and extend the recommendation in paragraph 1.d above, and not merely concern itself with medical education, but also with the relevant aspects of the role and education of paramedical health workers in so far as they might affect the numbers, function and education of physicians in relation to the total activity in the health field.

A Round Table Conference organized along these lines could only lay down guidelines and hope that they would be adopted by the countries concerned for the study of their own problems.

HEALTH IN LATIN AMERICA

Governments in many parts of the world tend to follow the pattern of a primary interest in promoting economic development, secondly in achieving a better distribution of wealth, and thirdly in attaining better living conditions.[3] The Act of Bogota and the Charter of Punta del Este reflect the determination of the governments of the Americas to unite in a common effort to accelerate social welfare and economic growth simultaneously.

The population of Middle and South America comprises some 206 million people of whom about half live in rural areas and population centers of less than 2000 inhabitants. This varies widely in different countries and in different parts of the same country. Forty per cent of the population is under 15 years of age. The birth rate is high, exceeding 40 per 1000 population in many countries. Mortality is excessive, especially in infants and children under 5 years of age. Yet the rate of increase of the population is the highest in the world, amounting to 2½–3 per cent per annum. At the same time economic growth is less rapid. Projection of such a trend forebodes

serious consequences for the future, both socially and economically.

In the greater part of Latin America, the economy rests primarily on agriculture, often over 50 per cent of the population being involved. Currently, there is a movement away from agriculture and the rural areas towards industry and the big city, which is aggravating existing difficulties. The nutritional status is already poor and industry has in general not developed sufficiently to absorb the population moving into the urban areas. The trend can therefore be expected to act adversely, both by lowering agricultural production and through the health problems that arise from urban overcrowding, unemployment, and the creation of "shantytowns". Such poor living conditions are becoming serious political factors. A major effort to improve minimum living standards is therefore urgently needed.

The picture is one characteristic of young populations, growing at an accelerated rate, producing less than they need and able to provide less than they demand in material and social elements, including both education and health.

The nature and distribution of health problems are related to the conditions which prevail in Latin America, as are the measures which might be applied to solve them. However, although the latter may be based on the same principles as are used elsewhere, they must be adapted in detail for the conditions under which they are to be applied. At the recent meeting of the Task Force on Health at the Ministerial Level, the major factors responsible, alone or in combination, for the most important diseases in Latin America were identified. They included infections, malnutrition, poor sanitation, inadequate housing, low per capita income, and ignorance—which, it was stressed, is more than just illiteracy.

Yet it must be recognized that immense strides have already been made in the improvement of health in some fields. The quarantinable diseases are disappearing. Great strides have been made in the control of malaria. Thirty-eight million people formerly at risk are no longer exposed to the disease. But the problems of tuberculosis, malnutrition, and environmental sanitation are still grave. Where tuberculosis is concerned the situation is becoming hopeful through

the application of modern techniques of the ambulatory treatment, although the administrative and technical problems of ensuring the success of such an approach should not be minimized. Nevertheless, large expensive sanitaria are no longer needed on the same scale as in the past. In malnutrition, the problems are not so much scientific as sociological and administrative. How can the knowledge we possess be successfully applied in the face of ignorance and inertia? In sanitation, capital investment has been the major obstacle. In urban areas, economic arrangements involving low-interest long-term loans provide hope of solution. But the prospect for the neglected rural areas remained bleak until the concept of community organization and self-help was brought forward.

Although further studies are necessary, already there is sufficient experience to suggest that this concept of community organization may be the only early solution to many social problems in rural areas. Wherever community organization and participation has been seriously attempted the response has been good. The application of this concept to the solution of housing and sanitary problems is urgently needed. It is regrettable that so little has been done so far regarding the health problems of housing in Latin America. Experience elsewhere has shown how quickly new slums arise in new housing projects if the health, educational, and other needs of the population are not taken into account.

Latin America is a continent in transition. Although the main diseases in most countries are those of underdeveloped areas, in some, and in the upper socio-economic groups of others, the disease problems of highly developed countries are taking on a high priority, a trend which is bound to continue. Accidents, cardiovascular diseases, and cancer are already among the five leading causes of death in 10 countries.

What resources are available to deal with these many problems? In this connection, statistics tend to be misleading. The actual proportions of physicians and hospital beds to the population, while lower than in most highly developed countries, is high enough to anticipate that in view of the essentially preventable nature of many existing health problems, a much better job could be done through

improved organization of health services.

Such factors as maldistribution and misuse, and others which are mentioned in the subsequent pages of this report, aggravate the situation. It needs to be emphasized, however, that while physicians are important as leaders of the "health team", and while only they can perform certain health-care functions, there are many other important health measures, some of which are now being carried out by physicians, which can be undertaken effectively by other professional and auxiliary health workers. However, in general, the latter are proportionately in even shorter supply than physicians.

It seems clear that these various problems cannot be solved without a new look at the over-all picture. Health as a medical interest cannot be separated from human well-being in the social, economic, and political sense. All these segments of human activity have, in fact, the same ultimate objective, that of human well-being, although their approaches are influenced by considerations which seem at first sight, and often are in practice, divergent in their immediate aims. It is worthy of note that the Constitution of the World Health Organization defined health as a state of physical, mental, and social well-being. In doing so, it recognized that health depended on social properties as much as personal attributes and that the social aspects of health involve man's activities in both small and large groups and even on a national or international scale.

As already pointed out above, in this shrinking world what happens to one nation is of immediate concern to all. In this context, man's social activities include all those enterprises which contribute to his well-being; that is to say, where and how he lives, his work and salary, his social stability and political rights and obligations, including such things as taxation, the opportunities for his children and their education, nutrition and the material goods available to him. It is therefore clear that the conference must concern itself with the role of health personnel and their activities in the context of man's relationship to his total environment, that is to say, of human ecology.[4]

The environment to the ecologist includes the biological (animate) environment, as exemplified by the vegetable and animal

products he grows for food, the other living components of his environment, some beneficial, some harmful, such as parasites and pathogens and their vectors, as well as wild animals and plants; it also includes the inanimate environment, containing all those physical and chemical factors, of which there are legion, affecting human well-being both favorably and adversely; and to these two must be added the behavioral environment, which, as already pointed out, includes the behavior of man as an individual and in both small and large groups. There can be no question that the behavior of governments profoundly affects the well-being of individuals and groups all over the world.

The first conclusion of the conference, therefore, was that while the medical and related professions had neither the competence nor the desire to interfere with the primary responsibilities of those concerned with agriculture, economics, industry or politics, it had an intense interest both in participating in their present activities and in assisting with the coordination of future planning of the various groups. The decisions of any one of them, including those of the health authorities, would inevitably have a profound effect on the endeavors of the others. Knowledge of the potential effects of such interaction is obviously a prerequisite of intelligent planning.

It was emphasized that this coordination—or better, integration —of planning should involve all levels, including the setting of goals and the allocation of resources, material, personnel, and, often overlooked, the sharing of information. Just as the economist or industrialist depends on the availability of healthy manpower for the execution of his plans, so the health program may depend on roads and transport, water, housing, education, agriculture, and the ability of the individual or community to purchase health services.

The allocation of resources is far from easy. Far too little is known of how to quantify health and health measures in economic terms. Indeed, the value of health certainly cannot be measured in these terms alone. Nevertheless, the conference felt that further studies are urgently needed in this direction if the ideal of a dynamic equilibrium in the socio-economic-health complex is to be approached and if political leaders, government officials, economists,

educators and others are to understand the potential contribution of health. In this connection, it was pointed out that health has unique qualities not possessed by economy or industry. These and many other socio-economic elements are means to an end, namely the promotion of human well-being. Health is a state of well-being. Thus it is a goal in itself, but it is also a tool, since its presence contributes to the success of other means in reaching the objective more quickly and for greater numbers.

REVIEW OF TECHNIQUES USED IN STUDIES OF MANPOWER

Organized interest in manpower studies in the Western Hemisphere evolved from the need for information to meet national crises. For example, during the First, and particularly the Second, World War, a strong interest grew up in the United States in gathering information about the types, location and over-all strength of the nation's skilled manpower resources. It was felt that such information would provide a basis of planning for the utilization of professional individuals in emergencies and such data also would serve as a measure of critical needs for training.

The concept of "manpower" includes, inter alia, a description of the number and other characteristics of the people avaliable in various occupational categories. The assumption that individuals in the same category can be added together is fundamental to most studies. This notion in turn is based upon the prior assumption that individuals with the same professional labels are similar in training, skill, and activity. Studies based on these assumptions have inherent limitations, some of which are described below.

The study of medical manpower usually involves some effort to

relate the supply of physicians to the need for their services. Several methods which have been used are:

—physician to population ratio or the physician-patient ratio
—the relationship of mortality and morbidity to physician services
—the producer approach (a measure of the average number of patients seen by physicians per unit of time)
—the consumer approach (the number of contacts which patients have with physicians per unit of time)
—economic growth factors as indicators of physician needs (gross national product, consumer expenditures for medical care, etc.)
—the prevalence of preventable disease as an indication of the need for health workers
—unfilled professional positions (vacancies as indicators of special needs for physicians in given institutions, e.g., unfilled positions in medical schools, hospitals, etc.)
—studies of function or utilization.

Each of the above techniques can provide only a particular type of information. This limits the questions which can be answered through any one technique. For example, the physician-population ratio approach which is very widely used has serious limitations, some of which are cited in the following quotation.

> "The supply of doctors is usually stated in terms of the ratio of physicians to population. The use of this ratio as an indication of the relative adequacy of the supply of doctors in particular localities has limited validity. The size of the population is not an accurate measure of the need for doctors in any particular locality. Patients frequently seek medical care in nearby communities. As the size of the area in question increases, this criticism loses force, since few individuals travel great distances for physicians' services. Nevertheless, the metropolitan areas, as well as certain other localities where comprehensive hospital facilities and large numbers of specialists are found, attract many patients from other areas. The amount and kinds of medical care which a community needs and seeks also vary, depending on such factors as the income,

education, age, birth rate, cultural background, housing, environmental sanitation, and occupation of the residents, and even the climate.

The number of doctors in a locality does not measure the amount of medical care provided any better than the size of the population measures the care needed. Differences which may exist among states or regions in the quality of physicians cannot be measured. . . . The amount of care provided by each doctor also depends on prevailing patterns of doctor utilization, which is influenced in turn by the age of the doctors, the amount of time they spend in traveling between patients, the length of their usual work week, the character of nearby hospital facilities, and the supply of auxiliary medical workers such as nurses and technicians."[5]

Some of the above techniques are concerned with the direct services of the physician to the patient. They largely ignore the question whether a physician was really necessary to provide the particular service or whether it could equally effectively have been provided by a nurse, for instance, or, if he was essential, whether he could have provided additional useful—perhaps preventive—service at the same contact. Nor are these techniques adequately concerned with the impact on the health of the community of the physicians engaged in public health, research, teaching, or administration. It is probable that in some situations these physicians have a far greater long-term effect on the health of the community than the physician whose activities are confined to individual patient care. It is helpful to differentiate between various studies in terms of precision where precision is needed, insight where insight is lacking, and documentation, which might lead to either.

The need for physicians therefore has to be looked at in the context in which work will proceed, taking into account the plan, the variety of duties expected of the physicians, and the availability and functions of supporting personnel. Sophisticated planning and reorganization becomes vital in the search for a balance between effectiveness and economy, economy not just of funds but in the optimum utilization of the physician who is scarce and costly both to train and maintain.

BASIC ASSUMPTIONS OF THE PROPOSED STUDIES OF HEALTH MANPOWER

This epoch of dynamic change in social structure, and consequently in concepts and demands for medical education and programs, is producing severe stress on the traditionally established forms of medical education. It is necessary therefore to identify and, as far as possible, to measure the controlling factors which are influencing contemporary practices in medical education in each country of Latin America, and to make the best use of this knowledge in order to introduce the modifications needed for the over-all program of national development.

It is assumed that the planning of such modifications will require a comprehensive understanding of the projected quantity and quality of health services and the role of physicians therein. In other words, the future preparation of physicians should be designed to fit the framework of the plans and goals established for the solution of health problems in the context of the national plan for socio-economic development.

It is recommended therefore that studies should be focused on three main fields:

—measurement of health needs and demands and the establishment of health goals
—the resources needed for health services to attain these goals
—the modification required in the patterns of medical education.

The need for health services changes with the physical, cultural, and social setting and varies through time. Demand, likewise, is a relative matter. The availability of services itself creates demands. The lowering of economic barriers to medical care, the improvement of roads, the construction of hospitals, the general improvement of education, as well as the prevalence of disease, are important elements in determining the demand and the need for medical care.

It is essential therefore to have an over-all picture of these needs and demands, as well as of the available resources, for the establishment of health goals and for the design of health and educational programs. The expansion of services clearly depends on the availability of the necessary trained personnel and other resources. Medical educators in Latin America are expressing increasing concern regarding the contribution of medical education to the process of development of their countries. Many are aware that the curriculum of the medical school should be attuned to the functions of physicians in the communities they will serve, but they need information as to what the range of the functions will be, what the physicians will need to know to fulfill these functions more effectively so as to satisfy the public which is becoming increasingly conscious of health needs and of the potential benefits of modern medical science. The "producer" of physicians, the medical educator, needs to be brought much closer to the "consumer" if they are to understand each other's aims and to establish joint efforts for attaining their health goals.

The rapid and intelligent adaptation of the traditional forms of medical education to new concepts and requirements is essential if it is to respond effectively to these challenges.

The proposals of the conference are therefore based on the following assumptions:

1. The ten-year goals established by the Charter of Punta del

Este are a first step, but in planning for medical education it is necessary to look beyond these objectives because the effect of changes in medical education may not be felt until towards the end of that period or for several years beyond.

2. Health needs and priorities must be viewed in a broad socio-economic context.

3. Health programs and resources are becoming increasingly governmental responsibilities.

4. Integration of preventive and curative services will increase.

5. Rapidly changing and expanding health service programs demand continuous evaluation and redeployment of resources as necessary.

6. Patterns of education and training of physicians and allied professional and auxiliary health workers must be modified in response.

7. It is essential that medical students be brought to understand the community responsibilities of the medical profession and the place of the physician in health team as well as in society.

From these assumptions numerous questions arise, many of which are dealt with in the pages which follow.

MEASUREMENT OF HEALTH NEEDS AND DEMANDS AND THE ESTABLISHMENT OF HEALTH GOALS AND PRIORITIES

The need for health services can be described and to a certain degree measured by a number of indices. First among these are mortality rates for specific causes, age groups, and population sectors, both economic and geographic. Another dimension of health need can be found in morbidity data. Hospitalization rates, disability rates, work-day losses, all serve to give understanding of the health needs of a community or of a nation. In any one country different levels of health need can be found as one moves from isolated to urban areas.

The sources of information on these subjects, and the manner of collection and analysis, will vary somewhat from place to place, but essentially they are these: official death records, official communicable disease records, hospital and health center discharge records, household surveys, and longitudinal studies of population groups.

It is important to remember that the components of need, even in a single community, are not fixed. The very presence of health services causes changes in needs—as communicable diseases of child-

hood, for instance, give way to the different but even more demanding chronic diseases of an older population.

The effective demand for health services is also constantly changing and increasing. It is affected by the supply of services, and by people's experience with them. The availability and use of one physician in a community can lead to the demand for a second. The construction of a hospital can lead to such a change in the patterns of caring for illness that more hospital beds are demanded. Demand for services is increased for example by road construction, by economic betterment, by general education, by medical advances, by changing perceptions of illness.

At any one time the gradations of demand, and the potential future dimensions of demand, need to be measured in communities with different economic and educational levels and different levels of health service. Community and household studies and longitudinal studies can be of great value in understanding the determinants of demand and the patterns of utilization of health services.

Health goals for a community and a nation must be established in relation to the present situation and to past experience. They may be in terms of national goals for the reduction of infant mortality, tuberculosis, malaria, etc., or in terms of raising health levels in rural areas to a level comparable with those of the more advantaged urban population. They must be related to the total social and economic goals of the country. They must look to the coordination of public and private effort. They will be the more realistic as achievements in other areas are taken into account and as more accurate analysis is made of morbidity trends and of the health status, demands, and perceptions of the general population.

It is also possible for the analysis of needs, demands, and goals to be cast in the pattern used in the formulation of national health plans in Latin America today. This consists essentially of making a diagnosis of the health situation, using indicators of mortality, morbidity, economic importance, vulnerability of the condition to attack, and cost of the attack, as the basis for a rational ordering of priorities. The "instrumentalization" of the plan is then studied in terms of the human and material resources needed to carry it out

and their utilization.

The study of medical manpower requirements is precisely part of this "instrumentalization", and the fact-finding undertaken in order to formulate national health plans within the framework of general plans for social and economic development under the Alliance for Progress is providing many of the statistical indicators which are needed to establish manpower projections.

Establishment of Priorities

In its report to the Task Force on Health at the Ministerial Level, the Pan American Health Organization Advisory Group on Health Planning stated: "The first and most important step in planning, once the facts are known, is the determination of priorities, a decision which will depend on the correct evaluation of data and on the planner's experience and common sense."[6]

It is clear that the priorities established in this way will depend on the validity and completeness of the "facts", on the criteria adopted as to what constitutes "correct evaluation", and on the planner's understanding of the relative importance of the multiple factors involved in all health problems, as well as the means available for reducing or eliminating the adverse influence of some or all of them. These priorities will also depend on an appreciation of the realistic possibilities of applying the measures, their anticipated efficacy in coping with the situation under consideration, and the potential repercussions, or side effects, on other areas of human concern, that is, on the human ecosystem as a whole.

Many of the "facts" which planners have to use, because they are all that is available, are inaccurate, often to an unknown degree. Some of the studies proposed in this report should help to ameliorate this situation, but it will always be important to scrutinize critically the data upon which decisions are to be taken. The data will also usually be deficient or incomplete in various areas. Sometimes the missing information may be available in other ministries, agencies, or institutions. Furthermore, the complexity of the factors involved and the wide range of considerations which apply to any large-scale interference with human systems, call for a breadth and depth of

knowledge, which cannot be found in one individual or even readily in a small group. It is therefore very important that a wide variety of people with different educational backgrounds and professional experience should be involved in the planning process.

The over-all planning body must be one having a high level of authority and community confidence. This will help it to resist undue pressures from groups with sectional interests, whether political, economic, social, or humanitarian. It should include governmental, professional and other leaders. Futhermore, planning should not be regarded as a one-time study, but as a continuing process guiding the adaptation of activities to continually changing circumstances. The body should therefore have a degree of continuity and authority which would enable it at least to check arbitrary changes or individual decisions. It should be emphasized, however, that the purpose of planning is not to stifle leadership but to channel it.

The establishment of priorities can be examined at two levels—the priority to be given to the health sector within the general social and economic context and the priorities to be established within the health sector.

The priority given to the health sector as a whole is reflected in the resources which can be assigned to it. As a minimum, this will be the amount needed to maintain the existing health situation in per capita terms as the population grows. Assigning resources to go beyond this will depend on high-level political decisions.

While the final decision may be political in nature, health professionals and economists have the responsibility of providing information on costs and benefits that will enable rational decisions to be taken. In this connection, there is good information on costs in many countries but benefits pose difficulties of measurement in the aggregate. Relationships between health activity and the resultant economic benefits are more clearly visible at the level of the individual economic development project.

It should also be recognized not only that health activities can produce economic benefits but that economic development projects create new demands for health services—e.g., the need for health

centers to serve new population centers associated with new industries, ports, agricultural colonization, etc. The coordination of health planning with over-all economic and social planning involves free interchange between health and those other sectors whose plans could affect the demand for health services and consequently for medical manpower. This is one reason for a planning mechanism in which all sectors of economic activity would be represented and whose main function would be to advise national authorities on the allocation of resources among the sectors.

While, from the economic point of view, the health sector is a means of accelerating the development process, in social terms health is also a goal of the development process. This double meaning of health has to be taken into account in assigning sectoral priorities.

From the economic point of view all needs clearly could not be satisfied in one or in two decades, and the availability of funds for health activities (based on the general allocation of resources among sectors) would set an upper limit on the medical manpower that could be employed. Priorities within the health sector are thus imperative for the utilization of available resources to maximum effect.

The collection of information on patterns of spending on health care, the use of records of institutions providing health services, of household surveys where indicated, of records of private physicians, of statistics of drug production, marketing, and imports, taken together with the standard national accounts and supporting aggregates (which include government current and capital account) would provide the needed background information. The standardization of definitions in the United Nations standard accounts and the World Health Organization cost questionnaire[7] facilitates the task of obtaining comparable data. The number of Latin American countries expressing interest in replying fully to the World Health Organization questionnaire is encouraging, as is the example of a small country like El Salvador where a "crash program" to develop a national health plan produced much of the needed data in a very few months.

In undertaking studies of needs and demands, and in setting priorities and goals for health services, as a basis for the development

of health manpower resources, the conference underlined a number of principles:

1. The climate of interest and understanding of health needs is such that the value of studies in this area is quite widely understood. Only five years ago this would not have been true.

2. At the same time, there is need to stimulate orderly planning. It will not occur spontaneously.

3. In the development and carrying-out of studies, there should be involvement of as many as possible of the key groups concerned—these might include the Ministry of Health, social insurance organizations, the medical schools, representatives of medicine and other health professions, economic advisors, educators, and the public—"prestige groups".

4. Before any new studies are undertaken, there should be careful review and appraisal of data already at hand and studies already made, with a view to making the best use of such material, to profit by understanding the shortcomings of earlier studies, and to sharpen the focus of future inquiry.

5. Statistics are not sufficiently available for geographic and political subdivisions of countries. These must be developed.

6. Studies of health needs must be related to more general studies of the demographic, economic, and environmental characteristics of the population.

7. Studies of needs and demands should be utilized for purposes of planning training programs for all types of health workers, and not for physicians alone.

8. Manpower requirements will depend on the priorities established for the health sector and for individual health programs within the health sector.

9. Priorities must be established according to predetermined criteria. The following are suggested:
—magnitude of the problems expressed in terms of population affected, persons ill, disabilities, etc.;
—nature of the problems, cause, interdependence, interrela-

tionships to social, environmental and other factors;
—territorial extent of the problems, population density, accessibility;
—possibilities of attacking the problem and preventing its effects;
—possibilities of applying measures to benefit the greatest number of persons;
—results expected from applicable measures;
—economic consequences, characteristics of population affected (age, sex, occupation, "economic value"), expenditures required for dealing with the problem;
—social and psychological effects, demand for measures by the population, community support, disposition to cooperate in the program;
—educational value of the measures to be applied;
—political interest and importance;
—international agreements.

10. After establishing priorities, available and prospective financial resources would set an upper limit to what could actually be undertaken.

11. An interim plan should therefore be established within these limits, so designed as to ensure that the steps taken would not block measures eventually to be developed as part of the long-term plan.

12. Provision must be made for continuing evaluation, periodic review, and reappraisal.

HEALTH SERVICE RESOURCES AND ORGANIZATION

In order to provide health services to meet the demands and needs of the population in a country, consideration has to be given to the existing organized resources in manpower and facilities, to expansion of such resources and to realistic solutions to problems so that health goals may be met. The orderly development and proper utilization of resources and the organization of health services are important aspects of national health planning. Basic data to be collected for initiation as well as for current evaluation of progress towards goals and also demonstration projects for operational research are considered here.

Physicians

Data regarding each physician in a country should be obtained with name, sex, date of birth, year of graduation from medical school and name of school, speciality, position(s) held, address, etc. Such information would be analyzed as a first step in the planning process; the register of physicians which should be developed would be kept

current, with deaths and emigrants eliminated and new graduates and immigrants added to permit annual evaluation. An activity study of the distribution of physicians' time would also be desirable in order to obtain an estimate of the volume and type of services given in the private sector as well as in hospitals and health centers.

The imbalance in the distribution of physicians in the large cities and in the rest of the continent was pointed out. Wide variations were noted from 0.5 physicians per 10,000 population in the rural sector of one country to over 20.0 per 10,000 population in the metropolitan area of another.

Measurement of the volume of medical services was considered useful for planning. For instance, the number of physician contacts per person per year was reported to be around 5 in a country with 13 physicians per 10,000 population. It was estimated that 3 physician contacts per person per year could be obtained in an area with 5 physicians per 10,000 population. Thus in areas with only one physician per 10,000 population, the medical services supplied to the population would be limited.

Planning for the future supply of physicians should take into account their distribution by areas or regions of a country, the numbers needed for hospitals and community health services, for social security programs, for medical education, and the volume and type of preventive and curative services required to meet specific goals, and include estimates of graduation and death rates, and of the effect of immigration and emigration.

Allied Professional and Auxiliary Personnel

Collection of data and analysis of the supply of manpower is as important for nursing and other allied professional and auxiliary personnel as for physicians. At present the numbers of physicians and nursing personnel appear to be approximately the same in Latin America, although in some countries there are as many as two or three physicians for one nurse or auxiliary. In the United States the supply of professional and auxiliary personnel is much more favorable, for there are at least two graduate nurses and in addition more than two nursing auxiliaries per physician. Experimentation with

assignments of certain simple tasks to personnel who can be much more rapidly trained than the physician is indicated for the large segments of the countries where the supply of physicians is limited.

Hospitals

Information regarding the number and distribution of hospitals and hospital beds in areas of regions of a country is essential for planning of health services. The imbalance in the distribution of hospital beds in large cities and the rest of the country did not appear as great as with the distribution of physicians. However, the minimum requirements for rural areas with a staff of at least one physician and allied professional and auxiliary personnel should be determined.

Information on the utilization of hospitals with the study of admissions, lengths of stay, hospital morbidity and staffing is necessary for this phase of planning. In some countries data are available, while in others they are completely lacking.

The Pan American Health Organization and the World Health Organization are starting pilot programs to develop comparable data in this field. It was suggested that administrative data regarding each hospital and the staffing could be collected on forms provided by the Pan American Health Organization. Also completion of forms released by the World Health Organization through the Pan American Health Organization for an International Study of Hospital Utilization is advisable in several countries. Hospital morbidity statistics are needed for assessments of health problems and for understanding of the current utilization of hospital beds. If hospital morbidity statistics are not available, information on discharges from all hospitals for a limited period of time, such as a week, could be collected and analyzed for planning in this field.

Community Health Services

Information should be collected regarding the number and distribution of all other health services through health centers, outpatient clinics, rural posts, etc., as well as the volume of service

rendered and the staff providing these services. Studies of these community resources could parallel the proposed studies of hospital resources with respect to location, size, patient load, staffing, and services rendered. It is important to know the present completeness of coverage of the population by health services for planning the extension of preventive and curative services to the entire population. Social progress requires that each member of the society should have access to minimum health services.

Social Security and Other Insurance Programs

Groups of workers are covered by social security or other insurance programs, which provide preventive and curative services in clinics and hospitals. A thorough study of these programs, which are growing rapidly and include 10–20 per cent of the population in some countries (and approximately 70 per cent in Chile), is indicated. Data should be collected regarding the type and volume of services rendered to these insured workers, patterns of financing, remuneration, and performance of physicians to provide valuable data regarding the demands and costs of services, the volume of services per person, as well as the volume of service per physician and allied staff. Such an analysis would be useful in establishing practical goals in terms of manpower and facilities required for the entire population of a country.

Total Health Services

Combination of the services rendered in hospitals, in community health programs and by private physicians would provide measurement of the total volume of health services by regions of a country. Problems were recognized when considering combinations of services in different types of programs, especially in mass campaigns such as malaria eradication. However, the kinds of data outlined were considered essential, although refinement would be needed in the details as well as in adaptation to local situations. The quality of data collected would depend on the usefulness and relevance to specific programs and goals. Such data would serve in planning for develop-

ment and utilization of resources of a country in terms of manpower and facilities in relation to the health needs and demands. Although both preventive and curative services are required, the focus would be on preventive services. Emphasis was placed on the design of the best possible organization to give efficient services. The usefulness of study of the kinds of services received by populations in areas with similar ratios of physicians to population was pointed out. Although it is likely that the services rendered by nurses and nursing auxiliaries would differ widely in such areas, evaluation of the productivity of physicians was recommended.

Demonstration, study, and training areas were also recommended for evaluation of the services of teams composed of various types of personnel in order to determine the best possible combination of personnel and their functions in accordance with manpower and training possibilities of an area or a country. The importance of integration of preventive and curative services was stressed. Demonstration projects would serve for studying the composition of minimum teams necessary for control of major hazards, for care of infants and young children and for specific activities in eradication programs, including routine reporting of quarantinable and other notifiable diseases. The minimal requirements in terms of physicians and allied professional and auxiliary personnel for complete coverage of a population with emphasis on preventive services would be delineated. Community centered demonstration projects could serve as research and training laboratories for medical schools.

Services for Rural Areas

Methods of overcoming the imbalance in the distribution of physicians within the countries was the subject of extensive discussion. On the basis of data available for 80 per cent of the total population of Latin American countries, 51.6 per cent of the physicians were concentrated in the capitals and large cities of over 500,000 population in which only 18.7 per cent of the people lived. Thus planning was considered essential both for long-range and short-range developments to improve rural health services, and it was recommended that studies of the numerous possible causes of the distribu-

tion problem be undertaken.

Several different approaches were suggested for encouraging physicians to serve in rural areas as well as in training them for such service. Small hospitals would ideally serve as the professional base for the physician but they are relatively expensive. Since there is a tendency for physicians to return to the home community after completion of education, the importance of providing medical education to students coming from rural as well as those coming from urban areas and from the various social groups was stressed.

Governments must be prepared to finance rural services. These problems are being tackled by the governments of Venezuela and Mexico. For example, rural medicine in Venezuela is nationalized and young physicians are paid by the government for service in rural areas in centers termed *medicaturas rurales.* In Mexico, the following needs were pointed out in preparing physicians for rural service, namely, orientation; adequate subsidy; permanent connection with a medical school for guidance; professional supervision, referral, and continuing education, including sufficient length of stay in the area and return visits to the medical school for courses; a small hospital for surgery and full support by civil authorities.

A new orientation in medical education for the preparation of the physician for rural areas was recommended, with teaching directed to services for the population rather than for the individual. The social aspects of medicine should be taught in conjunction with clinical instruction. Professors in medical schools could exert much greater influence on their students by actually working, teaching, and conducting research in the rural setting. Regular contacts could be established between medical schools and physicians serving in hospitals and health centers in remote rural areas. An investigation was recommended to arrive at methods for establishing the best type of relationship.

The projects under way in Colombia, including that at the University of Valle in Cali, were cited as a method of approach to be watched. Each of the seven medical schools there will have responsibility for an area with 100,000 people. Medical students would receive training in these areas and the numbers of auxiliary personnel

required for health services would be determined. The Ministries of Health and Education and the Association of Schools of Medicine in Colombia have scheduled a seminar of the deans and directors of medical schools in Colombia for discussion of the problem of physician needs and their training to meet the manpower requirements in accordance with the health goals. Similar examples could be cited from other countries.

The preparation of physicians for service in rural areas requires long-range planning and improvements in their distribution will be gradual. But, in addition, there is critical need and urgency for immediate plans for delivery of health services to the large sector of the population living outside the capitals and large cities. A practical solution at present appears to be the provision of health services by a team of health workers, led by the physician and including graduate nurses and auxiliary personnel. The latter could be trained rapidly for performing some of the simple tasks. Better utilization of the existing medical manpower was recommended with the employment of many auxiliary workers in order that health services with the focus on preventive programs would become more widely available to the rural population.

The results of relevant studies undertaken in developing countries in the past should be reviewed for their contributions to the solution of health manpower problems. However, demonstration projects will probably be needed to carry out operational research to delineate the most suitable combinations of personnel to provide services in the rural areas. Medical schools could undertake such demonstration projects with the departments of preventive medicine assigned specific responsibilities.

It was recommended that the Pan American Health Organization assist in the collection of information regarding studies in this field and in holding seminars for discussion of procedures and results, thereby establishing a communications system for those working in this important field.

It is recognized that the differential availability of health services in rural areas compared with cities is basically a reflection of fundamental differences in the level of economic and social development.

Therefore progress in reducing these latter differences will automatically improve the availability of health services for rural populations.

Health Services Organization

The potential effectiveness of health personnel is dependent, not only upon their number and training, but also upon the framework within which they function. Thus, data regarding the organization of health services would be useful. This is because the organization of services, the functional relationships between personnel, facilities, and programs have a crucial influence upon the effectiveness and cost of the services rendered. The following are illustrations of areas worthy of study.

1. Functional relations between different types of personnel:
   –medical specialists and other medical personnel,
   –physicians and nurses,
   –physicians and nurses vis-a-vis technicians and auxiliary personnel (X-ray laboratory, etc.)
   –physicians and sanitarians, engineers, entomologists, veterinarians, etc.

2. Functional relations between institutions and programs, public and private:
   –hospital inpatient services with outpatient services,
   –large hospitals in urban areas with smaller hospitals in rural periphery,
   –disease screening programs with diagnostic treatment and follow-up activities,
   –hospitals with community health centers,
   –industrial health services with personal medical care,
   –school health services with family care,
   –domiciliary care, office care, and hospital services.

3. Scope and aims of activities of personnel, institutions, and programs:
   –degree of incorporation of preventive and rehabilitative measures, focus of responsibility for continuity of care or scope of activity.

4. Methods and scale of remuneration and payment required for services affecting, for example,
   - –the availability of services to patients,
   - –the availability to professional personnel of professional, technical, and auxiliary assistance,
   - –elements of service receiving emphasis,
   - –assumption or assignment of specific tasks and procedures by or to diverse types of personnel.

The data required, and their sources, are summarized in the following table.

HEALTH SERVICES, RESOURCES AND ORGANIZATION

DATA REQUIRED	SOURCES
A. Physicians	
–academic, professional and background characteristics	–census of physicians
–disposition of time and function	
B. Allied Professional and Auxiliary Personnel	
–academic, professional and background characteristics	–census
–occupational activity survey	
C. Hospitals and Inpatient Services	
–administrative data	–census of hospitals
–patterns of discharging patients from hospital	–survey of discharged patients
–hospital staffing patterns	
D. Community Health Services	
–description of available health facilities	–survey of health facilities –household survey
E. Insurance Related to Health Services	
–extent of coverage	–household survey
–volume of services in insured, uninsured groups	–records of insurance agencies and government programs

In the context of studies of health services organization, these data would be developed on a situational, district, regional, or institutional basis, to be used for comparative purposes. Within most countries in Latin America there are examples of different frameworks of organization of services which would lend themselves to this type of comparative evaluation. Special demonstration and experimental situations should be developed in order to accumulate experience which will facilitate systematic planning for the training of manpower better prepared to achieve clearly delineated functional objectives.

CHANGING PATTERNS OF MEDICAL EDUCATION IN LATIN AMERICA

The number of medical schools has doubled in the last 20 years—there were 54 in 1944, there are 108 in 1963.

But of more significance than the number itself are some changes that are occurring in the organization of various medical schools in Latin America.

Teaching of Preventive Medicine

Stimulated by two seminars on the subject organized by the Pan American Sanitary Bureau in 1955–1956, a number of medical schools in Latin America have started programs to incorporate the concept of preventive medicine and public health in their curricula. This has caused problems, but significant progress has been made in some schools. An appraisal of their programs of teaching of preventive medicine is planned by the Pan American Health Organization in the near future to examine what progress has been made and the difficulties encountered. A main problem seems to be the lack of understanding of the majority of faculty members in the medical

schools of the significance of the changes proposed. The result has been that teaching of preventive medicine has frequently not been integrated into the over-all teaching program of the entire medical school.

The conference considers that the philosophy of prevention should permeate all clinical teaching, whether or not there is a separate department of preventive medicine. And it recognizes that one of the main impediments to this is the fact that the majority of clinical professors have not been exposed to the modern concepts of preventive medicine, which range far beyond the older approach of simply exposing the students to the elements of hygiene and sanitation and instruction as to the use of immunizations.

In order to bring modern ideas of preventive medicine into the teaching program, clinical professors must be exposed to them, preferably in the clinical context which they know so well. The introduction of totally new ideas of demonstrable merit in a familiar field is the surest way to change thinking on any subject.

To do so, however, requires that the faculty of the departments of preventive medicine must be able to talk to the clinical professors as equals. There must be, therefore, within the department faculty members who have a thorough comprehension of clinical medicine. Such persons can establish their right to speak with authority on the clinician's own grounds and add to clinical teaching the concepts of preventive medicine with which most clinicians are unfamiliar.

Teaching of Basic Sciences

The reorganization of the teaching of basic sciences is an important need in the medical education programs in Latin America. Recognizing the importance of a sound scientific basis in the preparation of physicians, some schools are taking steps to improve the teaching of the preclinical sciences. These have in most instances proved highly beneficial, although in some this enthusiasm has resulted in an overemphasis on, rather than a revision of, the teaching of these subjects, and as a consequence, in loss of perspective of what is the purpose of preclinical instruction as a preparation for medicine, and in diversion of precious time, money, and resources for the

medical school. This is most apparent on examination of the research activities in some of these basic science departments. Scientific research is certainly indispensable in any educational institution. The conference, however, suggests that the research activities of the preclinical science departments in Latin American schools should be directed primarily to providing solutions to the many passing problems in the biomedical, biosocial, or bioengineering fields of immediate concern to the health and economy. Nevertheless, the concepts of scientific method, especially those fundamental to the basic sciences themselves, should not be lost sight of, through preoccupation with immediate concerns.

The conference agrees with the aim of the Pan American Health Organization and of the Pan American Federation of Associations of Medical Schools that faculty members should receive their main training in the environment in which they are going to work and that care should be exercised in their placement, should advanced training overseas be deemed essential, as indeed it is recognized that it often will be.

Student Enrollment and Selection

Student enrollment and selection of applicants is a matter of great concern to medical educators in Latin America. The problem is to maintain or improve upon the established standards in the face of the increasing numbers of applications. The problem of selection of applicants is the more difficult because of the lack of established procedures for selection based on clearly stated objectives of the medical schools. The variation of procedures between schools and, indeed, between countries is a matter for concern.

It is clear that the inadequate preparation of students, resulting in many failures and other forms of attrition, raises serious questions as to the adequacy of the pool from which future applicants will be drawn in competition with the demands of other professions. In many countries it is considered that a special study of this particular problem is needed.

Other problems that deserve special study are those related to the coordination of secondary or preparatory, university, and medical

education to improve premedical preparation. Studies directed to these ends should be the joint responsibility of academic, professional, and official, as well as international agencies. It is suggested that the Pan American Federation of Associations of Medical Schools should consider directing special attention to this subject.

There is need for a better understanding between those responsible for the training of medical personnel and those who will be making use of their services, particularly the health departments. Medical schools should be better informed of the needs of health departments. Similarly, health officials need to be aware more quickly of the rapid advances of medicine and what they can offer in the preventive field. There is a special need for improved training of all physicians in preventive medicine.

In fact, the education of the health care professions and the development of the health care services should form an inseparable whole[8] which, together with research also an essential part of education, depends upon systematic planning to ensure the provision of manpower for health work, adequate both in quality and quantity.

In general, medical educators in Latin America are in agreement that physicians should be prepared at a high standard. However, the question has been raised of the convenience of preparing a physician of lower standard who, under supervision, could perform some curative as well as preventive medicine. The conference was not in favor of the preparation of this "second class" physician. It recommended that emphasis should be placed on the training of other kinds of health personnel who could act under the supervision of a fully trained physician. It was suggested that the medical school should play a greater role in developing auxiliary personnel who should be recruited and trained in the area served by the school, and preferably, as close as possible to the area where they are going to work.

It was suggested that a study should be made of the facilities available for the training of other types of personnel and to what extent these facilities can be enlarged.

In view of the increasing number of medical schools that are being established in Latin America it was suggested that greater atten-

tion should be given to the preparation and continuing education of faculty members, as well as to improving facilities for their training in the existing medical schools of Latin America. In relation to clinical and post-graduate training it was considered important to study ways of improving the relationship between medical schools and hospitals, including those not at present used for teaching, and with other health institutions, in order to ensure the most adequate utilization of these facilities for training purposes.

Guide Lines to the Collection of Data on Medical Schools

In the study of medical schools and of medical education, the following "check list" may be found useful as a guide to the collection of data. Most of the items are also relevant to nursing and other schools concerned with the training of health personnel.

1. Student Intake and Graduate Output
   a. Applicant pool
      —available secondary school graduates
      —academic qualifications
      —geographic origin and socio-economic class
   b. Registrants
      —(both academic and nonacademic causes)
      —attrition or loss
   c. Graduates
      —post-graduate placement (where do they go?)
      —post-graduate activity (what do they do?)

2. The Educational Process
   a. Objectives
      —explicit (i.e., formally approved by school)
      —implicit (i.e., those assumed by the faculty in the absence of explicit objectives)
   b. Curriculum
      —does it reflect objectives?
   c. Evaluation
      —examinations
      —other methods

3. The Necessary Facilities and Arrangements
   a. faculty (number of full-time, and part-time by rank, subject, training, etc.)
   b. equipment and building
   c. facilities (clinical hospital, community, etc.)
   d. budget

4. Relations
   a. licensing or registration laws
   b. accreditation authority
   c. with rest of University
   d. with other schools or institutes

The value of personal visits to the school to assist the faculty in the collection of this information was emphasized, rather than trying to obtain it through questionnaires. In estimating the time that the faculty spends in teaching or research activities, guidance could be obtained from similar studies that have been done by the Association of American Medical Colleges.

Curriculum

One of the most important deficiencies in current medical education is the neglect of the environmental and behavioral (including social) determinants of disease, as contrasted with the emphasis on the biological. Generally, the medical student is taught to concern himself with disease episodes in the individual patient, isolated from his environment, without considering the importance of the environment in the genesis of his disease or in its continuation. Nor is he taught the importance of such understanding for the benefit of the rest of the population living in the same environment. In other words, he is not taught the social implications of his diagnosis and treatment, nor the social obligations of his profession. He is thus gravely deficient in his understanding of the principles of modern epidemiology and preventive medicine, with their strong roots in the social sciences.

In addition, social sciences can play a role through the teaching of

social aspects of human relations and human groups in specific areas such as public administration and community development.

Furthermore, in most medical schools there is no teaching of the role of biostatistics in helping to build a comprehensive picture of the health problems, nor of its use in scientific medicine, in the design of experiments, etc.

It is, therefore, recommended that these subjects should be introduced into the curricula in all medical schools and they should be regarded as basic medical sciences. It is pointed out that their inclusion into the curriculum in this way will go a long way to developing the integration of the preventive and therapeutic concepts of medicine which is so essential for the program suggested in this report.

Other deficiencies arise from the fact that the medical curriculum takes little account of the nature of the duties which a physician will have to perform in society. Furthermore, the health and social problems of the country are not given sufficient emphasis in it. Present educational systems are, by and large, little changed, except for the addition of new scientific material, from those which prevailed a generation or more ago. Today there is so much new scientific knowledge of practical value that it is questionable whether, for instance, the traditional emphasis on a detailed knowledge of minute anatomy—much of which is forgotten by the student as soon as the examination is passed—should be continued. In the opinion of the conference a thorough review of medical curricula is needed to determine how the curriculum can be modified the better to meet the needs of the student and of the society which he serves. The conference noted the activities of both international and national organizations which are devoting considerable attention to these problems.

By way of example of some of the problems not currently well covered by medical curricula and yet of primary public health importance, the conference cited the population problem, including not only the conventional belief that this only implies an increase in the numbers of people, but also the secondary implications which include the high incidence of abortions and of greatly increased maternal and child health problems which profoundly affect the de-

mand for health services; the high rate of alcoholism, accidents, physical trauma and homicide were also cited as problems with both sociological and surgical implications, as far as medical care is concerned. How many physicians ask: "Why did this accident occur and could it have been prevented?" for instance. The answers may not be too far to seek if the question is asked.

In the clinical field the conference laid emphasis on the opportunities for the student to acquire through clerkships, demonstrations and like methods a thorough understanding of the management of the common diseases of the country. Professors, understandably, tended to lay emphasis on those diseases of particular interest to them to which they were devoting their research interest. As a result students were being graduated without any knowledge of the "ordinary" diseases with which they would have to deal for the best part of their active lives.

In developing research, teaching and medical care programs, the conference strongly advocated the idea that medical schools should consider the development of a "community teaching and research center", providing medical care and preventive services for a defined population in which medical students could be taught the care of the sick in the social context of the kind with which they will eventually have to deal. At the same time this would provide a population in which the faculty could undertake research of interest to a wide variety of specialists—internists, pediatricians, psychiatrists, epidemiologists, obstetricians and so forth. This could, perhaps, be the best way of introducing the future physician to his social responsibilities.

Educational Methods

The conference urged that medical educators should familiarize themselves with advances in the theory and practice of education and adopt more effective techniques. A beginning is now being made in adapting these developments to medical education. The emphasis on Teaching and Learning in Medical Schools, which has been well exemplified by seminars on that subject in several Latin American schools, was warmly endorsed.

In general it may be said that the student learns in proportion to the interest of his teacher in the subject and to his competence as a teacher. Thus the selection of teaching faculty is profoundly important to the success of a medical school, and it cannot be done solely on the basis of research achievement or specialized skills. In many medical schools the criteria for the selection of faculty require serious reconsideration. Also the effectiveness of full-time versus part-time faculty should be evaluated.

STUDIES FOR THE FORMULATION OF A HEALTH MANPOWER PLAN

In the preceding pages an outline has been given of many aspects of the health problems of a nation, how these may be measured, and the relevance of such measurements to health planning, to the study of health manpower requirements, and of what changes may prove necessary in medical education in order better to fit the profession for the tasks ahead.

To show more clearly the diverse uses to which the results of the studies proposed might be put, they may be brought together in broad groups and arranged in a sequence according to the following pattern:

—present health situation and needs for services
—health services currently supplied
—unmet needs
—planning to meet these needs
—inventory of present health resources and projected requirements
—an appraisal of existing educational resources for health manpower

—determination of modifications or additions to educational resources to meet projected requirements
—assessment of the economic resources for current and projected plans
—determination of priorities within resources available
—organization and implementation of the final plan.

It is clear that the various steps need not necessarily be taken in the above order, nor indeed will the usefulness of the data gathered be vitiated if the whole sequence is not complete. For instance, an evaluation of the existing situation and services alone may reveal ways in which these services can be reorganized to deal with the situation more economically and effectively within existing resources. On the other hand, if, as is assumed in this report, countries are interested in a radical overhaul of health services as an essential part of a long-term program of socio-economic development, all steps will be needed.

It may be useful therefore to define their content in rather more detail, even though they are discussed fully in the preceding text.

1. A profile should be obtained of the health of the people, measured in terms of mortality, morbidity, and through various special studies or health indices not necessarily directly related to overt disease (e.g. growth and development). The sources of such information have been given previously. This material would be analyzed in relation to the basic demographic data from census sources, e.g., information on number, age, sex, education, economic status, and place of residence.

2. A picture should be obtained of the health services currently supplied, i.e. the effective demand, measured in terms of physician visits, hospital admissions and hospital ways, clinic visits, community services, and other health services received. This information would come from the studies of the various services mentioned and also from household surveys and would be related to basic demographic data. Wherever possible, the expenditure in the form of cost per unit service should be obtained. It should be noted that this, the existing service, sets the minimum level for future planning since a retrogressive

step would be intolerable in a progressive society.

3. A picture should be obtained of present unmet health needs and demands. It should be noted that perception of a need may be made by the population or by the health experts themselves and that these two estimates will seldom precisely coincide. The data required would come from hospitals, clinics, and other health services as well as from special surveys and studies. From another angle, the geographic distribution of resources and facilities alongside demographic data and knowledge of the nature of the areas in question will serve to indicate unmet needs even in the absence of accurate field data, although of course the establishment of priorities for services in these areas will require more precise information. Comparisons of the health levels in groups covered by social security or insurance programs with the health of populations without such coverage would also reveal unmet needs. This step, in effect, defines the maximum level for future planning.

4. A ten-year goal for health achievement as part of an over-all plan of socio-economic development should be established according to the broad objectives of the Punta del Este Conference. These goals would be related to the present health status, demands and needs as determined above, to the economic conditions and prospects, and to the health trends identified from historical data, and include consideration of future manpower needs for the over-all program of development.

5. An estimate should be made of the health manpower, by number, category, and training required to meet these goals. This estimate may be based in part on experience and in part on models of organizations developed out of experience and from special studies.

6. An inventory should be obtained of present health resources, with projections through the period covered by the plan. This would include:

a) a profile of present availability and supply of physicians and allied health manpower by categories, with descriptions of the numbers, qualifications, and locations of

physicians and other health manpower in relation to population and to health facilities. Estimates of functional productivity should be made

b) projections of future supply based on present training resources

c) a parallel picture of the present supply and planned program development of facilities for health services based on studies of hospitals, health centers, etc., together with a projection based on planned construction.

7. An appraisal of the resources available for education in medicine and other health fields, including their organization, distribution, curriculum, length of programs, staffing, enrollment, the manpower pool from which students may be drawn and their educational preparation for further study, and, finally, the financial resources.

8. A study of the manpower and educational requirements in relation to the available resources and educational practices would give guidance for future developments in educational programs for physicians and other health personnel, including the possibility of the establishment of new schools and of better utilization of present teaching resources.

9. An assessment could be obtained of the economic resources now available for health services and medical education, an estimate provided of the costs of alternative programs, and the appropriate financial recommendations made.

PROPOSALS REGARDING THE IMPLEMENTATION OF RECOMMENDED STUDIES

The conference strongly recommended that pilot studies of health manpower needs be started in one or two Latin American countries. These should be prefaced by the preparation of a bibliography and a careful review of previous studies and of the already existing information in the country concerned. One of the earliest steps should be the establishment of the over-all planning body as recommended in this report.

The pilot study should be conducted by a competent staff supported by consultants experienced in research design in this field. Methods should be tested carefully and the approach evaluated before extending the program widely. It is noted that details of certain techniques, e.g., questionnaires and data forms, might be suitable in one setting but not in others.

It would be desirable to ensure the comparability of these studies with such national health planning as might be undertaken in ac-

cordance with the agreements made by the Ministers at Punta del Este. The technical assistance for national health planning operations already offered or in prospect of commitment on the part of the Pan American Health Organization would promote the quality and acceptability of the data obtained.

A responsible concern to meet health manpower shortages should be fostered by engaging representatives of the appropriate governmental agencies, the universities and the health professions in discussions of the proposed survey. Besides facilitating its execution, this would arouse interest also in the responsibility of medical faculties to extend their scientific interest into the community—to assess its health needs, to see the relation of health programs to the broad social tasks of community development—and to share these experiences with students as part of their professional education.

Faculty interest in community health might be aroused further by study of the desirable educational objectives of the medical school, by holding seminars on the results of the study as they emerge and by the encouragement of clinical departments to evaluate the long-range results of their activities in medical care.

In addition to a wide distribution of this report, reviews of the study and of related educational issues should be inserted in medical and other journals. A place for these topics should be sought also on the agenda of regular meetings of educators, government officials and members of societies for the health professions.

Representative seminars should be held at the appropriate time in individual countries or in groups of countries to study the implications of this report for their own territories. There is also a need for broadly representative regional conferences to be held periodically to consider the ways and means whereby health personnel may be trained to meet the health needs of their populations.

REFERENCES

[1] This Introduction is taken from the letter of invitation sent to participants by Alexander Robertson M.D., Executive Director of the Milbank Memorial Fund.

[2] The Charter of Punta del Este, *from* ALLIANCE FOR PROGRESS, Pan American Union, General Secretariat, Organization of American States, Washington, D.C., 1961, *Organization of American States Official Records,* OEA/Ser.H/XII.1.

[3] Abraham Horwitz M.D., Director of the Pan American Sanitary Bureau, presented a major contribution by evaluating the health situation in Latin America as it is related to the objectives of the conference. This section is a summary of some of the most important ideas contained in his address, together with those which arose during the discussion.

[4] *Ecology* or *oecology* may be defined as the science which treats of living things in relation to the environment in which they live.

[5] National Manpower Council, A POLICY FOR SCIENTIFIC AND PROFESSIONAL MANPOWER, Columbia University Press, New York, 1953, "Physicians," Chap. XI, pp. 219–241.

[6] Pan American Health Organization, REPORT OF TASK FORCE ON HEALTH AT THE MINISTERIAL LEVEL, TFH/14, Rev. 1, Washington, D.C., May 14, 1963.

[7] World Health Organization, QUESTIONNAIRE ON THE COST AND SOURCES OF FINANCE OF HEALTH SERVICES IN 1961, Document MHO/R/3.63.

[8] *Op. cit.,* REPORT OF TASK FORCE ON HEALTH AT THE MINISTERIAL LEVEL, p. 3.

Copies of this Report are available upon request from the Milbank Memorial Fund, 40 Wall Street, New York 10005. The Report will be published shortly in Spanish, Portuguese and French.