APPROACHES TO
NATIONAL HEALTH PLANNING

HERMAN E. HILLEBOE, M. D.

Clinical Professor of Comprehensive Medicine,
University of South Florida, Tampa, USA

ARNE BARKHUUS, M. D., Dr P. H.

Professor of Public Health Practice,
School of Public Health and Administrative Medicine,
Columbia University, New York, USA

WILLIAM C. THOMAS, Jr, Ph. D.

Associate Professor of Public Health Practice,
School of Public Health and Administrative Medicine,
Columbia University, New York, USA

with a chapter by I. D. BOGATYREV and M. P. ROTMAN

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CONTENTS

Preface .......................... 7

CHAPTER 1. Introduction .................. 9

CHAPTER 2. Less developed countries: the pragmatic approach ............. 13

CHAPTER 3. The Indian example: planning as a political way of life ............ 23

CHAPTER 4. Public health planning in the USSR—I. D. Bogatyrev & M. P. Rojtman .... 29

CHAPTER 5. Regional planning: the Swedish approach .................. 45

CHAPTER 6. The PAHO-CENDES Method .................. 52

CHAPTER 7. Health planning in the USA .................. 69

CHAPTER 8. Health manpower planning in Peru, Taiwan, and Turkey ............. 87

CHAPTER 9. The future of national health planning .................. 102
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PREFACE

During the past 20 years WHO has paid considerable attention to health planning and governments have become increasingly aware of its value for improving all types of health service. Health planning is, however, an extremely difficult administrative activity and a wide variety of approaches have been adopted. They range from the simple pragmatic approach followed in many developing countries to the complex, fully integrated system that has been developed in the USSR.

At the invitation of WHO, Professor H. E. Hilleboe, Professor A. Barkhaus, and Dr W. C. Thomas, have prepared this survey of methods applied in a variety of countries under widely differing political, economic, and social conditions. The authors have not attempted to make a thorough comparative analysis of all the methodologies now in use, but simply review a representative selection of current approaches to national health planning, pointing out some of their advantages and drawbacks. It is hoped that by showing national authorities what has been done in other countries the survey will help them to avoid mistakes that have been made elsewhere. In countries where health planning is not yet practised systematically, the authorities may wish to examine the approaches presented here and select the elements that are most appropriate to their national needs.

The system of national health planning developed in the USSR is described in detail in a separate volume in the Public Health Papers series. However, a concise account of the general principles of Soviet health planning has been specially prepared for the present publication by Professor I. D. Bogatyrev and Dr M. P. Roftman.

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A WHO Expert Committee on National Health Planning in Developing Countries \(^1\) pointed out in 1967 that national health planning is an integral part of general socio-economic planning; that the process varies from country to country and even in the same country at different times; that a government’s interest in health planning should be clearly indicated; and that enabling legislation is desirable for both planning and subsequent implementation. It also emphasized that a planning organization for overall socio-economic planning, authorized to coordinate sectoral planning, should be established at the policy-making and decision-making level, and that administrative capacity is essential because so many plans fail for administrative reasons.

A health plan is a predetermined course of action that is firmly based on the nature and extent of health problems, from which are derived priority goals. The heart of the planning process is the analysis of alternative means of achieving the preselected goals in the face of a variety of constraints. The process has been summed up in this way:

If planning is to be complete and effective, (1) needed data will have to be available—relevant, accurate, and correctly selected and related, (2) desired ends will have to be identified as the result of problem analysis and in the light of explicated values, (3) feasible and satisfactory—if not optimal—choices will have to be made among the alternative actions that might be taken, (4) projected actions will have to be understood and accepted by those who must carry them out if they are to govern organizational behavior.\(^2\)

Many questions face health planners as they involve themselves with the intricacies and complexities of the planning process. What is a health problem and how does one define it? Or, even more fundamental, what is health? How does one establish a priority goal? How

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can one be sure that it is realistic and feasible? What administrative action can be projected to reach health goals, and how? These questions are only a minute sample of those that must be explored and examined if we are to make satisfactory progress in bringing about improvement in health services throughout the world. To examine such questions and to make it possible for the reader to examine some of them himself, the following chapters present a series of examples of different approaches to health planning that have been developed around the world.

It is the function of health planners to determine how health services can be improved and to make proposals for the consideration of political and administrative authorities. The health plan has to compete with a host of other interests: those of non-health sectors such as national defence, agriculture, and education; various organized groups such as medical health and hospital associations; and the interests of the general public. The interaction of these interests in the decision-making process determines whether the plan should be implemented in its entirety, in part, or not at all.

This is a vast oversimplification of the political process, but it is sufficient to show that health planners make a contribution to that process. The character and quality of their "input", the health plan, can be expected to have a bearing upon whether it will be adopted. In some political climates it will have little impact; as the climate changes, it may have a greater impact. Here are two important variables: the quality and character of the input and the receptivity of the climate in which the decision-making process takes place. Obviously, the realistic health planner will concern himself with both variables.

Much can be done to improve the quality of the health planning input and the receptivity of the climate to planning. Health planning should be used as an instrument for the improvement of services, according to the values of the societies where it is applied. It is to be hoped that the planning process will be recognized and given due weight in the political decision-making process by both the public and its leaders. This is not to deny that health planning is already being given a high priority in many countries.

Some of the health planning approaches and methodologies discussed in the following pages, such as the PAHO-CENDES methodology, are quite rigorous and complex in design. On the other hand, some are frankly "pragmatic", i.e., purely practical. As will become clear later, this distinction is one of degree. All planning involves assumptions or judgements that are made more or less pragmatically; the key question is how often the assumptions are changed. Moreover, the distinction between the pragmatic and non-pragmatic approaches may not be obvious, and may be quite complex. One country, proceeding in an
openly pragmatic fashion, may go on making value and fact judgements one after another. Another may base decisions on extensive, but inappropriate, data and analysis, or may systematically gather considerable data and then, in the last analysis, base decisions upon relatively unsupported judgements. The apparently scientific character of the most systematic methodologies for health planning has considerable appeal, yet their techniques for analysing social and political factors, which experience indicates are of critical importance, are substantially the same as those of pragmatic planners.

It cannot be stated categorically that systematic planning is better than pragmatic planning. To obtain political support for a plan’s implementation may require some pragmatism. A moderately good plan implemented is far superior to a perfect plan gathering dust on a shelf. Again, it is not practicable to adopt in its entirety the most scientific approach for determining health priorities, biological demand, as the chapter on manpower planning makes clear. The problem appears to be to determine what pragmatic planning can do best, and what non-pragmatic planning can do best, and create the optimum mix.

To move to another problem area, it was pointed out at the beginning of this chapter that health planning involves the setting of priority goals in health. How does one do this? The difficulties are illustrated in the following quotation:

How does one define emotional stress and measure its impact, for example, on an executive with coronary heart disease? How does one gauge the profound happiness of a mother with a healthy new-born or the lingering tragedy following the loss of a loved one? How does one measure the comparative output of a steel worker, an office worker, or a housewife? What productivity standards apply to the mentally retarded, the physically handicapped and other disadvantaged persons?  

The problem of priority goals is central to the work of the health planner. There are no easy answers. The problem is approached—not solved—by a number of the planning studies covered in this book, e.g., the PAHO-CENDES methodology (chapter 6) and the USSR approach to health planning (chapter 4). The “Q” Index of the Indian Health Service of the United States Public Health Service (chapter 7) is an interesting effort to measure the impact of disease and to allocate resources accordingly. The chapter on the USA also contains a description of the programming-planning-budgeting system (PPBS), which involves systematic cost benefit analysis along the lines of the PAHO-

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CENDES methodology. In chapter 8, which deals with health manpower planning, there is a discussion of demand, a concept that is essential to understanding the problem of determining health goals. This list of countries where the problem is touched upon is by no means complete, but reference should be made to India, where expert committees incorporated into the political structure participate in making relevant decisions.

Some have argued that planning is linked to execution or implementation. If planning is to be effective it *should* have an extremely close relationship with execution, but too often it does not.\(^2\) The need for such a relationship was clearly realized by the late Prime Minister of India, Jawaharlal Nehru, who was a major force in the development of planning machinery in that country (see chapter 3). The integration between lines of planning and political power in the Soviet Union, described in chapter 4, is also worth noting.

Integration of various kinds of planning is also important. The chapter on India and the Soviet Union deal with the relationship of health and socio-economic planning, while the chapter on manpower planning is, in a real sense, a study of the relationship of manpower planning to overall health planning.

In general, the developing countries are confronted with great shortages of health resources. Successful planning and implementation of preventive services is still a difficult problem for these countries, and relatively too much is spent on curative care. Usually nurses are too few and doctors are concentrated in the big cities, while the rural areas suffer from acute shortages. Adequate sewage disposal systems and potable water supplies are the exception rather than the rule.

Many developing nations are turning to health planning because of the desperate need to make their meagre resources go as far as possible. Great improvements in health and human well-being can come from better planning and more efficient use of modern knowledge and techniques in health administration. The effectiveness of organized public and private activities in health will be determined largely by the planning and problem-solving talents of a new breed of administrators. This publication may help to lay the foundation upon which the health administrators of the future will build their knowledge and skills.

LESS DEVELOPED COUNTRIES:
THE PRAGMATC APPROACH

INTRODUCTION

When we speak of the "pragmatic" approach to health planning we mean the approach based on the experience and intuitive skill of the planner or planners. This does not preclude the possibility that the planner may possess a knowledge of general planning theory and even a familiarity with different methodologies. What is implied by the term pragmatic, or practical, is that there is no clearly defined methodology that lays down concepts or techniques of analysis and measurement in advance. Without such concepts and techniques, there is limited guidance on the kinds of data that should be gathered and brought into planning. In this approach, therefore, data have limited impact upon decision-making. Without clear lines to follow, the pragmatic planner is like the person who "cooks without a cook book". Some of these cooks, of course, may be very good.

WHO has had a significant influence upon health planning both in Africa and Latin America, and historical accident largely accounts for the difference in approaches on the two continents. In Latin America, in accordance with the Punta del Este Charter, WHO collaborated in preparing one of the most elaborate and carefully designed of all health planning methodologies, the PAHO-CENDES methodology (see chapter 6).

Although the Economic Commission for Africa has encouraged the preparation of development plans for African countries, there has been no declaration comparable to that of Punta del Este. The African governments have been greatly interested in the development of the social sector. There has been a genuine desire to have something to show for independence and therefore a temptation for African political leaders, as distinct from their economic advisers, to allocate resources to social services and facilities on a scale that commits their countries to living beyond their means. Accordingly, the health planner is

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likely to receive more encouragement from political leaders than from his colleagues in charge of planning economic development.

Although WHO envisaged that planning for each African country should be based upon its total socio-economic situation, various limitations made the planning more or less pragmatic. Pragmatic planning, resting heavily upon judgements not reinforced by data and systematic analysis, is relatively vulnerable to political pressures that are not oriented to the long-term welfare of the whole country.

CHARACTERISTICS OF LESS DEVELOPED COUNTRIES RELEVANT TO PLANNING OF SOCIO-ECONOMIC DEVELOPMENT

The pragmatic approach has chiefly been applied in the less developed countries, many of which have only recently obtained their independence. It has become customary to avoid the term "underdeveloped" and to substitute the more optimistic "developing". Myrdal has forthrightly attacked this "diplomacy by terminology":

The now widely used term "developing countries" is one of these diplomatic euphemisms… The really important aspect of their situation and the meaning that seeks expression is not that they are developing, but that they are underdeveloped, that they need to develop, and that they ought to develop, and in some cases are planning to develop.

Also, by using a term that presupposes that these very poor countries are now developing, and implies that they will continue to develop, an important question is begged.¹

It is unfortunately true that the pace of economic development of the less developed countries, far from increasing, has been slowing over the 1950s and 1960s. According to the United Nations Economic and Social Council, their annual rate of per capita growth in domestic product dropped from 2.7% in 1950-1955 to 2.0% in 1960-1965.

If this trend continues, the economic gap between the less developed and more developed nations will remain wide and may become wider. Bryant, in a recent book, states:

The rates of economic growth for many of the less developed countries provide a somber picture for their futures. They indicate that now and in the foreseeable future resources will be desperately limited. Indeed, these limitations are relentless determinants of the design of health services…²

Moreover, although the data indicate that most countries in the developing world have been increasing their expenditure on health, Bryant points out that the increases have been more than counter-balanced by inflation and population growth. Even if expenditure on health rises with a country’s gross national product (the index most commonly used to measure economic development), it is unrealistic for planners to expect more than modest increases in per capita expenditure on health.

Some observers of the less developed countries have noted a recent trend away from the neo-classical planning approach, which related investment in physical capital (e.g., plants and machinery) to economic development. As Myrdal has noted, the planning model cast in terms of physical investment alone has been widened by some to encompass “investment in human resources”. In this new approach the qualities of people, particularly their education and according to some analysts their health as well, are considered very important for the overall development of a country. Although Myrdal applauds this expansion in concept, it is still not wide enough for him:

If we do add investment in health to investment in education and define human resources in terms of the two dimensions of population quality—as occasional references invite—we must include all costs involved in improving conditions of health, not just expenditures on health facilities.¹

He would include nutrition, clothing, housing—all consumption that can contribute to health. The special importance of nutrition is also emphasized by the Commission on International Development:

In fact, nutritional deficiencies, especially in protein, are likely to persist for a long time to come. However, in order to raise general standards of health, the productivity of labor and the general quality of life, improved nutrition is indispensable. It is especially important in child health.²

This new concept, investment in man, is for Myrdal merely a “vague propaganda term for a more rational and circumspect development planning that takes into account not only physical investment but all other induced changes”.³ This brings us back to the Latin-American approach of totally integrated social and economic planning.

Such factors as nutrition, housing, and educational facilities are of much greater significance in developing than in developed countries. For example, much more is to be gained by improving the nutrition of an average citizen in Africa than in the USA. Consumption is therefore

¹ Myrdal, G., op. cit., p. 1549.
³ Myrdal, G., op. cit., p. 1551.
a more significant planning factor in developing than in developed countries. But consumption of what items? Not all are equally beneficial, or even beneficial at all. In this regard, at least, the planning process is more complex in developing countries, and the limitations of pragmatic planning are especially noticeable.

In the matter of facilities, other serious problems relevant to pragmatism are common to the less developed countries. Most of these countries, particularly in Africa, have only recently emerged from colonial domination by European powers. In the development plans sponsored by the departing colonial administrations, considerable emphasis was given to social welfare. However, with few exceptions, the type of medical service advocated and the standards sought were based on European models, with the result that only very small sections of the population could be reached by the personnel and facilities available.

As Bryant states:

It is important to distinguish between the problems of providing health care when there is a reasonable balance between numbers of people and resources available and the problems of reaching all the people of a nation, a region, or even a city.¹

One of the first facts striking the health planner in almost any less developed country is that facilities are preponderantly curative and are concentrated in urban areas. The one outstanding exception is the development in the French-speaking parts of Africa of mobile preventive services (Organisation de Coordination et de Coopération pour la Lutte contre les Grandes Ennéémies). But however admirably conceived, this type of service is not generally applicable to all countries.

The planner might expect, in a less developed country, that he would be able to plan from the beginning. However, he generally finds that most resources are committed to existing facilities. For example, a study in Sierra Leone revealed that increases in the budget of the Ministry of Health were largely swallowed up by statutory salary increments, leaving little room for programme expansion. Although the main priority in Sierra Leone was the development of basic rural health services, it was found that his could be done only at an extremely slow rate because of lack of funds, unless some radical reorganization could be undertaken.

This is perhaps the most serious problem in health planning in the less developed countries. Even when existing services are wasteful, it is generally not possible to do away with them or to modify them

¹ Bryant, J., op. cit., p. ix.
to any large extent. Perhaps one of the most distinguishing characteristics of pragmatic planning is its ability to accommodate to existing political, social, and economic conditions. Having limited preconceptions, such planning is flexible.

Again, the health services are not likely to benefit from new sources of finance. A report to the Government of Tanganyika in 1964 stated:

We do not think that the health services are likely to receive a substantially higher share of the budget in the longer term than in the short term.\(^1\)

Foreign aid may be available for capital investment, but the recurrent expenditures must normally be found from domestic sources. One of the main recommendations in the above-mentioned report was that the central government should take over the responsibility for all personal health services provided by local government; in addition, the separate services provided by the central government and the voluntary agencies should be unified.\(^2\) It is difficult to see how any substantial resources would become available for rural services without an increase in the health budget. However, the recommendation that an integrated health service should be developed, conforming to a national plan laid down from the centre and observing a set of principles determined on a national basis, is a sound one. This goes back to the principle laid down by the United Kingdom Ministry of Reconstruction in 1918:

The first principle of good administration requires that when a special function is to be undertaken, it be undertaken by one governing body for the whole community needing the service, and not for different sections of the community by several governing bodies.

Nonetheless, this does not solve the actual economic and political problem of finding a way to finance the rural services and still maintain the present curative level in urban areas.

Problems in manpower are not greatly different from those already mentioned. A shortage of doctors and nurses is typical of the less developed countries. Most of the health workers that are available work in the urban centres, and are mainly concerned with curative activities. The doctor’s education, whether abroad or in one of the medical schools recently set up in a number of the developing countries, has not prepared him for handling the comprehensive health needs

\(^2\) Ibid., p. 217.
of his community. The standards of the schools are Western and quite inappropriate for the less developed areas. As Bryant says:

The systems for health care and education of health personnel, with few exceptions, were not designed to meet the needs of these countries.¹

In the face of such difficulties, pragmatic planning is often merely palliative in orientation. Often it aims only at slow, step-by-step modifications.

**ORGANIZATION OF THE PLANNING PROCESS**

In a developing country where none of the advanced methodologies can be followed, but where the problems are extremely serious, how does the health planner go about his work? What are the logical, common sense steps to be followed?

First it should be clearly recognized that development planning may take many forms, and will not be the same for all countries—or, for that matter, even for the same country at different times.

Waterston discussed three approaches of increasing complexity found in mixed-economy countries: (1) a project-by-project approach; (2) integrated public investment planning; and (3) comprehensive planning.² He suggests that national planning should be permitted to evolve gradually, beginning with the project-by-project approach. He warns that comprehensive planning may not be possible for some time in most developing countries. Even the development of the planning process itself may sometimes be pragmatic.

There has been a tendency in some less developed countries to start planning partly because it is fashionable and partly as a way of attracting foreign grants and loans. In such circumstances plans have sometimes been prepared too hurriedly, in a few months or even a few weeks, and this can produce seemingly anomalous results:

In the past we have had a Plan without much planning... During this current year, in order to achieve effective planning in the future, we shall, as it were, be planning without a Plan.³

While comprehensive planning is in theory the ideal approach, it should be remembered that most African countries have neither the required data nor the qualified personnel to formulate and execute

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¹ Bryant, J., op. cit., p. 91.
such plans. Even without overall plans, however, health sector programmes can be worked out, projecting demand and resource requirements for a period of years. This has been done in Liberia and Sierra Leone. In such cases, where no total framework is available, the health planner must take care that his projections do not violate the country's priority needs and resources in other sectors. To be effective, planners must have an assurance that the government is firmly committed to planning:

Above all if Governments have not made planning an article of faith and furtherted planning objectives wholeheartedly, it is not surprising that actual performances have not sometimes measured up to expectations.4

The government will have to make certain that there is enabling legislation for planning and for subsequent implementation of the plan.

One of the most important tasks in planning is to gauge the country's administrative capacity. Existing administrative structures in less developed countries have often been found insufficient to carry the burden of an otherwise intelligently worked-out plan. It has been estimated that 80% of failures in socio-economic plans are due to administrative deficiencies. In 1965 a Latin American study group on health planning, meeting in Puerto Azul, Venezuela, agreed that:

Undoubtedly, the present structure of health services in some countries is not suited to the planning process because of their heterogeneity, multiplicity, and deficient organization and administration. A central mechanism and the necessary legal provisions to promote and develop the general and the sectoral planning process have been lacking.5

The government must ensure that the necessary machinery is available for the following activities: for health planning within the ministry of health; for co-ordination with other ministries of immediate concern; for co-ordination with overall socio-economic planning at the top level; and, last but not least, for ensuring the co-operation of the public and of the professional organizations.5

Theoretically, planning should be carried out at all levels of government and should be essentially a two-way affair—from the top downwards and from the local level upwards. For the time being, this will not be possible in many of the less developed countries, especially where there has been no tradition of effective local government.

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In most of the less developed countries the health planner will find he has insufficient data on available resources of manpower, facilities, and finance. He should bear in mind, however, that the planning process is one of the basic tools for improving the production and use of statistical data. His plan should therefore include ways and means of initiating and improving epidemiological information and statistics concerning personnel, facilities, equipment, and supplies.

The lack of adequate data is a serious problem, but it should not be allowed to delay the initiation of planning. Prerequisite data for planning have been discussed by several WHO expert committees, and a list of such data was published as Annex 1 of the fourth report of the Expert Committee on Public Health Administration. Where essential data are lacking the planner should remember that modern sampling techniques may be of assistance in obtaining data quickly.

Where socio-economic planning is carried out, the health planner should make use of guidelines from the overall plan to cover the health sector. These guidelines should include:

1. criteria for the determination of broad consumption objectives;
2. policy objectives determined in the light of expected income;
3. broad policy objectives to be fulfilled in each sector;
4. an indication of the distribution of resources between sectors.

Within the framework of these objectives and the resources expected, the health planner should prepare a draft plan containing:

1. an accurate assessment (diagnosis) of the existing situation;
2. definition of the means recommended to improve efficiency in the operations of the sector;
3. an estimate of personnel needs, category by category, together with an indication of the facilities needed for staff training;
4. the costing of the various activities, project by project, taking into account and listing separately: (a) capital expenditure (buildings, vehicles and equipment) spent inside the country or spent on imported goods, and (b) recurrent expenditure on personnel in each category and materials bought in the country or imported;
5. a description of the expected results, in terms as concrete as possible;
6. as accurate as possible an estimate of the expected economic effects; and
7. recommendations for activities in other sectors; for example, the health planning unit may make recommendations about nutrition (including crop rotation), health education in educational establishments and environmental health.

Proposed goals, estimates of resources needed, and alternatives to each of these should be presented to an appropriately constituted health planning committee. A draft health plan should be agreed upon by
that body, and forwarded to the central planning unit for co-ordination with all other sectoral plans.

One of the most difficult and important tasks facing the health planner is to learn what financial resources will be available and then to prepare cost estimates accordingly. Only when this has been done can he develop a plan of action. The health planner will generally be supplied with a tentative financial statement, but he will also need some understanding of the economic situation if he is to attempt to compete with the demand of other sectors.

Generally he will be dealing with both a development budget and an ordinary budget. The development budget will cover capital projects actually under way or planned and for which specific funds have been allocated either from national or external sources. The ordinary budget will provide for normal recurrent national expenditures, with provision for minor capital expenditures not directly connected with the development budget. The health planner should be aware that much of the yearly increase in the ordinary budget will be taken up by statutory increments in salaries.

The planner should estimate a probable health budget for the duration of the plan by analysing patterns of previous budgets and finding the probable percentage annual increase. The costing procedure will generally fall into the following categories:

1. Capital expenditure on: (a) new buildings, (b) major renovations and extensions of existing premises, (c) communications (roads and vehicles), (d) services (water, etc.), (e) equipment and supplies, (f) training (fellowships, etc.).

2. Recurrent expenditure on: (a) personnel, (b) training, (c) running cost of new establishments and increased costs of existing ones, including replacement of supplies.

Having estimated the cost of reaching his health goals, the planner will no doubt find that his resources are not sufficient. He will then have to establish the relative importance of the different health problems—in other words, their priorities. But how can the pragmatic planner best assess priorities in a situation that does not permit the utilization of such elaborate techniques as cost benefit analysis, linear programming, and econometric models, and in the face of political and public pressures? One possibility is to try to estimate the magnitude of the problems, e.g., how many people are involved and how seriously, how many are killed, how many are disabled, how much economic loss is incurred, and how effective are the means of prevention or cure.

This, like many of the other suggestions put forward for the pragmatic planner in the preceding pages, approaches the techniques of the more
formally developed health planning methodologies. The essential
difference between the pragmatic and the methodological planner lies
in the extent to which decisions are made by sensing or judging, and
are not based on precise concepts substantiated by quantitative data.

Pragmatic planning looks intuitively into the future—in part because
(a) it lacks data, (b) it lacks sophisticated techniques of prediction, and
(c) it recognizes the relatively intractable nature or instability of political
and social conditions. Pragmatic planning relies less upon involved
theoretical prognosis and more upon knowledge—mostly common
sense—that is well established even though not set out in written form.
A quite substantial body of North American literature, represented
typically in the writings of Lindblom \(^1\) and Wildavsky, \(^2\) intrinsically
supports pragmatic planning. It is not surprising that many countries
with limited resources for health, for other social activities, and for
economic development, have “muddled through” with pragmatic
planning; they simply have not been ready for or able to afford non-
pragmatic planning. Yet it is also interesting that the wealthiest of
nations, the USA, has made little progress beyond the pragmatic form
of national health planning.

In pragmatic decision-making the planner is neither bound to a set
of predetermined rules nor obliged to go through a long, complicated
procedure. Its advantages are low-cost planning and realistic adjust-
ment to circumstances; its disadvantages are a propensity to bend with
current forces and the need to make decisions without the benefit of
adequate information and analysis.

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\(^{1}\) Lindblom, C. E. (1965) *Intelligence of democracy: decision-making through mutual adjustment*,
New York, Macmillan.

CHAPTER 3

THE INDIAN EXAMPLE:
PLANNING AS A POLITICAL WAY OF LIFE

INTRODUCTION

India has perhaps the longest tradition of planning of any non-socialist country. Even before independence the Congress Party had a planning committee under the chairmanship of Jawaharlal Nehru. The Government of India under Lord Wavell was engaged in planning in 1944, and the present Planning Commission was established in 1950. The first five-year plan was launched in 1951.

The Planning Commission is an advisory body, with the following terms of reference: to assess the country’s resources and ways of augmenting them; to formulate a plan for their most effective utilization; to determine the action needed to implement the plan; to evaluate the performance of the plan from time to time and make proposals for its improvement; and to make recommendations on specific problems referred to it by the central or state governments. Most important, the Commission makes its recommendations to the Cabinet in close understanding and consultation with the ministries of the central Government and state governments. The membership of the Commission is highly distinguished, and from the very beginning the Prime Minister has been its Chairman.

The Planning Commission’s secretariat is composed of “general” and “subject” divisions. The “general” divisions are concerned with such broad matters as macro-planning, surveys, and perspective planning, while the “subject” divisions deal with particular sectors, such as agriculture, health, and education.

It is in the divisions that most of the planning takes place. Each division utilizes working or expert groups on which the appropriate ministry is represented. Thus there are close relations between planners and those who carry out policies. The directions given to working groups are relatively general in the early stages, but become much more specific as the preparation of a five-year plan proceeds. The groups give particular attention to the determination of financial and personnel resources required for their proposals.
The interweaving of the planning mechanism with the political structure is seen again in the consultative committee composed of representatives of the National Planning Commission and both houses of Parliament. Moreover, within some of the central ministries there are planning units devoted to collaboration with the Planning Commission. The planning unit in the Ministry of Health has the following functions:

1. compilation of national five-year health plans and supporting material;
2. development of strategy for getting plans accepted and financed;
3. preparation of the central annual health plan, and discussions with the Planning Commission and the Ministry of Finance on budgeting;
4. discussion and co-ordination with states on matters relating to planning developments and the financing and implementation of plans;
5. submission of progress reports on planning schemes to the Planning Commission.

The Commission keeps in close touch with planning activities at state level. It does this through the programme advisers attached to the secretariat's Programme Administration Division. These programme advisers are the link between the Planning Commission, the specialized central ministries, the state planning boards, and the state specialized ministries; their role is especially important in relation to the states. They sometimes lead teams of experts from different ministries to examine particular problems and make recommendations to the Government. They check the estimates of projects and assess the expenditures incurred on the projects in terms of the national plan. They also offer advice to state governments for improving the implementation of the projects and the plan in different areas of development.

The National Development Council was set up to review the working of the national plan from time to time and to consider important questions of social and economic policy affecting national development. It also recommends measures for achieving the aims and targets set forth in the national plan, including measures to secure the active participation and co-operation of the people. The Council's membership includes the Prime Minister, the chief ministers of the states, and the members of the Planning Commission. Ministers of the central Government concerned with economic and social development are also invited to participate in the meetings of the Council.
Parallel to the planning at national level, the states prepare their own draft plans for submission to their legislatures and to the Planning Commission. Each state has some machinery for these functions, although there is a great variation from one state to another. Usually there is a planning secretary in charge of a planning department, which in turn acts as secretariat to an interdepartmental state planning committee.

Again the principle of working through expert groups is followed, each group functioning in a specialized area such as animal husbandry, fisheries, or health. The nucleus of each group is made up of service officials concerned with the subject. A group may also set up sub-committees of special experts.

Although the Indian machinery for planning is elaborate, the great virtue of India’s planning has been its political strength. With the Prime Minister as chairman of both the Planning Commission and the National Development Council over a long period, planning has become a political way of life in India. As Myrdal sums up, “The technical work on a plan has only one purpose: to enable these political decisions to be taken on more rational lines and with a fuller understanding of the facts.”

Two important factors affect health planning in India: (1) health planning is performed as an integral part of the general process of national socio-economic planning, and (2) most health work is carried out at the state level. Health services are primarily the responsibility of the states. Only certain activities, such as higher education and research, international quarantine and port health, control of food adulteration, the care of lepers and the mentally deficient, and the prevention of interstate spread of communicable diseases, are dealt with by the central Government. Under these circumstances it is essential that there should be broadly agreed national policies and co-ordination at all levels of government if planning is to be successful. The programme advisers are responsible for co-ordination and cooperation between the central Ministry of Health and Family Planning, the planning bureaus of the state ministries of health, and the state planning departments, especially as regards the allocation of resources.

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and the determination of priorities during the five-year plan. The various groups concerned have strong preferences and influences, and these have to be reconciled and related to the resources available.

In formulating comprehensive health planning, two special bodies have been particularly important. The Health Survey and Development Committee (the Bhore Committee) was appointed during World War II. In its report presented in 1946, it concluded that there was a need for greater central power and that the central and state authorities should be more effectively co-ordinated. Accordingly, a Central Council of Health, composed of the state ministers of health, was established in 1952. However, the Health Survey and Planning Committee of the Ministry of Health (Mudaliar Committee), conducted a survey in 1961 and found that co-ordination was still not satisfactory. This Committee made a series of proposals, not involving the amendment of the Constitution or reduction in the responsibilities of the states, but seeking to ensure more effective co-ordination. These proposals included the formation of a central health cadre, the institution of national programmes for communicable diseases, and more effective operation of the Central Health Council. The Committee cited the observation of the American planner, Paul H. Appleby, that epidemics respect no state boundaries and that the health of the people is increasingly a national problem.

At the central level, a health planning section was created in the Employment and Social Services Division of the Planning Commission in October 1951. In April 1956, it was made a separate division. As a “subject” division, its main task is to assist in the formulation of the health programmes and projects to be included in the five-year plans and annual plans. It assists in evaluating progress and also undertakes studies of special interest to health planning, e.g., manpower requirements of health programmes, vital statistics, health education, and the development of indigenous systems of medicine. The Division provides liaison with the Health Ministry, on which it relies largely for information and expert advice.

A Panel on Health consisting of 42 members was constituted to advise the Planning Commission on the First Five-Year Plan (1951-1955). It made recommendations to the Planning Commission, based on the reports of 11 expert subcommittees. One of these subcommittees urged the need for family planning as long ago as 1951, and in 1952 India became the first country to declare family planning a national

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policy, even though for many years implementation of this policy was slow and the resources allocated were inadequate.

A new panel was established to advise the Planning Commission on priorities and targets for the Second Five-Year Plan (1956-1960). A broad assessment of the entire field of health was desired for the Third Plan (1961-1965), so the central Government set up the Mudaliar Committee to make short-term and long-term recommendations. This Committee called for a shift from the direct control of diseases to the improvement of basic health services and the strengthening of administrative services at all levels. Although communicable diseases continued to receive major attention, new importance was attached to (a) the establishment of primary health centres in each community development block, and (b) to the provision of a supply of safe water in the villages.

About one-third of all funds allotted to health in the first three development plans was earmarked for water supply and sanitation schemes—mainly in areas where water-borne diseases were endemic and in large metropolitan cities and, more recently, in rural areas where water is scarce or very costly to supply. In the Fourth Five-Year Plan (1969-1974), water supply and sanitation schemes will receive a greater financial allotment than in all three previous plans together. The share of these schemes in total public development spending will rise from about 1.5% to 2.6%, and their share in total health expenditure from one-third to two-fifths.

Among the most pressing problems in India, and one closely linked with the country’s other problems, is the population increase. The change in the name of the Ministry of Health to the Ministry of Health and Family Planning indicates the new priority. During the First Five-Year Plan the Health Ministry still had certain reservations about methods of birth control other than the rhythm method. Under the Second Plan great dependence was placed on family planning clinics in the British tradition. This was changed to a more aggressive approach in the Third Plan, and family planning has now become one of the main concerns of health planning:

In the circumstances of the country, family planning has to be undertaken, not merely as a major development programme, but as a nationwide movement which embodies a basic attitude towards a better life for the individual, the family and the community.1

In recent years, the Government of India has repeatedly declared that its goal is to bring down the birth rate significantly. The Fourth Five-Year Plan states:

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The population growth rate is estimated to be 2.5 per cent per annum. In order to make economic development yield tangible benefits for the ordinary people, it is necessary that the birth rate be brought down substantially as early as possible. It is proposed to aim at its reduction from 39 per thousand to 25 per thousand population within the next 10-12 years.¹

The family planning programme is integrated into the regular health services and the community development services. It includes provision of facilities for the married population and gives special attention to group acceptance of the small-sized family, personal knowledge about family planning methods, and the ready availability of supplies and services.

Major emphasis in India is laid on the speedy and thorough implementation of health plans so as to secure practical results. Plans require implementation at many levels—national, state, village, district, and block. At each level there must be co-operation between different agencies and an understanding of the purpose of the plans and of the means by which they are to be carried out. With the steady increase in the Government’s responsibilities, the volume and complexity of administrative work has increased. To meet some of the problems in the health field, a National Institute for Health Administration and Education has been established. The Institute’s major objectives are: (1) to provide educational and training facilities in the principles and practice of public health administration through doctoral and postgraduate courses, staff colleges, seminars, and expert groups; (2) to conduct research, specially oriented towards administrative and educational problems in the implementation of health and family planning programmes; and (3) to provide consultation, advice, and guidance to central and state governments on the development of health services.

Planning has become established in India as an essential activity of government. Planning for health is accepted as part of the general process of planning for socio-economic development. Government leaders recognize that health is, as Myrdal phrased it, both of independent and of instrumental value—an essential element in the development of India.

CHAPTER 4

PUBLIC HEALTH PLANNING IN THE USSR

Professor I. D. Bogatyrev ¹ & Dr M. P. Rojtman ²

GENERAL PRINCIPLES

All economic activity in the USSR, including public health activities, is determined by the national economic plan. The Council of Ministers of the USSR, through its State Planning Committee (Gosplan USSR), and the councils of ministers of the Union republics, through their own planning commissions, are responsible for the planned management of the national economy. At the local level, the soviets of workers' deputies have their own planning bodies.

The procedures and time limits for drawing up the national economic plan are laid down by the Council of Ministers of the USSR. Gosplan USSR is the chief co-ordinating body: to ensure that a balance is maintained between material, financial, and manpower requirements, and to promote the harmonious development of the various sectors of the national economy, Gosplan USSR draws up instructions on the methods to be used in preparing the plan, the indices for the plan itself, and the most important targets for the individual sectors of the economy. These instructions are sent to the Gosplans in the Union republics, ministries, and other branches of the administration.

The basic form of long-term economic planning in the USSR is the five-year plan. Provision is made for adjustments to the plan that may become necessary in the course of its implementation.

The national economic plan is subdivided into plans for administrative areas and plans for different sectors of the economy. The area plans comprise plans for the development of the national economy in republics, krais, and oblasts and in individual rayons or cities. The sector plans deal with the development of the various sectors of the national economy.

¹ Director, Semal'sko All-Union Institute of Social Hygiene and Organization of Public Health, Moscow, USSR.
² Chief, Section of Economic Studies, Semal'sko All-Union Institute of Social Hygiene and Organization of Public Health, Moscow, USSR.
³ Each constituent republic of the USSR is divided into oblasts, and each oblast into rayons. Administratively, a kraj is equivalent to an oblast, but is differently named for historical reasons.
The plan for the development of the public health services is a sector plan. The responsibility for preparing it lies with the Ministry of Health of the USSR, which submits its draft plan to the Council of Ministers of the USSR after obtaining the approval of Gosplan USSR.

It is particularly important to ensure that the sector plan for the development of the public health services is co-ordinated with the area economic plans. This means that the development of the system of medical establishments and the rates of increase in the numbers of medical and other staff employed in them must be correctly correlated with the rates of growth of industry and agriculture in the republic, oblast, city or rayon concerned. Moreover, medical establishments must be sited with due regard for the location of population centres or individual industrial enterprises, and new medical establishments must be built in accordance with the plan for economic and cultural development in the area.

The national economic plan comprises the following subdivisions:

1. the production plan;
2. the capital investment plan;
3. the manpower and wages plan;
4. the staff training plan;
5. the plan for social and cultural development;
6. the plan for distribution of the economy in the various economic areas of the country and the various republics;
7. the financial plan;
8. the plan for the introduction of new technology; and
9. a subdivision for miscellaneous items (supply plans, plans for transport of goods and people by various means, internal trade plan, etc.).

All the subdivisions of the national economic plan are co-ordinated with one another. At the same time the sector plans, which include those for public health and the medical industry, are reflected in all these subdivisions. For instance, subdivision (1) of the national economic plan lays down the production indices for the medical industry. The plan for capital expenditure on public health determines increases in the bed complement, the expansion of the sanitation and epidemiology services, the extension of establishments for pre-school children, and improvements in the technical equipment of public health establishments; this plan covers the volume of capital investment in the public health services and the building of new public health establishments, giving details of materials and costs.

The manpower and wages plan reflects the staff requirements of
public health establishments and the wages fund necessary to pay them. Planning the number of specialists (doctors and medium-grade medical staff) is of particular importance, since it is linked with advance planning of training in educational establishments. This is also reflected in the staff training plan.

To ensure organic unity between sector and area planning, computer techniques are being introduced into all subdivisions of the country's economy. An overall project has now been drawn up for an automated system of planning and managing the public health services, and work is being completed on some individual components of this system which represent the first partial models: management of the large inpatient section of a hospital; management of emergency hospital admissions in a large city; analysis of information flows for public health establishments of various types and for public health authorities at different levels; and a subsystem for the management of research, teaching, and leading administrative staff in the public health services. At the same time work is being done to devise mathematical models of individual diseases and to calculate the time-distribution of information flows (attendances at a polyclinic by hour of day and day of week, calls for emergency medical assistance at different periods during the day, etc.). A national computer centre, the basis for the future automated system of public health service management, has been set up in the Ministry of Health of the USSR.

Under the ninth five-year plan, which will run from 1971 to 1975, the construction of large specialized and multipurpose hospitals, polyclinics, and diagnosis, treatment and follow-up centres (in Russian, dispensers) will continue. The network of emergency care stations and sanitation and epidemiology centres will be extended. By 1975 the number of hospital beds will reach three million, and more public health establishments will possess the latest medical equipment, apparatus, and instruments. It is planned to raise expenditure on nutrition in hospitals. There will be further development of sanatorium and spa treatment and of organized leisure in rest homes, boarding establishments, youth hostels, and pioneer camps. Measures are to be taken to increase the number of doctors and to improve the level of training of all health personnel. Research on the most important problems of medicine and public health will be widely developed.

PUBLIC HEALTH PLANNING

The theoretical and methodological bases for the planning of the public health services are the same as those used in the planning of the national economy as a whole. The different subdivisions of the plan
for the development of the public health services must be carefully co-ordinated with the corresponding subdivisions of the national economic plan. No disproportion must be allowed to arise between the two plans.

The following areas of public health planning fall within the competence of the highest organs of the USSR:

(1) the drafting of all-Union plans for the development of public health and the implementation of health-giving measures and of plans for the development of scientific research;
(2) the drafting of all-Union plans for the development of medical and pharmaceutical education, the training of medical and pharmaceutical staff, and the assignment of specialists;
(3) the drafting of all-Union production and distribution plans for the medical supplies industry;
(4) the approval of design standards for the provision of medical services to the public, the supply of equipment, materials, and transport for medical establishments, standards for the use of medicaments, and standards of nutrition for persons in curative, prophylactic, and other health establishments;
(5) the approval of a unified nomenclature and standard regulations for public health establishments, together with the drafting of appropriate staffing standards.

Each Union republic is responsible for drawing up a republic plan for the development of the public health services and plans for carrying out measures to improve health. The republic authorities have the right to define and approve the itemized indices for the public health plan and the training of medium-grade medical workers, to lay down work targets, to determine the volume of capital investment, and to approve the detailed lists of public health establishments to be constructed and the plan for supplying medical establishments with materials and technical equipment.

The Ministry of Health of the USSR and the ministries of health of the Union republics each have planning and finance boards. The kraj and oblast health departments and the health departments in large cities have planning and finance sections responsible for drawing up public health plans, submitting them to superior planning authorities, and checking that they are carried out.

The interrelationships between the various bodies concerned in the preparation of the public health plan are shown in the accompanying organizational chart.

See page 36.
The Ministry of Health of the USSR provides the ministries of health of Union and autonomous republics and the heads of oblast (kraj) health departments with basic directions for preparing the long-term plan. These directions set out the main theoretical considerations governing the further development of the sanitation and epidemiology service, curative and preventive care, the supply of medicaments, the supply of public health establishments with materials and equipment, the financing and construction of such establishments, and the training, distribution, and utilization of graduate-level and medium-grade medical and pharmaceutical staff, research workers, and administrators. Corresponding instructions are passed on by the oblast health departments to the rayon authorities.

Preparation of the public health plan starts at the rayon level, as part of the whole complex plan for the development of the economy in the rayon. The public health plan is therefore drawn up with due allowance for the development of industry and agriculture and of establishments for cultural and other purposes, such as children’s homes and schools.
The plan drafted by the rayon or city health department is submitted to the rayon or city planning commission. After considering the draft, the planning commission submits it, as part of the overall plan for the development of the local economy, to the rayon or city executive committee of the soviet of workers' deputies. The draft overall plans are considered by the executive committee and submitted to the oblast executive committee and the oblast planning commission.

A similar procedure is followed at oblast and at republic level. After consideration of the republic plans by the Council of Ministers of the USSR, a national economic plan is drawn up incorporating the plans for the development of the public health services. The approved plans are passed back to the lower authorities.

The overall plan of the Ministry of Health of the USSR is made up of the plans of the individual Union republics.

Popov outlines the procedure for drawing up the public health plan as follows:  

1. An analysis is made of the level and structure of morbidity, vital statistics, and their long-term trends.

2. An analysis is made of the extent to which the public is provided with the medical care it requires (system of establishments, their activities, medical staff).

3. Forecasts are made of expected changes in the level and nature of morbidity, growth of population, its sex and age structure, and its distribution between town and country.

4. Specific targets for the development of the public health services are set.

5. The "design standards" needed for planning calculations are worked out.

6. A plan for the development of the public health services is drawn up and brought into balance with the national economic plan.

7. The fulfilment of the plan is checked so that any necessary corrections can be introduced while it is in progress.

The public health plan consists of four main sections, concerned with: (a) the network of public health establishments; (b) the posts available in those establishments and the persons who fill them; (c) the siting of new public health establishments; and (d) the basic, further, and special training of staff.

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The correct combination of the republic, oblast, city, and rayon plans is ensured by the use of identical indices, in particular:

1. Indices showing the extent to which the population is provided with medical care, e.g., number of attendances at outpatient clinics and polyclinics, number of hospital admissions in absolute and relative figures;

2. Indices showing the degree of bed utilization, e.g., bed occupancy (number of days per year that a bed is occupied) and bed turnover (number of patients treated per bed per year);

3. Indices showing the extent to which medical staff are utilized (actual workload of medical staff compared with the prescribed standards);

4. Indices showing the extent to which the public is provided with medical establishments and staff, e.g., number of beds and number of medical posts per 1000 urban or rural inhabitants.

The number of indices used depends on the level at which planning is taking place. The lower the level, the wider the range of indices.

METHODS

The following methods are used in public health planning: the analytical method, the balancing method, the design standard method, the method of correlations or proportions, and the experimental method.

The analytical method

This involves careful analysis of the state of health of the population at the end of the previous planning period, i.e., an analysis of the initial level for compiling the new plan. The degree to which the plan for the previous period was actually carried out is taken into account, and the reasons for any failure to fulfil the plan in respect of various indices are determined. An analysis is also made of the interrelationships between various public health indices and indices for the development of the national economy as a whole. All these analyses serve as a basis for preparing the new plan.

The balancing method

This involves creating an “equilibrium” between the various subdivisions of the public health plan and also between the public health
plan and the national economic plan. Special importance is attached to balancing the plan for expanding the public health system against the plan for building new establishments, balancing personnel requirements against the education and training of medical staff, and balancing the development of the public health network against the supply of materials and equipment and the development of the medical supplies industry.

**The design standard method**

The design standard (норматив in Russian) is a scientifically based theoretical standard used for calculating various requirements. Particular importance is attached to design standards for meeting the public’s medical care requirements, for the labour expended by medical staff, and for the supply of materials, manpower, and finance. The design standards serve as a basis for balancing the various parts of the plan. If there is an increase in bed complement, for example, they can be used to calculate the requirements for extra personnel to serve those beds, for additional medical and other equipment, and for the money to ensure normal operation of the expanded facilities.

There are design standards for the number of hospital beds per 1000 inhabitants, for the number of doctors per 10 000 inhabitants, and for the numbers of medical personnel in different categories. In urban polyclinics, for example, the design standard for the number of doctors' posts is 11.8 per 10 000 adults (15 years and above). These posts are broken down as follows:

<table>
<thead>
<tr>
<th>Professional Category</th>
<th>Posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>District physician</td>
<td>5 posts</td>
</tr>
<tr>
<td>Surgeon (traumatologist-orthopaedist, urologist)</td>
<td>1 post</td>
</tr>
<tr>
<td>Ear, nose, and throat specialist</td>
<td>0.5 posts</td>
</tr>
<tr>
<td>Neuropathologist</td>
<td>0.5 posts</td>
</tr>
<tr>
<td>Ophthalmologist</td>
<td>0.6 posts</td>
</tr>
<tr>
<td>Endocrinologist</td>
<td>0.2 posts</td>
</tr>
<tr>
<td>Stomatologist</td>
<td>4 posts</td>
</tr>
</tbody>
</table>

There are also design standards for the number of doctors in workshop services giving outpatient care to industrial workers, for the medical and other types of equipment, supplies, and transport to be made available to public health establishments, and for the workload of medical staff.

The use of scientifically based design standards helps to promote the use of the most effective methods of diagnosis and treatment in the everyday practice of curative and preventive establishments and to increase the productivity of medical workers.
The correlations method

This is important for establishing the correct proportions between different parts of the plan. For example, there is a definite relationship between the extent of inpatient and outpatient care. If the number of inpatient beds is small, this may increase the number of outpatient attendances. There are also clear ratios between outpatient visits to different types of specialist, and the study of these makes it possible to plan correctly the needs for such specialists (therapists, surgeons, neuropathologists, etc.). It is also important to determine the relationship between the number of attendances at polyclinics and the number of requests for doctors to see patients in their homes.

The experimental method

This is important in testing new design standards. For example, new standards for workloads of medical staff must be tested experimentally in several public health establishments. The experimental method is widely used for trying out new methods of organizing work and in economic research connected with the activities of public health establishments.

RESEARCH ON PUBLIC HEALTH PLANNING

A public health plan must have a scientific basis. In the USSR, therefore, extensive research is conducted to determine the public's requirements for curative and preventive care, the workload of medical staff, and health manpower requirements. It is also extremely important to study the economic aspects of the public health services: to determine the economic effectiveness of specific health activities and to investigate specific problems of public health economics with a view to achieving more economical utilization of material, manpower, and financial resources.

The extent and nature of inpatient and outpatient care are affected by a considerable number of different factors, many of which act in opposition to one another. It is therefore extremely important to examine the effects produced by the most important of these factors: demographic processes and overall morbidity.

Demographic processes are studied quite fully in most countries and the relevant research methods have been investigated in considerable detail. The general tendencies observed—the constant increase in the proportion of elderly persons in the population and the reduction in the birth rate—must be taken into account in planning medical care.
Together with demographic processes, overall morbidity basically determines the level of inpatient and outpatient care and its structure by specialty. Figures for overall morbidity are of immense importance in working out design planning standards and in solving organizational problems concerned with curative and preventive care. Recognizing this, the public health authorities in the Soviet Union have in recent years commissioned research institutes to carry out thorough sample surveys on general morbidity. The records of all types of medical establishment (inpatient case histories, outpatient record cards, children's developmental histories, records of preventive examinations, pregnancy records, etc.) are used as a source of information. The surveys are usually carried out in specially chosen areas where highly qualified medical care is readily available.

Work in the last decade has shown that the records of applications for medical assistance can be used to gain some idea of the distribution and structure of acute and clinically manifest chronic illnesses. However, some protracted chronic illnesses go undetected, either because they are in the early stages of development or because they are not sufficiently marked clinically, with the result that patients do not seek the medical assistance they need. In order to gain a fuller idea of the level and structure of overall morbidity, therefore, two basic sources of information have been utilized in recent years:

1. Figures for overall morbidity, based on personal requests for medical assistance;
2. The results of many-sided medical examinations of the population.

On this basis a study has been made of overall morbidity among one and a half million people in five towns situated in different economic and geographical areas. The study was conducted in each town throughout a calendar year so as to cancel out any seasonal variations. Neither the level nor the structure of overall morbidity in the towns studied showed any marked differences, so that all the main design calculations could be based on the mean indices of overall morbidity for the five towns.

The investigations indicate that the main, most widespread causes of morbidity in man can be divided into three basic groups, depending on the nature and frequency of their occurrence in different age groups:

1. Illnesses that follow an acute course, particularly influenza, acute catarrh of the upper respiratory tract, and sore throat. These are most prevalent among young children; the prevalence rates gradually fall to reach a minimum at the age of 17-19 years, then rise somewhat, only to fall once more after the age of 50.
(2) Conditions more often encountered in the middle age groups, e.g., injuries, appendicitis, gastric ulcer, and duodenal ulcer.

(3) Diseases showing a marked and continuous increase in prevalence rates with age, e.g., carcinoma and other malignant neoplasms, atherosclerotic cardiosclerosis, hypertensive disease, diseases of the liver and bile ducts, chronic gastritis, radiculitis, neuritis, and sciatica.

Differences in morbidity between the sexes are also of considerable interest. Gastric and duodenal ulcers are encountered roughly eight times as often among men as among women, and injuries occur roughly three times as often among men. On the other hand such diseases as appendicitis, hypertensive disease, renal and urinary diseases, and disease of the thyroid gland are encountered more frequently among women.

Such data on demographic processes and overall morbidity, together with information on hospital admissions and attendances at outpatient clinics and polyclinics and on the special features of the country's public health system, serve as a basis in drawing up design standards for the public's requirements for different types of medical care.

Design standards are used for determining quantitative values in the public health plan and for ensuring a correct relationship between the various specialties. They therefore play an important role in public health planning and management.

The question arises whether design standards based on the averaged indices collected for towns and rural localities in different climatic and geographical zones are suitable for use on a nation-wide scale. This is a very complex question and should be approached with caution, since many factors must be taken into account. Design standards of medical care for the country as a whole have to be determined, since they are needed for establishing the figures in the national plan for the development of the health services in the USSR and for maintaining correct proportions between the various medical specialties. However, these mean design standards must be corrected to allow for a number of specific features in each town or administrative area, on the basis of three main factors:

(1) Allowance must be made first of all for differences in the age and sex composition of the population in different towns and rural rayons.

(2) Comparison of the morbidity of the whole population in a number of towns with that of industrial and office workers has shown quite convincingly that industrial production has a very serious effect on the level and structure of human morbidity and consequently on the standards of therapeutic and preventive care required. In each town,
therefore, the general design standards should be adjusted according
to the degree of industrial development (proportion of industrial
workers in the total working population, and special features of
industry).

(3) The general design standards should also be adjusted to allow
for the proportion of rural inhabitants receiving medical care in the
town's curative and prophylactic establishments. The proportion of
rural inhabitants in the total number of patients treated in urban
inpatient departments ranges from 8% to 60%.

At the level of the oblast, kraj, or autonomous republic, two other
factors must be taken into account:

(1) Differences in the relative proportions of urban and rural
population within a particular oblast, kraj or autonomous republic;
(2) such features as the distances between populated centres, the
state of the roads, the available means of communication, and other
geographical and climatic factors.

In planning inpatient care, it is important to consider the relationships
between the numbers of hospital beds provided for various purposes
in different hospitals, towns, and administrative areas. A city hospital
need not necessarily have a full range of specialized departments, but
for the city as a whole it is essential that certain proportions be kept
between the number of beds in the different specialties, on the basis
of the design standards. At the same time extra beds must be available
to provide inpatient services for the rural population and people from
other towns, and these extra beds will not follow the same specialty
pattern as those for the actual population of the town.

A further very important question is the duration of inpatient treat-
ment in hospitals. An increase in the ratio of hospital beds to popula-
tion has two opposite effects: it promotes more frequent hospitaliza-
tion both of patients with comparatively mild acute illnesses that can be
treated in a short time and of patients with protracted chronic diseases,
who naturally spend a longer time in hospital. Here, special investiga-
tions must be carried out to determine which effect predominated in the
previous few years.

Finally, the problem of the occupancy rates of hospital beds in the
course of the calendar year is of considerable importance in planning
inpatient care. In the Soviet Union it is generally considered that in
urban areas a bed should be occupied for 340 days a year and in rural
areas for 320–330 days.

In the planning and organization of inpatient care, the correct
apportionment of hospital beds between different specialties in various
types of town and in different establishments takes on immense importance. The principle followed is that there should be more detailed specialization in the centre than at the periphery. A district hospital has general medical beds, and possibly beds for two or three specialties as well. A central rayon hospital should have departments covering the main specialties, while the capital of an oblast, krai or autonomous republic will possess a large hospital (usually a teaching hospital) and associated diagnosis, treatment, and follow-up centres (in Russian, dispensery) dealing with malignant tumours, tuberculosis, psycho-neurological diseases, skin and venereal diseases, etc. Increased specialization is still more marked in the capitals of Union republics and in Moscow, where there are research institutes that devise methods of treatment for various diseases and help in the most complex and serious cases (cardiovascular surgery, neurosurgery, etc.).

In working out plans for the development of inpatient care, the public health authorities in every country are inevitably faced with the need to make long-term forecasts on such matters as: (a) likely changes in the size and the age and sex structure of the population; (b) anticipated changes in the level and structure of overall morbidity; and (c) possible changes in the organizational forms of inpatient care.

The forecasting of overall morbidity is a very difficult but important question. When the forecast is to cover any appreciable period of time, the following considerations must be taken as a basis:

(1) In regard to chronic illnesses whose prevalence is closely linked with age and sex, but for which no sufficiently effective means of treatment or prevention has yet been found, possible changes in morbidity are estimated by standardizing the existing indices for sex and age.

(2) In regard to communicable diseases, allowance must be made for the achievements of research and the degree to which the health authorities are equipped to control individual diseases, as well as for the rate of reduction of morbidity during the last few years, i.e., the extrapolation method must be used.

(3) In respect of diseases whose prevalence is affected by living and working conditions and by the level of health consciousness of the population, account must be taken of the rates of reduction already achieved and of the anticipated future improvements in environmental conditions, particularly improvements in production technology. Here again, the extrapolation method can be used.

No less difficult a problem is to forecast possible future changes in the organizational forms of inpatient care. Here, obviously, provision must be made for certain trends that are already appearing. Above all, the anticipated increase in the proportion of elderly persons in the
population will inevitably lead to the establishment of numerous hospitals for persons suffering from irreversible chronic diseases.

The increase in the proportion of patients with chronic diseases is drawing attention to the auxiliary form of inpatient treatment known as "home hospital treatment". It must be assumed that medical care under home conditions will develop much further in the future. Wide-ranging investigations in the Soviet Union have indicated that this is an economically advantageous form of inpatient care and is medically quite effective in very many illnesses.

Obviously, close consideration will soon have to be given to ways of converting all sanatoria into establishments for natural continuation of the treatment begun in hospitals, as has already been done with tuberculosis sanatoria. Any measures taken are certain to affect the huge network of sanatoria-preventoria attached to industrial undertakings and maintained by the trade unions at their own expense.

The determination of health manpower requirements is one of the most complex problems facing the health authorities at different levels in any country. It must be anticipated that attempts to find a scientific solution to this problem on an international scale will encounter even greater difficulties, in view of the substantial differences in the social, legal, and organizational foundations of the public health services in various countries. Moreover, considerable research into reliable methods of determining public health manpower needs is required before the initial data can be obtained for solving the manpower problem properly.

Estimates of future morbidity and demographic structure, made in accordance with the techniques outlined above, should serve as a basis for determining the number of medical staff required to provide outpatient and inpatient care. It is also necessary to take into account the volume of preventive work carried out by doctors and other medical staff, i.e., the frequency of medical examinations of healthy subjects and the degree to which doctors in various specialties take part in them.

Other factors that must be determined are:
(1) the number of days (hours) worked in a full calendar year by male and female doctors in various specialties;
(2) the extent to which male and female doctors in various specialties hold more than one post;
(3) the related disciplines in which doctors most often combine posts;
(4) the correlation between the number of doctors and the number of medium-grade medical workers employed in treatment and prevention establishments;
(5) the most rational workloads for doctors in different specialties, and the average length of the working day for doctors in different specialties employed in outpatient, polyclinic, and inpatient establishments; 

(6) the average number of years of professional activity of male and female doctors in different specialties; and 

(7) the degree to which doctors continue to practise after reaching pensionable age:

Information on all these points will make it possible to determine the number of doctors and medium-grade medical workers who will be needed to provide curative and preventive services. It is also necessary to determine the numbers of medical staff who will be needed for work on sanitation and hygiene, for administrative duties on management bodies, medico-legal expert panels, etc., and for work in medical and public health research establishments. It is practically impossible to lay down objective scientific bases for determining the numbers of such staff, and the present situation must be taken as a starting-point.

Another important task, although difficult from the methodological point of view, is to determine the extent to which increasing specialization in medical care may result in further subdivision of existing medical specialties.

**Conclusions**

Methods of studying overall morbidity, hospitalization, and outpatient and polyclinic care in the Soviet Union have been thoroughly worked out, so that it has been possible to determine the basic laws governing these problems. These laws have been used for calculating design standards for curative and preventive care. On the basis of the laws and design standards, the numbers of medical staff needed for the next few years have been calculated.

Further research on the forecasting of overall morbidity requires a very wide range of investigations in which medical specialists of various types, statisticians, and economists must take part. The volume of research needed, not only at the stage of data collection but also and more especially at the stage of statistical data-processing, requires the utilization of modern computers and other auxiliary techniques. Investigations must be carried out on a sampling basis and require the establishment of special centres in the different economic, climatic, and geographical zones in different countries. Before work...

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1 Bogatyryov, I. D., ed. (1967) *Zabolevaemost' gotskogo naseleniya i normativy lekcheprofilakticheskikh podnabii* (Morbidity among the urban population and design standards in therapeutic and preventive care), Moscow.

At such centres begins, a whole range of organizational measures must be taken to ensure complete availability of medical care of a high standard. Moreover, the curative and preventive establishments in the towns and rural localities selected must be provided with the latest technical equipment.

Methods of dealing with a considerable proportion of the types of research listed have been devised and tried out in practice in the Soviet Union, but a complete solution of the problems of public health planning still requires considerable expenditure of resources and time.
CHAPTER 5

REGIONAL PLANNING: THE SWEDISH APPROACH

For several decades Sweden has held a leading position among European countries in the planning of comprehensive health services for the entire population. Furthermore, the country has had the resources to implement its long-range plans and to adjust them in the light of experience. The Swedish approach has many attributes worthy of emulation, but is the regionalization of health services that warrants particular attention.

Planning, as the process of seeking the best way of achieving an agreed set of goals, can be carried out at a number of different levels. It may extend "all the way from relatively limited planning of an essentially private or mixed enterprise economy to the comprehensive all-embracing planning of a totalitarian system". The planning unit may be a nation or a region. The region may be political or economic or determined specifically for social planning. It may be "subnational" (part of a country) or multinational.

Using Waterston's definition, subnational regional planning may mean one of several things. It may refer to planning for a city, a rural or metropolitan area, or an economically depressed part or a country. It may also include the preparation of a series of regional plans, the sum of which will form a national plan; this is the approach in the USSR. It may involve fitting local projects into a national plan so as to ensure the best possible arrangement of social services and thereby reduce economic disparities between the regions of a country.

Sweden has been in a particularly good position to utilize a decentralized, regional approach to health planning. Engel, who may be called the originator of the regional approach in Sweden, describes how, in 1862, community self-government was instituted by new laws for the local communes:

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... and—most important—on the basis of the historical state-governed counties a new regional self-governing body was created—the county council. Among the duties of the county councils, as laid down by the new legislation, health care—until then entirely a state concern—was included.¹

Engel describes how administration of the hospital system quickly became the most important task of the county councils, with 85% of their budgets devoted to medical care. Until 1967, however, the State retained responsibility for the administration of mental hospitals.

Until the 1950s the medical services largely depended on some 25 county councils (except in the "free cities" of Stockholm, Gothenburg, Malmö, and Norrköping). Each county had a central hospital, and some smaller hospitals, serving a population of 250,000–300,000. The county paid for the medical services with local taxation and the services were financially sound.

In 1962, responsibility for public health was transferred from the Ministry of the Interior to the Ministry of Social Affairs, in which the National Board of Health is the overall planning and innovating agency. Since 1968 the medical and social services have been integrated and the Board is now known as the National Board of Health and Social Welfare. It is the principal authority for supervision and promotion of medical and social services. The Central Board of Hospital Planning and Equipment is an independent body engaged in standardization of hospital building and equipment. Sweden has a national health insurance system and all care for inpatients in hospitals is free.

The impetus for the development of regionalization in Sweden was provided by the rapid progress made in the pharmaceutical and medical fields. Medical care in hospitals suddenly became much more complex and costly. A Chairman of the Federation of Country Councils and Speaker of the Lower House of Parliament wrote:

It was here that the first series of problems began to appear. Every self-respecting central hospital included in its plans new clinics for thoracic surgery, neuro-surgery, plastic surgery, etc., etc. Neither from the financial nor the organizational point of view was it defensible for a county council with 250,000 population to involve itself in such projects.²

Hospital care was becoming prohibitively expensive, and the shortage of medical staff, especially doctors and nurses, was acute. It was only natural for the responsible medical and political bodies to look towards regional planning as a solution to their problems. The head of the National Board of Health, Dr Arthur Engel, was given the task of

drawing up a preliminary plan dividing the country into hospital regions, i.e., self-sufficient units for providing medical care.

Dr Engel found himself confronted with three main problems. How should the system for the delivery of services within the region be organized? What would be the most advantageous population size for such a system? Finally, how should the geographical problem of availability of services be solved?

Dr Engel defines a region as an area that is appropriate, in population and size, for the planning of independent and self-sufficient health services.\(^1\) The medical care system within the region can briefly be described as a pyramid.\(^2\) At the top is the regional hospital providing the most highly specialized services for about one million people in three or four counties. In principle the regional hospital is administered like every other large hospital, but there is obviously a need for close co-ordination with the county hospitals of the other counties of the region. A regional care committee composed of two representatives of each county meets several times a year; one of its functions is to determine the financial contribution of each county to the regional hospital.

At the next level of the pyramid is the central hospital serving a single county, still very specialized but without facilities for the most highly specialized activities such as neurosurgery, plastic surgery, and thoracic surgery. This hospital has a catchment area of 250 000–300 000 people, and approximately 800–1000 beds.

At the third level are the district hospitals. These used to be known as “normal” hospitals, and many of them served only a small population or were poorly located. The present policy is that the district hospital, with about 300 beds, should serve a population of 60 000–90 000 and should have specialized departments for surgery, medicine, anaesthesiology, radiology, obstetrics and gynaecology, paediatrics, psychiatry, and geriatrics.

At the base of the pyramid the local commune (township) is served by a health centre offering ambulatory care to 10 000–20 000 people. Peripheral nursing homes for chronic illness are attached to the health centres. Dr Engel writes:

> These centres, still under development, are not part of the hospital organization, but our aim is to integrate their activities as closely as possible with the nearest district hospital. A goal as yet nowhere achieved is to have an exchange of medical personnel, primarily doctors, between the hospital and the health centres. May I add also that we nourish the hope of having our health centres staffed, in the future, with specialists in internal medicine, paediatrics, obstetrics and gynaecology,

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\(^{1}\) Engel, A., op. cit., p. 82.

\(^{2}\) Ibid., p. 19.
and psychiatry, with a doctor of social medicine as a co-ordinator and leader. This would mean a more effective pattern of medical practice.\(^1\)

In order to decide what services should be supplied at what level within the region, Dr Engel held a series of hearings with representatives of highly specialized branches of medicine, asking their opinions on such matters as the need for hospital beds for their different specialties and the optimum size of their departments.\(^2\) In this way "estimated standard figures" were determined (see Table 1). It was agreed that the majority of patients in neurology, dermatology or urology would be taken care of in the appropriate departments of central county hospitals, while the regional hospital would provide treatment for the more serious and complicated cases. From the bed/population rates shown in Table 1, it was evident that, if a regional hospital was to function economically, it would need to serve about one million inhabitants.

**TABLE 1. BED/POPULATION RATES FOR HIGHLY SPECIALIZED BRANCHES OF MEDICINE**

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Beds per 100 000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic surgery</td>
<td>5.5</td>
</tr>
<tr>
<td>Thoracic surgery</td>
<td>4.6</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td>4.1</td>
</tr>
<tr>
<td>Radiotherapy (cancer clinics)</td>
<td>14 (at least 1/4 for gynaecological cancer)</td>
</tr>
<tr>
<td>Neurology</td>
<td>12-16 (divided between regional and county levels)</td>
</tr>
<tr>
<td>Dermatology</td>
<td>10-15 (rural areas)</td>
</tr>
<tr>
<td>Urology</td>
<td>20 (divided between regional and county levels; 2/3 male patients)</td>
</tr>
<tr>
<td>Paediatric surgery</td>
<td>100(^a) (densely populated areas)</td>
</tr>
<tr>
<td></td>
<td>20(^b) (sparsely populated areas)</td>
</tr>
</tbody>
</table>


\(^b\) Per 100 000 children under 15 years of age.

Since 1955 efforts have been made to estimate the number of hospital beds required for both general and specialized care. Much of this work is of a similar nature to that carried out in the USSR. The figures arrived at are highly dependent on the structure of the population, especially age distribution, and on other epidemiological factors, such

\(^1\) Engel, A., op. cit., p. 83.

as morbidity and mortality patterns. Minimum standards for hospital beds—"bed quotas"—have been found to be of limited value for planning except as a very rough guide. ³

As in the USSR, ambulatory care is of considerable importance in the Swedish health service system; it is provided both through outpatient departments in hospitals and through clinics in health centres.

TABLE 2. HEALTH CARE USAGE BY AGE GROUP, EXPRESSED AS "CONSUMPTION UNITS" *

<table>
<thead>
<tr>
<th>Age group</th>
<th>Number of consumption units by age group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General, tuberculosis, and contagious disease hospitals</td>
</tr>
<tr>
<td>0-9</td>
<td>0.63</td>
</tr>
<tr>
<td>10-19</td>
<td>0.47</td>
</tr>
<tr>
<td>20-29</td>
<td>0.78</td>
</tr>
<tr>
<td>30-39</td>
<td>0.82</td>
</tr>
<tr>
<td>40-49</td>
<td>0.90</td>
</tr>
<tr>
<td>50-59</td>
<td>1.29</td>
</tr>
<tr>
<td>60-69</td>
<td>1.74</td>
</tr>
<tr>
<td>70-79</td>
<td>2.00</td>
</tr>
<tr>
<td>80-</td>
<td>1.37</td>
</tr>
<tr>
<td>Totals</td>
<td>10.00</td>
</tr>
</tbody>
</table>


Sweden has a low birth rate and a high life expectancy at birth. Consequently there is an unusually large number of people in the older age groups, which consume a disproportionate share of medical services. To analyse this problem Swedish planners have been using a special index, the "consumption unit", which relates the use of services by a particular age group to the average use of services by all age groups. Table 2 illustrates the number of consumption units for various kinds of care used by different age groups.

Of particular importance in regional planning is the geographical size of the region. The Royal Commission on Regionalization of Health Services was asked to study this problem. From an operational viewpoint the problem was to achieve maximum accessibility, measured by the time of travelling to the health facilities, for the largest possible number of people. At the same time it was necessary to preserve the organizational pattern of the regionalization described above.

An expert in economic geography was asked to study the problem from the point of view of demographic and economic development and of transportation. Particular attention was paid to trends in occupation and employment at the county level that might be indicative of future population trends. Population density maps were prepared for every county for the period 1955-1975. Accessibility to the regional hospitals was first studied by making estimates of travelling time by public and private transport for both short and long distances. Four hours was fixed as the maximum acceptable time for a single journey to a regional hospital, since this would avoid an overnight stay.

In his case study of regional health planning in Sweden, Navarro succinctly summarized the methodology as follows:

1. The inventory of travelling time is represented geographically on "isochrone" maps. (Isochrones are lines joining points situated at the same travelling time from a given centre.)

2. The space between adjoining isochrone lines is called an "umland" and represents one hour's travelling time.

3. The isochrone maps for alternative locations are superimposed on population density maps (1955-1975). These maps give the projected populations in the various time zones.

4. The aggregate travelling times are then easily calculated by multiplying umland population densities by isochrone travelling times.

5. The planner's task was to select regional centres that minimized travelling times of patients and their visitors. Regional boundaries were selected to coincide with the nearest county boundaries by appropriate adjustments.

6. To arrive at travel costs for alternative centre locations, "isodapan" maps were constructed—isodapan lines join points situated at the same travel cost from a given centre. These were superimposed on population density maps, and aggregate travel costs were calculated.

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By this method eight regional hospital centres were selected: two in Stockholm and one each in Uppsala, Lund-Malmö, Gothenburg, Umeå, Linköping, and Karlstad.

Navarro concluded that these regional centres were chosen because they maximized the proportion of the population living within four hours' travelling time and minimized the aggregate travel costs and times (for the projected population of Sweden).

The Swedish approach to regional health planning has some unique features, e.g., the consumption unit index, the isochrone and isodapen maps. These techniques are not difficult to calculate or apply, and take into account both demographic and socio-economic factors on a county-wide, regional, and national basis. This planning method could be applied to good advantage in both developed and developing countries.

Further changes in regional health planning can be expected as data processing systems, using computers for speed and accuracy, make possible (a) population registration, (b) registration of the location of real estate, households, and other establishments, and (c) long-term financial planning and economic analysis. In Stockholm, for example, the Danderyd hospital, which is not even a regional hospital centre, processes information on 1.4 million people in Stockholm County. According to Ruth Link, this hospital is a "medical-technical industry for human repair", admits patients by computer, and is run by an economist trained in hospital administration. Information on the 1.4 million "potential customers" is held in a data bank, and kept up to date for instant access when patients are admitted and require further care. The same data are used for statistical and medical research, for follow-up studies, and for managerial control.

Sweden spends 7% of her gross national product on medical care, most of which is associated with hospitals. The country has sufficient resources to experiment and innovate in regional health planning and automated hospital services. Less wealthy nations cannot copy Sweden's total health services, but they can take advantage of new patterns of hospital organization and management that have proved efficient in the delivery of care.

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CHAPTER 6

THE PAHO-CENDES METHOD

Under the Punta del Este Charter of 1961 the Pan American Health Organization (PAHO) acquired responsibilities for aiding Latin American countries in drawing up the health sectors of national development plans. PAHO and the Center for Development Studies (CENDES) of the Central University of Venezuela, Caracas, collaborated in developing a methodology for national health planning. In addition, PAHO established courses for the training of health planners at Santiago, Chile, in collaboration with the Latin American Institute for Economic and Social Planning. This approach to health planning, known variously as the Latin American, PAHO-CENDES, or Santiago methodology, has been used extensively by the Institute for the training of some three hundred professional staff at CENDES and over 2500 persons elsewhere in Latin America. For convenience it is referred to here simply as “the Method”.

The framers of this planning system were striving for a practical, useful tool that would enable them to tackle forthrightly the problems of improving health care. They were interested in teaching the fundamentals of health planning to a large body of persons, previously untrained in planning, so that they could create a planning milieu among those responsible for rendering health services. One of their themes is that “planning is a state of mind rather than a method”. Although their analytical tools are drawn largely from the field of economics, they eschew techniques that require special education in mathematics, economics, or allied disciplines.

This is not to say that the Method is simple. On the contrary, it is elaborate and complicated, and its concepts and processes require

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1 The Pan American Health Organization (PAHO) comprises the Pan American Sanitary Conference, the Directing Council, and the Pan American Sanitary Bureau (PASB). The Pan American Sanitary Conference (or the Directing Council in those years when the Conference does not meet) serves as WHO’s Regional Committee for the Americas, and PASB serves as WHO’s Regional Office for the Americas.
detailed study if they are to be thoroughly understood. In this chapter an attempt is made to delineate its logic, to identify the fundamental lines of thought and their relationship to each other, in order that their essence can be grasped by the reader. The aim is not primarily to present a critical analysis of the Method. In preparing the chapter, the authors have drawn heavily on a report prepared by CENDES in co-operation with the Pan American Sanitary Bureau. Other sources are a series of lectures given by members of the PAHO staff at the School of Public Health and Administrative Medicine, New York, in the spring of 1970, and the unpublished report of the Technical Advisory Committee to the Pan American Center for Health Planning, which met in Santiago in February 1971.

INTRODUCTION

As a central governing principle, the PAHO/CENDES Method for health planning adopts the criterion of efficiency, conceived as follows: "A resource is efficiently used if the benefit obtained from its use is greater than that which would have been obtained if the same resource had been used for something else." The logic involved calls for systematic determination of what the significance of the different health problems in a geographic area will be in some future period, and what resources will be available to deal with those problems. In addition, the Method is concerned with the most efficient organization of resources for solving specified health problems. Organizational and allocational patterns are then developed in such a way that each resource is assigned to a problem as long as it produces the greatest benefit. When the resource ceases to do so it is transferred to another problem on which it can be used more efficiently.

Although the major steps of the Method described on pages 59-66 are logical, many difficulties are encountered in their application. For example, how does one determine whether a resource used for a certain purpose yields more benefit than if it is used for something else, especially in the field of health where so much is unquantified? The Method approaches this challenge along three fronts: (1) recognizing and demarcating areas of judgemental values, where it provides an opportunity for discussion but leaves decisions to those socially and politically responsible; (2) offering conceptions and techniques that can facilitate quantification and more rigorous analytical management of variables;

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(3) identifying data that need to be collected routinely in order to make concepts applicable and techniques workable. The Method also proposes a country-wide organizational framework within which its planning techniques may function.

APPLICATION OF THE METHOD

Priorities and compromises

This planning system is intended to produce proposals relating to health goals and to the means by which such goals are to be achieved, these proposals being submitted for the consideration of the country's central political authorities. The planners do not actually determine the country's health goals or make decisions about its health services system, therefore, but only put forward ideas for consideration. However, the planner does choose alternatives as to both means and ends.

The area concerned with choices about goals is labelled "the problem of priorities", and the area concerned with decisions about the system is labelled "the problem of selecting techniques". The problem of priorities involves the question of allocating limited resources to different needs—How much should be devoted to preventive services and how much to remedial care? How much should be spent now and how much should be invested for future pay-off, for example, in research? What constitutes an equitable distribution among different segments of the population when the resources are insufficient to meet the needs of all? The Method prescribes techniques for achieving goals, according to the dictates of efficiency. It not only seeks the technique that will accomplish most with the least expenditure of resources, it also seeks the health objectives that (other things being equal) permit the greatest achievement per unit of resource expended.

The Method does not seek to apply the criteria of economics to every problem. It is necessary in health planning to adopt some position regarding the value of life as compared with freedom from disability and pain. What relative weights should be given to mortality rates and morbidity rates? How many people should have to suffer, without care, in order that the available resources can be used to save one life? Economic answers to such questions would presumably take into account the years of productive capacity that would be saved by saving a life or curing a person of some disability. If this reasoning is adopted, it is logical to consider not only the years of productive capacity that health services will make available to the community but also the
resources the community must invest, or has already invested, to sustain, develop, and educate an individual in order to make him productive. Implementation of this policy would mean reducing health hazards for persons between the ages of 15 and 55. However, the Method acknowledges that there are two possible views of the social importance of the health of individuals: "(a) that one person's life is of the same importance as that of any other; or (b) that the life of certain persons is more important to the community than the life of others." Application of the economic criterion implies adoption of the latter view.

The Method makes no attempt to decide between the two views, but simply states that whatever choice is made should reflect the values of the society for which the planning is to be carried out. However, "for the sole purpose of facilitating the explanation of the Method", the premise is adopted that any life is equal to any other, and that the relative weights of mortality and morbidity cannot be determined, i.e., no common denominator can be found. Therefore, the yardstick of the effectiveness of a given health activity will be "the number of deaths prevented through that activity, irrespective of the benefits arising in the form of a reduction in morbidity or disability. Clearly, further research into these matters is needed".

With more specific application of the Method's rationale, a need for further refinement and for further compromises with the concept of efficiency is encountered.

It is not enough, according to the designers of the Method, to relate the commitment of given units of resources to the different outputs they produce. There is also a need to compare the use of different kinds of resources committed to the same goals. Moreover, comparisons should also be made wherever possible between different kinds of resources used for different purposes. The matter becomes even more complex when the effect of different combinations of resources is compared. The planning objective is to find the combination of resources that will have the greatest impact. The fact that one set of resources produces higher achievement than another does not mean that the first is as efficient as possible.

Whenever a choice must be made between two or more alternative techniques, or between different combinations of products, preference should be given to the one that shows a higher percentage relationship between the effect obtained and the cost of the instruments used, since that is the way to obtain the maximum benefit from a given amount of resources. Strictly speaking, the problem of priorities is the problem of establishing the optimal combination.

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1 Ahumada, J. et al., op. cit., p. 5.
2 Ibid., p. 6.
3 Ibid., p. 9.
Accordingly, resources should be concentrated on the disease or hazard to health that requires the lowest expenditure per death prevented, up to the point where the resources are no longer effective. They should then be directed towards another disease or condition, using the same criterion, and so on until they are exhausted. It must be noted that the cost of preventing one death varies with the prevalence of the disease, rising as the prevalence diminishes. As the prevention programme proceeds, therefore, it is to be expected that the disease will lose its priority to some other. This feature greatly complicates the Method but constitutes its essential and unique feature, for it introduces the concept of marginal utility and imparts rationality to the whole scheme.

In order to wage an effective attack on one disease it may be necessary to control several diseases simultaneously. Again, this is a complicating feature. It appears to make necessary the identification of clusters of diseases or hazards to health that require the lowest expenditure per death prevented, and may put a heavy strain on the feasibility of the scheme.

With regard to the allocation of health resources among geographical areas, the Method again departs from its economic rationale. In countries that are heterogeneous, as most may be expected to be, the cost of preventable deaths may be substantially lower in some regions than in others. According to the economic criterion of efficiency, resources should go to those regions where the cost of preventing deaths is lower, and where the impact per unit of resource will be correspondingly greater. However, unless there are enough resources to combat disease throughout the country, some regions are likely to receive no health services whatsoever. This raises the question of equitable distribution, which requires an ethical judgement. Planning analysis can merely determine what would be the cost, in terms of lost opportunities to prevent deaths, of supplying resources to the latter kind of region.

The Method has an ethical approach to recommend. It proposes that the available national resources be allocated among regions in such a way as to ensure that existing health levels will be at least maintained during the period of the plan. This pragmatic approach, although probably sound, nonetheless freezes planners in some measure into the patterns of the past. Their task is to examine the means used for achieving the existing levels of care and to remove any inefficiencies they find, but this rule limits the specific purposes towards which they might direct resources. Benefits of planning can only be achieved, therefore, through resources freed by limited improvements in efficiency and through new resources committed to health.
There is a further major departure from the rationale of efficiency. The Method recognizes that some diseases are likely to continue to occur, regardless of what health resources are expended. The concept of “vulnerability” is introduced to indicate the distinction between “reducible” diseases (i.e., those whose incidence can be reduced by present knowledge and methods) and “nonreducible” diseases. Numerous chronic and degenerative diseases such as cardiovascular afflictions are in the latter group and many communicable diseases are in the former group. As living standards rise the incidence of nonreducible disease will increase, and it will not be possible to redirect the resources now devoted to them “in spite of the fact that total morbidity and mortality could be reduced to a greater degree if such resources were devoted to the care of other diseases.”1 For the purposes of the Method, therefore, the existing level of care of diseases that cannot be reduced is regarded as a community demand that must be met. The remaining resources are to be allocated among diseases that can be reduced, according to the criterion of lowest cost per death prevented.

Further problems

In addition to problems of priorities, there are numerous technical and administrative limitations on the ability of health planners to follow the Method logically.

There are serious limitations upon the flexibility with which resources may be shifted from one use, or manner of use, to another. In health services large investments have already been made in capital goods and in personnel possessing highly complex skills. Planners have to live with past errors in building programmes. Six or seven years of higher education are required to prepare a general physician; specialization takes three to five years longer, and a cardiologist is not interchangeable with a malariologist. Where there is a general shortage of professional health workers, a personnel development programme encompassing at least 15 years is needed. For these reasons planners must look to the future, attempting to foresee and prevent the problems that might arise. “Planning is prevention rather than cure.” Plans are recommended for ten-year, five-year, and one-year periods, the latter being particularly useful for purposes of annual budgeting. The span of each plan should depend upon national plans that include all sectors, not only health, but also education, transportation, and industrial development.

1 Ahumada, J. et al., op. cit., p. 16.
This leads to a further complication: the comprehensiveness of plans. Ideally, planning should cover every field of collective action, for all are interrelated. The field of health alone should include nutritional research, environmental sanitation, and personnel training as well as the more commonly recognized health activities, whether or not such areas are the responsibility of the ministry of health. On the other hand the Method states, and here a serious problem emerges: "It is not essential to plan all the aspects that are included in the field being planned."  

Malaria eradication and hospital construction programmes are given as examples of sub-programmes that can be planned separately. Again, however, the present impossibility of giving relative weighting to such activities as health, education, and employment is no excuse for failing to plan for the greatest possible diversity of activities. Planning can at least reduce the range of error associated with the arbitrary allocation of resources. On the other hand, it is not worthwhile to plan activities of only secondary importance when the cost of planning outweighs the benefits yielded. "In each case it will be up to the planner to decide which actions deserve to be included for the time being in the study, and which actions may be postponed."  

Setting priorities of time is partly a technical matter and partly a matter of judgements. The Method acknowledges the relevance of questions about future priorities as compared with present priorities, but because economic solutions to such questions are rather complex it offers no proposals for discounting the value of health to be achieved in the future. "A one per cent reduction in mortality this year is considered to be of the same importance as a one per cent reduction in mortality in N years."  

It does encourage the use of discounting in long-range capital construction projects, however, but warns that unless there is conscious alertness to the present value of money there may be a tendency to over-invest in expensive buildings. These investments will not, over time, yield the full value of the resources put into them. Comparative cost analyses are advised. If two systems of sanitation are to cost the same amount over a ten-year period, but one requires a large initial outlay and the other a smaller initial outlay, interest costs are taken into account to determine the true overall costs. The results that the systems are expected to achieve are then compared.

1 Ahumada, J. et al., op. cit., p. 11.
2 ibid., p. 6.
THE PLANNING PROCESS

The PAHO-CENDES Method prescribes three major steps in the planning process: (1) diagnosis, (2) determination of feasible alternatives in the local area, and (3) preparation of regional and national plans.

Diagnosis

The diagnosis begins with identification of the geographic units into which the country is to be divided for health planning purposes. A highly decentralized type of planning is envisaged. The local area is small enough to reveal the important differences between communities in health and related conditions. These differences might be concealed if data were collected only on a regional or national basis. The local area, which should have a population not exceeding 150,000, should possess medical, surgical, obstetric, and paediatric services and, equally important, political and administrative machinery.

In regional areas, which comprise two to six local areas, more highly specialized services should be provided. Cities with large populations should serve in a dual capacity as local areas and as regional centres for other local areas. The most highly specialized services are planned at the national level.

Decisions as to where local areas with inadequate services should fit into the scheme must be made on a regional basis. They may be allocated to adjoining local areas. For sparsely populated areas where inhabitants are far removed from any services, planning may have to be limited to periodic services.

Health planning jurisdictions need not coincide with existing political or administrative jurisdictions. The identification of appropriate areas for planning may call for changes in administrative jurisdictions.

An important function of the diagnosis phase is to establish the cost of preventing a death from each of the diseases or other health hazards of concern in the area. Because such cost determination for every cause of death would be unreasonably expensive the Method offers a guide, based upon magnitude, importance, and vulnerability, to indicate which causes of death should receive attention.

A measure of magnitude is the number of deaths in the population caused by the disease, expressed as a percentage of total deaths. The importance of a disease is again concerned with assessing whether one life is more valuable than another. The Method gives examples of weightings that may be applied to persons in different age groups. Vulnerability (i.e., susceptibility to prevention and treatment) is close to zero for cancer and some cardiovascular diseases, and rises to the value of 1.0 for eradicable diseases such as smallpox.
A list of priorities for health hazards can be established by multiplying the coefficients of magnitude, importance, and vulnerability. For example, in one study in Venezuela "transportation accidents" were assigned a coefficient of magnitude of 3.9 (since they accounted for 3.9% of total deaths), a coefficient of importance of 0.83 (since those killed in such accidents tended to be younger and middle-aged people), and a coefficient of vulnerability of 0.33 (since they are less vulnerable than contagious diseases but more so than cardiovascular diseases). With a rating of 1.07 (3.9 \times 0.83 \times 0.33), transportation accidents were placed seventh in the order of priority of health hazards. This order of priority does not determine the allocation of health resources, but merely guides the planner as to which diseases should be studied to determine the cost of preventing deaths.

In order to carry out a cost analysis it is necessary to know what resources are being expended on each disease or hazard. This requires a comprehensive inventory of all health resources, divided into discrete categories and updated each year. The inventory, which should include all personnel, facilities, supplies, and equipment, including medicines and transport, should be expressed in monetary terms, with due allowance for depreciation.

In order to determine whether the health resources expended during the year were used efficiently—the basic factor in the diagnosis—it is necessary to devise some means of analysing the combinations in which they were used and the intensity of use. Resources have accordingly been divided into three groups—instruments, tasks, and techniques.

An instrument is a recognizable combination of resources commonly used to perform a health function; it is designated by one of the key resources forming the combination. For example, "visiting nurse" is an instrument, but that instrument is comprised not only of nurses but also of transport, medical direction, and the administrative personnel necessary to provide nurse visits. Similarly, "hospital bed" is an instrument, but the bed itself is backed up by laundry and cleaning services, by doctors, nurses, and others, to say nothing of buildings, equipment, and supplies. Instruments are measured in units of time, such as nurse hours or hospital bed days.

A task is carried out by an instrument. For example, the task of a hospital bed is to get people to recover from illness sufficiently to be discharged, and is measured in terms of the number of discharges per year.

Techniques are combinations of tasks performed to combat a disease. In the case of diphtheria, for example, they include epidemiological surveys, vaccinations, and hospitalization.

The analysis proceeds by identifying (for each health hazard found
significant by the tests of magnitude, importance, and vulnerability) all instruments used, and their composition. Instrument costs are computed on the basis of the amounts paid to doctors, nurses and others, and the amounts spent on laboratory and other materials. The numbers of tasks are worked out and the cost per task is calculated. The costs for each disease are then totalled.

Problems are encountered when a resource is used to combat more than one disease, or when one facility, for example a water supply system, serves other purposes besides health. In such cases general estimates must suffice. The analysis of survey samples of different kinds of services, such as nursing, can be helpful in estimating the proportions devoted to different diseases.

Total annual costs associated with each disease should include a provision for the share of physical plant used, by year, based on the life-time cost of the plant.

The number of deaths prevented by curative techniques can be calculated by comparing the proportion of patients who recover after treatment with the proportion who recover without treatment. The effectiveness of preventive techniques is calculated by comparing the probabilities of dying from the disease with and without the protection afforded by the technique. In both cases, unit cost is obtained by dividing the total cost by the number of deaths prevented. There is a minor complication with preventive techniques, in that the year's expenditure must be allocated among the years the protection is expected to last.

The diagnosis should not only describe health conditions in the community but should seek to explain them as well. Faulty public investment policy, inadequate community concern, and inappropriately structured local government are mentioned as possible contributors to unsatisfactory health conditions. The characteristics of the population, the agents causing diseases, the physical environment, the socio-cultural milieu, and health policies are among the factors listed for examination.

More recently political phenomena have assumed greater importance than in the early years of the Method's development. In general, the planner is urged to seek understanding of the physical and social dynamics affecting health levels. He is provided with no clear guidelines for this part of the plan, but is advised to endeavour to increase understanding of community dynamics by tabulating morbidity and mortality rates and amounts of services rendered, taking into account such variables as age distribution, levels of education, employment, sanitary conditions, and housing.

One of the functions of the diagnosis is to look into the future. The
planner needs to know "what is the likely pattern of health conditions in a community for, say, the next 10 years, if there is no change in health policies". Projections are needed of future population size and its composition by age and by rural-urban distribution. Also, on the basis of experience over the past 5–10 years, the prognosis should indicate the death rates for each of the major diseases and the demand for curative services. These projections should take into account all health policies adopted, including those not yet implemented. Changes in living standards, such as improved nutrition, housing, and education, are also to be considered. Health resources per inhabitant should be assumed to remain constant, the total expanding and contracting with the population.

The prognosis provides a springboard for the evaluation of the health situation, the purpose of which is to determine if, "with the resources available per inhabitant, it would have been possible to have achieved a higher level of health in the past or will be possible, during the period of prognosis, to reach a more satisfactory level than that indicated in the projection of the trend". The process begins with an examination of the instruments, tasks, and techniques and the effectiveness with which they have been employed in combating each disease or hazard. Operational standards, or "norms", must be developed as a basis for a number of critical assessments. It is necessary to determine whether the instruments and techniques used are of the most appropriate composition. Is too much or too little physician time being consumed for achieving effects at minimum cost? Is there an appropriate "concentration" of tasks? By concentration is meant the number of times a task is performed for each patient; for example, should a woman consult a physician three times or five times during pregnancy? Is there appropriate "coverage"? By coverage is meant the proportion of the population reached by the resource expenditure within a specified time. Attacks on some diseases require a certain minimum coverage to be of measurable effect. Norms for coverage are particularly difficult to establish because often they not only require the availability of instruments but are also influenced by the public’s propensity to utilize facilities. One other specific index of efficiency stressed by the Method is utilization. Are health centres operating at only 50% of capacity? The planner examines the whole system from the viewpoints of composition, concentration, coverage, and utilization in order to determine where there are inefficiencies. He estimates the cost of the

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1 Ahumada, J. et al., op. cit., p. 43.
2 Ibid., p. 47.
inefficiencies, and what the cost would be if the inefficiencies were corrected.

Such adjusted cost information—in so far as it can be made available—puts the planner in a position to assess the allocation of resources among diseases according to the Method's basic rationale of lowest cost per death prevented. This requires a comparison of the cost of preventing one death from each disease found significant by the "magnitude—importance—vulnerability" test, followed by a comparison of the amounts of health resources apportioned to them. Low apportionment of funds to causes of death that can be prevented at low cost indicates poor distribution of resources. The converse is also true. There may be some justification for certain cases of maldistribution, but the main test is clear: is the benefit derived from the resources expended as great as the benefit that would have been derived if the resources had been devoted to some other health hazard?

_Determination of feasible alternatives in the local area_

The question arises as to whether services should be planned according to what resources are available or whether the planners should first set targets and then calculate the resources needed to achieve them. The designers of the Method believe that "in practice... successive approximations are almost inevitable", and propose that (1) the national planning office estimate the amounts that will be available for financing health activities, (2) the local planning authorities define the minimum and maximum limits within which feasible targets can be selected, and (3) the national planning office present feasible alternatives based on the available resources and suggested targets to the highest political decision-makers.

The minimum plan for each local planning area is based on the provision of resources adequate to maintain existing health levels throughout all areas of the country, taking into account the decision that the care of nonreducible diseases is a community demand that must be met (despite the fact that such distribution will be inconsistent with the basic concept of "lowest cost per preventable death").

The maximum plan for each area indicates the highest possible rate of increase in health levels, assuming the availability of unlimited physical and monetary resources. It contemplates an attack on each reducible disease up to the limits of its vulnerability, and its targets for the care of nonreducible disease are set at the level recommended by

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1 In the terminology of the Method, a "target" indicates a specified health achievement within a defined time limit.
medical experts. In view of chronic scarcities of funds, it is highly unlikely that such a maximum plan would ever be put into effect for the country as a whole. The usefulness of the maximum plan lies in the possibility that there may be some surplus of resources available beyond those required to implement the minimum plan. The maximum plan assists in determining the allocation of such surplus resources among areas and regions for the purpose of achieving the maximum reduction of deaths. Limits on improved health are not imposed by monetary and physical resources alone. Factors such as the time required to develop new instruments and the adequacy of administrative machinery are also of importance. The function of the maximum plan is to delineate these limits and, within them, to indicate how various levels of resources might best be expended.

The delineation of the minimum and maximum plans involves the "standardization" of both instruments and targets. This means specifying the components of the instruments (the doctors, nurses, technicians, and other health workers, along with the amounts of plant, equipment, and supplies) in proportions that will give the optimum efficiency—in other words, eliminating any inefficiencies in instruments discovered through evaluation. It is necessary to specify output goals for each instrument, i.e., how much it should produce. Standards can be set by research or estimation. If estimates are used, they can be based on either a consensus of experts or a comparison with some other part of the country or some comparable country. Standards should be revised from time to time to allow for changing conditions. Ideally, data should continually be flowing in and plans redrafted on an annual basis to give ongoing evaluation as part of the planning process. If instruments and their outputs are standardized, it is possible to calculate unit costs for the care of nonreducible diseases and for the treatment and avoidance of reducible diseases, for the minimum and maximum plans. On the basis of unit costs, and the knowledge of the trends in disease and demand for treatment gained from the prognosis, it is possible to calculate the total costs of preventing health hazards.

Preparation of regional and national plans

Regional plans comprise the adoption in various measures, at the minimum level and above, of local area plans, together with provision for services that cannot be based on any local area. These services include specialized services that are uneconomical for local areas and services for areas not covered by local planning units. For the former the planning process described in previous pages should be followed, i.e., compilation of an inventory of available instruments, analysis of
the output and composition of the instruments, establishment of standards and standardization targets, projection of the demand, and calculation of the instruments required to meet the demand. For sparse populations spread over vast areas the difficulty of gathering data may make planning based upon efficiency almost impossible. Emergencies, which can strike within any geographical area, do not lend themselves to planned activities. They can best be dealt with by pragmatic planning and contingency funds.

Once the national planners have estimated the resources that will be available for the region, regional planners are responsible for allocating any surplus not required for the minimum regional plan according to the cost per death prevented. Unit costs for the prevention of death from reducible disease are found in the local area plans. The regional planner examines these data to determine what disease in what area can be combated at the lowest cost per death prevented. He assigns resources to this disease in this area up to the limit of the disease's vulnerability, or until it is no longer the most attractive choice, or until resources are exhausted. As long as a surplus remains, he assigns resources to the disease and area with the next highest priority on the basis of cost of death prevented. If all reducible diseases can be covered at the levels specified in the local area maximum plans, surpluses may be assigned to care for persons with nonreducible diseases according to the lowest cost per case.

The plan thus developed constitutes the first alternative to the minimum. It is advisable to draft two further alternatives, one based on the assumption that the total resources available will be 20% greater than the estimates given by the national planner, the other assuming they will be 20% less.

Many of the functions of the health planner at the national level have already been implied. As the regional planner allocates resources above the amounts needed to implement the minimum plans for local areas, the national planner reviews regional proposals and makes reallocations among regions within the country as a whole. The minimum plans and regional re-allocations, together with certain national programmes, constitute the national health plan.

The national health programmes are centrally controlled operations directed at diseases requiring efforts on an unusually broad scale, such as malaria and smallpox. Priority ratings are again based upon costs per death prevented.

Other important national health planning functions are concerned with overall planning for manpower and for capital investment. Future personnel needs may be determined from the local area plans. Much training and education of personnel takes place at the local level, but
national institutions such as universities are also involved. Manpower needs must be related to available resources so that national manpower plans can be prepared. Facilities should also be planned on a national basis, for although many of the requirements will be determined locally, much of the design and construction of hospitals and of water systems are carried out at the national level by specialists and by bodies responsible for public works and national economic development. Coordination is essential at the national level.

It is the national planner who must make proposals to the central political authorities and, on the basis of the response to these proposals, estimate the resources available for planners at lower levels. In countries where national planning is extensively practised, it will already cover the health sector. However, the PAHO-CENDES Method provides no scheme for determining how the resources of various health-related sectors, such as social services and agriculture, should be allocated.

The consideration of health planning proposals by political authorities, including the legislature, can be facilitated by the form of the budget. Budgets ordinarily presented to legislatures show numbers of personnel, their remuneration, and costs of materials, but give no indication of the programmes they will be used for or the objectives they are expected to achieve. Using the Method, a budget can be drawn up according to programmes, the amounts of resources they are to use, and the objectives towards which they are to be directed. The adoption of planning implies a change from the traditional style of budget to the programme budget. If political authorities are presented with a health budget that clearly identifies the objectives to be accomplished, and the means and costs of accomplishment programme by programme, rational decision-making will be facilitated for all.

ASSESSMENT AND PROSPECTS

This discussion of the PAHO-CENDES Method should not be closed without drawing attention to some of its weaknesses and strengths.

One of the problem areas is concerned with the concept of "cure", whereby the cure of a person with a reducible disease is counted as a death prevented, but the cure of a person with a nonreducible disease is not. It is difficult to see the logic in this. Furthermore, all persons discharged from the care of physicians or from hospitals are considered as cured, which obviously must inflate the number of cures reported. Most important of all, since the Method has a clear concept of death, but no clear concept of cure, it makes death its primary target, to the relative neglect of other objectives of equal or even greater importance—the lessening of morbidity and alleviation of disability.
Another major problem area concerns the allocation of causes of death. For the Method to work, each death must be attributed to a disease or hazard. In fact, it is well known that deaths are often caused by a combination of two or more diseases and hazards. Persons over 50 years of age especially may have a number of afflictions, and death is often due to more than one of them. The same kind of problem is encountered in treatment and prevention. A particular measure taken may ward off or cure not one disease, but a number of diseases. General sanitation is a good example. Should its cost be allocated to the prevention of diarrhoeal diseases, malaria, or yaws? Moreover, general sanitation may promote not only health but the aesthetic qualities of the environment as well. There is no simple way to divide the costs.

In addition to these methodological reservations, there are a few practical ones. The Method requires the collection and processing of enormous amounts of data. Certainly it is cost-conscious about data collection and cannot be faulted on that account, but even so, is such data collection feasible, especially in developing countries?

Political and social factors are of critical importance for the success of health planning. The designers of the Method recognize this, yet offer no methodology for analysing them. More recently, those responsible for developing and teaching the Method have been devoting greater attention to these factors, which nevertheless remain the chief challenge to planning.

The Method's aim of decentralizing planning—of developing planning from the local level upward through the regional to the national level—has proved exceedingly difficult to attain in view of the size and variation found in levels of medical, social, and economic development in such countries as Brazil and Peru. For a variety of reasons—particularly the political and social factors—it has not been possible to put the Method into operation throughout Latin America.

Despite these reservations, the Method is one of the most thorough applications of systems analysis to health planning that the authors have encountered. It is comprehensive and looks towards the most efficient allocation and utilization of resources. It represents a substantial step forward in the conceptualization and application of health planning.

**Future plans**

Since the formal establishment of the Pan American Center for Health Planning in Santiago, Chile, in 1968, the policies and activities of the Center have broadened. The Method is being revised on the basis of experience, both in its teaching and in its application. The teaching of planning courses has been decentralized by transferring it
to other centres in Latin America. A variety of courses will be offered to professional health workers with differing backgrounds of education and experience. Of signal importance to planners and health administrators is the Center's plan to offer consultative and evaluative services on health planning to all Latin American countries. This will narrow the gap between the preparation of health plans and their application and implementation.

The Center has established a research group that is already exploring new models of health planning to complement the revised PAHO-CENDES model. The Center will work in close collaboration with WHO and will be ready to put any new methodologies developed by the Organization into wide use after appropriate trials under field conditions. The Center will also co-operate closely with the Latin American Center for Medical Administration in Buenos Aires (also supported by PAHO) in the development and application of health planning systems.

The next ten years should bring even more rewarding developments of this essential tool in health administration for both developing and developed countries.
CHAPTER 7

HEALTH PLANNING IN THE USA

INTRODUCTION

Strange as it may seem in a country with great resources, an advanced technology, and highly-specialized medical manpower, the USA has neither a comprehensive health policy nor a national health plan. Nevertheless, some excellent planning has been carried out at the national level. Since the enactment of the Social Security Act in 1935, federal health plans have been developed for certain population groups, beginning with programmes for maternal and child health and crippled children. In this chapter, some of these planning activities are briefly reviewed and analysed.

HEALTH FACILITIES PLANNING (THE HILL-BURTON PROGRAMME)

Purpose and legislative background

The Hospital Survey and Construction Act of 1946, known as the Hill-Burton programme after its sponsors, Senator Hill of Alabama and Congressman Burton of Michigan, authorized grants to states for: (1) surveying needs and developing state plans for the construction of health care facilities, and (2) constructing and equipping public and voluntary non-profit hospitals, including hospitals for mental diseases and tuberculosis, and public health centres.

The basic purpose of the programme was to improve the quality of medical care by increasing the number of beds and distributing them more equitably, especially in rural areas. The first year's appropriation was $75 million, a sizeable sum of money for public health in 1947.

The legislation gave impetus to: (1) federal-state partnership in health administration, (2) co-ordinated facilities planning, (3) facility construction standards, (4) methodology for determining need, (5) im-

— 69 —
proved operation of health facilities, and (6) better distribution of facilities. Federal, state, and local government units on the one hand, and voluntary health and hospital associations and citizen's groups on the other, were all deeply involved.

Between 1947 and 1970 the direction and content of this programme were frequently revised as experience was gained and as new science and technology developed. In 1949 the Public Health Service was authorized to conduct and provide grants for research, experiments, and demonstrations to achieve more effective use and co-ordination of hospital facilities and services. Five years later the programme was broadened to provide grants for the construction of non-profit nursing homes, diagnostic or treatment centres, and rehabilitation and chronic disease facilities. In 1961, research appropriations were increased and provision was made for experimental construction projects.

The year 1964 was notable for the authorization over a five-year period of $1340 million in grants and loans, both for new construction and for modernization and replacement of health care facilities. For the first time, project grants became available to develop comprehensive regional plans for health and related facilities, e.g., interstate, regional, metropolitan, or local areas.

From 1948 to 1965 Hill-Burton funds were distributed to states and to counties within states on the basis of bed/population ratio. This was arbitrarily set at so many general hospital beds and long-term extended care facilities per thousand population. These formulae gave a firm basis for determining priorities, especially among rural and urban counties, and thereby avoided considerable political and technical controversy.

The Hospital and Medical Facilities Amendments of 1964 eliminated the bed/population ratios for determining needs. New procedures included a method for estimating additional need on the basis of hospitalization experience and an occupancy factor of 80%. Plans had to conform to minimum federal standards for both construction and patient safety.

In June 1970, the hospital and medical facilities programme was extended until June 1973 and expanded as follows:

1. provision of $500 million in loans and loan guarantees, with direct loans for publicly owned facilities;
2. $20 million additional funds for aid in the construction or modernization of emergency rooms in general hospitals;
3. provision for construction of neighborhood health centers;
4. special provision for outpatient facilities in poverty areas, with an increased federal share of up to 90%.
Results of the programme

By mid-1970, a total of 10,471 projects had been approved for the construction of 6,200 public and voluntary non-profit facilities serving 3,800 communities. ¹ This provided an additional 456,663 hospital and nursing home inpatient beds and 2,979 other health care facilities. The construction of general hospital beds (334,438) dominated the building programme, with long-term care beds numbering 93,749. The construction programme also included 1,032 outpatient facilities, 520 rehabilitation facilities, 1,258 public health centres, and 41 state health laboratories.

The US Congress has changed the purpose and execution of the programme in accordance with the changing times. As the needs of the rural areas were met, the emphasis shifted to the urban centres where there were great demands for replacement and remodelling. From 1 July 1947 to 30 June 1970, the total cost of approved Hill-Burton projects was $12,140 million; the federal share of this was $3,580 million. ¹

Nevertheless, the pervasive influence of the Hill-Burton programme on the health of the people was most evident, not in the numbers of beds provided and dollars spent, but rather in new approaches to facilities planning and implementation. The states had to set up offices and provide staff for those specific purposes. It was necessary to survey existing facilities, meet with community groups, determine unmet needs, and set up priorities throughout each state to fill the gaps. Local groups and, in some instances, the state staffs had to go out among the people and their elected representatives to raise the major share of the locally contributed matching funds for construction. The church groups that operated hospitals and associated facilities participated actively in the programme and received assistance both in planning and in obtaining new sources of funding.

The number of areawide agencies for health facilities planning did not increase significantly until the 1960s, following the enactment of the Community Health Services and Facilities Act of 1961, which supported the development of areawide planning of hospitals and related facilities.

Much remains to be done in health facilities planning at the federal, state, and local levels. Only about 25% of the nation’s hospital beds have come under Hill-Burton planning procedures; many new private

beds have been financed without federal money, and there is some lack of co-ordination of government-owned facilities.

Exservicemen are cared for in separate facilities run by the Veterans Administration, whose facilities include 166 hospitals with 104,771 beds. The Defense Department has its own hospitals in armed services installations throughout the country, although it also makes use of Veterans Administration hospitals and other public facilities. The fragmentation of governmental health facilities extends to the states and their large cities.

There is still a great deal of maldistribution—shortage of beds in some areas and over-supply in others. The need for modernization is evident almost everywhere, and is particularly acute in the large cities.

The emphasis in the 1970s will be on changes in conventional hospitalization. Many persons do not need to occupy a hospital bed if adequate ambulatory and extended care facilities are available and operated efficiently.

MENTAL HEALTH PLANNING

Legislative history and purposes

The earliest federal legislation in the field of mental health was enacted in 1930, and provided for the establishment of a Division of Mental Hygiene in the US Public Health Service. Until then the burden of developing public awareness of mental health had rested largely on voluntary agencies and on sporadic local efforts to improve the care of the mentally ill. The next major advance at the national level came in 1946 with the passing of the National Mental Health Act, which substantially broadened the federal role by authorizing grants for services, research and training by the USPHS. However, the mental health movement received its real impetus in 1949 with the creation of the National Institute of Mental Health (NIMH). Funds were made available primarily for research, but also for training and for grants of money to stimulate state and local efforts. Under bold leadership the NIMH, aided by some powerful and wealthy private groups and individuals, aggressively pursued its own expansion.

By 1952, the concept of community mental health centres had already assumed much the same form it was to take in the legislation of 1963. A community Mental Health Services Act was passed in

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1954 in New York State, and similar acts were subsequently passed in most other states.

As so often happens in the development of health programmes, new therapeutic agents changed the whole approach to mental health in the mid-1950s. Many patients not amenable to psychotherapy were able to participate in treatment, and to benefit from the new tranquilizers and antidepressants. Prospects for help, although not necessarily for cures, were improved. Shorter stays in hospital and increased discharges of long-term patients affected large numbers of the mentally ill.

In 1955, the Mental Health Study Act became law without a dissenting vote in Congress, and ample funds were appropriated for the USPHS to make grants to one or more organizations for "an objective, thorough nationwide analysis and re-evaluation of the human and economic problems of mental illness". One month after the Act was passed, a Joint Commission on Mental Illness and Health was established, with broad representation from 36 participating agencies.

In December 1960, the final report of the Commission 1 was submitted to the Surgeon-General of the USPHS and the Governors of every state. The report was not itself a planning document, but it laid the foundation for ensuing legislation that produced extensive national planning. Great emphasis was placed on improving inpatient care, and secondary consideration was given to the prevention of mental disorders and the promotion of mental health.

In 1961, President Kennedy asked the Secretary of the Department of Health, Education, and Welfare to analyse the Commission's report and, with the advice of an Advisory Committee, to formulate possible courses of action. In a message to Congress on 5 February 1963, the President stressed the development of state and local comprehensive centres for community mental health rather than the community health clinics recommended by the Commission. These centres would focus on ambulatory care and prevention. The relevant legislation passed six months later was a milestone in the growth and development of the mental health movement.

During 1963 and 1964, federal funds were appropriated on a matching basis to assist the states in the development of comprehensive plans for mental health, and all states were actively participating by 1965. The guidelines for state and local planning had been set by the health leaders at the NIMH even before legislation was enacted. 2

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New legislation enacted in 1970 provided for increased grants for the construction of centres; for a higher federal share of construction costs in disadvantaged areas; for extension of the period of federal contribution for centre personnel from three to eight years; for planning grants to local, public or private organizations on a 100% basis; for extension of programmes concerned with special projects and facilities for alcoholics and narcotic addicts; and, finally, for special grants towards programmes for the mental health of children, including the training of personnel to operate services for children.

Results and future prospects

The results of the mental health legislation from 1949 to 1970 have been far-reaching. State and local agencies have reorganized their mental health departments, have studied the problems, needs, and demands of the people, and have inventoried and added to their resources with the stimulus of federal funds and leadership. Following the guidelines of the NIMH and the legislation enacted by Congress, the states have developed planning groups with broad citizen participation. Implementation is going forward at a good pace and the larger states, particularly, have revitalized programmes that only a few decades ago were limited to custodial care.

Some exciting experiments in comprehensive mental health services are going on throughout the country. There is an extensive project at San Mateo, California, that combines mental health, public health, and social welfare in a single local government department.

The 1970s should bring innovations in comprehensive mental health services and a concerted effort to evaluate all approaches. The days of attempts at quick answers to complex questions are over.

INDIAN HEALTH SERVICE PLANNING

Legislation, history, and purposes

Responsibility for health services for the American Indian was transferred in 1955 from the Bureau of Indian Affairs of the Department of the Interior to the Public Health Service. This was a turning point in the medical care of Indians. Health planning was involved in the expenditure of many new funds as a part of general planning to meet the social and economic needs and demands of the Indians, particularly

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those 400,000 who reside on or near federal reservations. Indians themselves became more involved in the planning and operation of programmes designed to improve their social well-being.

The Hospital and Health Facilities—Maintenance and Operation Act (1955) gave the Public Health Service broad powers to implement a comprehensive health programme for the Indians. The Indian Health Facilities—Funds Act (1957) and the Indian Sanitation Facilities Act (1959) gave the Public Health Service additional funds and authority to improve the health of Indians.

As in other health areas, the fragmented approach is clearly evident in the development of legislation for Indians. Even in 1971 there was no viable mechanism to co-ordinate on a federal interagency basis the planning, delivery, and evaluation of Indian health services of all types, including health-related services in the social, occupational, and environmental fields.

Planning, programming, and evaluation

In spite of the difficulties encountered by the Public Health Service in taking over a static health programme with a serious shortage of funds, the Service has been able since 1955 to obtain more money and personnel and to establish a system of planning.

Kissick ¹ believes that the Indian Health Service has successfully adapted the Planning-Programming-Budgeting System (PPBS, see pages 84-85) to its problems. The adaptation is known as the Indian Health Services Schema of Comprehensive Health Planning.

This Schema includes nine steps:

2. Setting of community goals: quantified by the health problem priority index.
3. Community attitudes, resources, and conditions, with evaluation.
5. Alternative plans of action to cope with problems.
6. Cost benefit studies.
7. Establishment of objectives and plans of action: the "programme package".
8. The total integrated community plan, using both objective and subjective parameters of measurement.
9. Evaluation: the process of determining the extent to which predetermined levels of operation are attained.

¹ Kissick, W. L. (1967) Planning, programming, and budgeting in health. Med. Care, 5, 201-
Thus the planning system describes for the health administrator a means of integrating problem and resource determination, implementation, and evaluation. The key to this system is the health problem priority index ("Q" index), which will be briefly explained. The "Q" index is the first of three elements in the "programme package"; the other two are cost-benefit analysis and performance budgeting. The whole "package" states in quantitative terms what is to be done, how, when, and how often, and what results are expected. Long-term programme plans are developed on a six-year basis; short-term plans cover the first two years. The Indian Health Service has classified its health problems in 17 categories on the basis of the International classification of diseases.  

In the formula for the "Q" index, several measurable factors are combined in an effort to achieve a quantitative basis for comparing problems  

\[ Q = MDP + \frac{LA \ (274)}{N} + \frac{B \ (91)}{N} \]

where:  
- \( M \) = health problem ratio (Indian rate/US rate)  
- \( D \) = crude Indian mortality rate per 100,000  
- \( P \) = early death factor: when average age at death is 15, \( P = 1.0 \); when average age at death is 65, \( P = 0.01 \); when average age at death is between 15 and 65, \( P = \frac{65 - \text{average age at death}}{50} \)  
- \( L \) = length of hospital stay ratio (Indian stay/national average stay)  
- \( A \) = total number of inpatient days  
- \( B \) = total number of outpatient days  
- \( N \) = Indian population  
- \( 274 = \frac{100 \, 000}{365} \) (conversion constant for days of work lost during inpatient care)  
- \( 91 = \frac{100 \, 000}{365 \times 3} \) (conversion constant for days of work lost during outpatient care)  

In a later modification of the "Q" index, L was deleted and a new factor C (= days of restricted activity) was added:

\[ Q = MDP + \frac{A(274)}{N} + \frac{B(91)}{N} + \frac{C(274)}{N} \]

The "Q" index is used also to establish disease priorities. For this purpose the health problem ratio (M) is replaced by a specific disease ratio. At the 87 local service units, further modification is required when statistics are unreliable or unavailable.

Once the "Q" index for various health problems has been determined, the planners prepare strategies to reduce these indices, by the choice of appropriate objectives and plans of action.

So many diverse factors are included in the "Q" index that it is difficult to determine what the index actually represents. One cannot combine vital statistics, conversion factors, health services, and days of restricted activity, with all their socio-economic and cultural implications, without losing the real impact of each of these variables on the health problem being studied. In view of the varying conditions under which it is used, the "Q" index does not represent a true basis for comparison.

The Indian Health Service deserves great credit for trying to develop a systems approach to health planning, but the usefulness and general application of the approach are questionable. Some of the deficiencies of the "Q" index have been pointed out for the benefit of planners in other countries.

**Further problems**

The Indian Health Service stated in 1969 that, in spite of 15 years of considerable progress, the health of Indians was lagging far behind that of the population as a whole. There are still a number of unanswered questions and unsolved problems, especially in the application of professional and administrative technologies. The use of modern methods of planning and implementing programmes has characterized the new approach to improve the mental, physical, social, and environmental status of the American Indian. It will be interesting to observe how the planning system develops and is implemented in the 1970s.

**REGIONAL MEDICAL PROGRAMMES (HEART DISEASE, CANCER, STROKE)**

The purposes of the "Heart Disease, Cancer, and Stroke Amendments of 1965" to the Public Health Service Act ¹ are: (a) through grants, to

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¹ Public Law 89-239 dated 6 October 1965.
encourage and assist in the establishment of regional co-operative arrangements among medical schools, research institutions, and hospitals, for research and training (including continuing education) and for related demonstrations of patient care; (b) to give the medical profession and national institutions the opportunity to make available to patients the latest advances in the diagnosis and treatment of heart disease, stroke, cancer, and allied diseases, i.e., to close the gap between knowledge and application in medical science and technology; and (c) by these means, to bring about a general improvement in health manpower and facilities throughout the country, without interfering with existing patterns of delivery, financing, or administration of health services, whether official or voluntary. These co-operative arrangements are known as "regional medical programmes" (RMPs) and funds have been appropriated for both planning and operational grants. Funds cannot be used for the routine or ordinary care of patients, or for the construction of new facilities.

A National Advisory Council advises the Surgeon-General of the Public Health Service on the development and operation of this new federal grant programme. The Surgeon-General, after consultation with the Council, prescribes the detailed regulations to be met by applicants for grants.

The RMPs resulted from an extensive national study carried out by the President's Commission on Heart Disease, Cancer, and Stroke. In the Commission's report published in 1965, the importance of these principal chronic diseases (which caused 70% of all deaths from 1955 to 1964) was amply documented. The first annual appropriation was $55 million, barely a tenth of the amount requested by the sponsors of the legislation.

Organization and operation of the programmes

The RMPs have no relationship with other health programmes authorized and supported by the federal government. Originally they came under the administrative authority of the National Institutes of Health, but were transferred in 1969 to the Health Services and Mental Health Administration, also within the USPHS.

The "region" covered by the programmes is not related to existing political jurisdictions; it may be a part or parts of one or more states. RMPs can include a group of public or non-profit institutions or agencies engaged in research, training, diagnosis or treatment, e.g., large hospital centres, medical schools, affiliated hospitals, other institutions engaged in postgraduate medical training, and primary clinical research centres.
An innovative aspect of the programmes is the provision for financing two types of activities—planning and operational. Upon the recommendation of the National Advisory Council, the Surgeon-General is empowered to make grants for implementing the planning phase of the programmes. The applicant must meet certain requirements, such as the designation of a local advisory group with broad representation of the medical community, voluntary health groups, and members of the public. The legislation provides for grants to finance the actual establishment and operation of RMPs, including the purchase of equipment and alteration of facilities. From April 1966 to September 1969, 55 planning grants and 44 operational grants were awarded. The budget for RMPs was $95.5 million in 1970, but only $70 million for 1971 and 1972.

A variety of RMPs have developed, both functional and geographical. In some instances, several states have combined to operate one RMP; in others, portions of several states or one whole state, or a portion of a state around a large city have become programme areas. A wide variety of organizational structures have developed; in general, the medical schools dominate the RMPs, but in some states, such as Florida, a non-profit corporation has been set up to plan and operate the programme.

It is too early to evaluate the achievements of the RMPs in terms of the original federal goals, but intensive activity is continuing in many of the regions. Some programme directors complain of inadequate funding and of inept co-ordination of federal programmes at the local level; nevertheless, coronary care units are in full operation in many hospitals that had no such units before. Programmes for cancer diagnosis and treatment are searching out persons who previously had no access to highly specialized services. Many continuing education programmes for physicians and ancillary health personnel employ the latest techniques of audio-visual teaching. Innovation in closing the gap between medical knowledge and its application is the major operational objective of RMPs.

COMPREHENSIVE HEALTH PLANNING

The “Comprehensive Health Planning and Public Health Service Amendments of 1966” to the Public Health Service Act \(^1\) contain two major provisions:

\(^1\) Public Law 89-749 dated 3 November 1966.
(1) financial grants to states and local communities for planning, and for the training of planners;

(2) financial grants for comprehensive health services, both state and local.

However, the Amendments specifically state that the proposed services must not interfere with existing patterns of private, professional practice of medicine, dentistry and related healing arts, thus imposing a considerable constraint upon planners even before they started their work.

Grants for comprehensive health planning (CHP) at the state level

Each state must designate a single agency to draw up the health plan. The state agency must be advised by a health planning council, a majority of whose members must be consumers of health services; this consumer provision is a striking departure in federal health laws. The health plan includes both public and private services of all types. The federal share may be up to 75% of the expenditures for planning, but federal funds cannot replace existing state or local funds. Another innovation in federal regulations is that the state plan is to be approved by a regional office rather than the central office of the US Public Health Service.

Project grants for areawide health planning within the state

These can be given only with the approval of the state planning agency. Such grants, totalling up to 50% of costs, may be given to any public or non-profit private agency or organization. Funds may be used for developing regional, metropolitan or other local area plans for all types of health services (including environmental health services). The projects are approved by the regional offices of the US Public Health Service, which set specific programme requirements, particularly with regard to the geographical area covered, the content of the plan, and consumer representation.

Project grants for training, studies, and demonstrations

These may be awarded to any public or non-profit private agency, institution, or other organization to cover all or any part of the cost of training, studies, or demonstrations in the field of CHP; schools of public health and university departments of business or public administration are the principal recipients.

Grants for comprehensive public health services

These general grants replace many grants for specific services (e.g., heart, cancer, tuberculosis, venereal disease) that have been in existence
since 1935. The only stipulation is that not less than 15% of these funds must be spent on mental health. This section of the Amendments was a great step forward in federal health legislation, since it enables the state health authorities to plan more comprehensively to meet health needs and demands according to the state's particular problems, freeing them from the rigidities of the traditional system of funding for specified purposes. The funds supplied can be used by public or private groups and are distributed according to a formula based on relative per capita income and on the state's population; the state's own contribution varies from 33% to 66%.

Project grants for health services development

These may go to any public or private non-profit group to cover part of the cost:

(1) of meeting health needs of limited geographic scope or of special regional or national significance;
(2) of stimulating or supporting new programmes of health services for an initial period;
(3) of undertaking studies, demonstrations or training to create innovations in the provision of health services.

Interchange of personnel

The Amendments provide for the interchange of personnel between the states and the federal government for a period of two years without loss of employment status by the participants. This is an excellent provision, especially for states with limited resources that have difficulty in obtaining personnel to start new programmes or to reorganize old ones.

Grants to schools of public health

The Amendments also provide for continuation of grants for the general support of public and private schools of public health, based upon the number of federally sponsored students in each school.

Partnership for Health Amendments of 1967

The CHP Amendments were themselves amended in 1967\(^1\) to clarify certain issues and to add some new provisions:

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\(^1\) Public Law 90-174 dated 5 December 1967.
(1) to assist each health care facility in the state to develop a programme for capital expenditures for the replacement, modernization, and expansion of facilities;

(2) to provide grants to conduct research, experiments or demonstrations relating to health facilities and services and new careers in manpower;

(3) to improve clinical laboratories through the licensing of laboratories and biological products.

A point of great importance to planners is that the new amendments provide for the evaluation of programmes, by making up to 1% of the funds available for that specific purpose.

Implications of the Comprehensive Health Planning Amendments

The remarkable thing about these Amendments is what they do not say. For example, they give no mandate for a national health policy or plan. The state and areawide planning groups are allowed to go their own ways within the broadest of directions and scope. The Amendments call for a partnership among all participants in the health industry, but do not say what is involved in such a partnership.

It remains to be seen what the CHP Amendments will accomplish in the political and administrative areas, and whether or not a health services system responsive to the demands and needs of the people will eventually develop. There are still many obstacles to comprehensive planning for health at the federal, state, and local levels.

The problem of competing programmes

A question that immediately arises is: what is the relationship between the regional medical programmes and the comprehensive health planning programme? By 1971 some state administrators held the view that the two programmes were competing for the same limited federal funds, were servicing many of the same persons, were engaged in many similar activities, and were increasing the fragmentation of local health activities. Both programmes are regionalized but include different geographical areas. Both programmes need professional manpower, but most of the RMPs can pay higher salaries and are more prestigious because of their medical school and research centre affiliations. Both programmes require basic community health services to provide continuity for their efforts. The administrators and coordinators of both programmes recognize that personal health care (or primary care) by general practitioners is the key to improved health.

In some areas RMPs and CHP are well co-ordinated; in others these programmes are quite separate and in some instances highly competitive. Yet the funds of both RMPs and CHP are channelled through the USPHS and its ten regional offices throughout the country. It must be repeated that there is as yet no comprehensive health policy or plan in the USA; each health programme has a built-in tendency to go its own way.

Changes are in the air, however. Various proposals are before Congress to expand and even combine the two programmes. A law passed in 1970 includes kidney disease among RMP activities. The President is urging that more attention be given to health care delivery systems in RMPs, with the extension of prepaid group practices (known as health maintenance organizations).

Other changes have already occurred. It is becoming more common for people to serve on the advisory committees of both programmes, and in some regions the two programmes are served by one advisory committee. Co-operative information systems for RMPs and CHP are being developed, since two separate systems are wasteful. Nevertheless, the US Congress continues to authorize new sector programmes for measles vaccination, family planning, and drug abuse control.

With the passage of time and the lessons learned from experience, the concept and execution of both RMPs and CHP have altered since their inception. There is evidence of a national resolve to bring the two programmes closer together, both legislatively and operationally. A community-wide approach to personal health problems, environmental hazards to health, and health-related social problems is inevitable. Cost-benefits, efficiency, limited funds, and population coverage are some of the critical factors that could lead to a mandate for a comprehensive health system in the USA early in the 1970s.

OTHER FEDERAL PROGRAMMES CONCERNED WITH HEALTH

Beginning with the Social Security Act in 1935, federal support of health services, both personal and environmental, has encouraged their fragmentation into an amazing number of pieces. Sector-based approaches to financial aid proliferated until 1966, when the Comprehensive Health Planning Amendments brought many, but not all, of the sectors together. Maternal and child health, mental health, hospital survey and construction, and veterans’ hospitals, to mention only a few, remained separate. In 1965, the Social Security Act was amended to provide special programmes for persons over 65 years of age (Medicare) and for persons on public assistance, especially the blind, the
disabled, and dependent children (Medicaid). This meant separate planning for certain population groups, although the main effort of these two programmes was to reduce or eliminate some of the economic barriers to care rather than to organize the services.

**PPBS**

In 1961, the US Department of Defense invited a group of technologists and scientists to try to relate planning to the budget process. Programming was used to bridge the gap between the planners and budget makers. The total process became known as the Planning-Programming-Budgeting System (PPBS), and its use has now been extended to all federal government departments.

PPBS is an ambitious attempt to determine the worthiness of all possible alternative approaches to all possible goals, to determine priorities accordingly, and then to follow through with action. The worthiness is to be determined through cost-benefit analysis, i.e., would the money spent on a given purpose in a given way yield more benefit if devoted to a different purpose or spent in a different way?

Since PPBS was introduced in federal agencies in 1965, however, it has had to struggle to survive in the face of the objections of established administrators, who are suspicious of innovations that attempt to curb their decision-making powers, directly or indirectly.

The principal purpose of PPBS is to improve the basis for making major programme decisions. Data have to be organized on the basis of programmes and must reflect future as well as current implications of decisions. Under PPBS, the review of departmental budgets is conducted primarily in programme terms.

PPBS consists of three basic elements:

1. **Programme memoranda** present statements of programme issues, give a comparison of the cost and effectiveness of alternatives for resolving those issues in relation to objectives, executive recommendations, or proposed programmes, and also indicate reasons for decisions.
2. **Special analytical studies** provide the analytical basis for decisions in the programme memoranda. Studies may cover the budget year or extend into the future. They provide the foundation for deciding major programme issues on a long-term basis.
3. **Programme and financial plans** are comprehensive summaries of agency programmes on a seven-year basis in terms of outputs, costs, and financing needs. This summary is the basic planning document.

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Programme directors have to specify major programme issues that require decisions in the current budget cycle. It is necessary to identify specific alternative courses of action, with their costs and benefits. Legislative as well as budgetary considerations are highlighted.

Responsibilities for programmes involving the same broad health goals rest with several different agencies within the Department of Health, Education, and Welfare, e.g., the Public Health Service, the Social and Rehabilitation Service, the Social Security Administration, the Food and Drug Administration, and the Office of Education. Seven-year plans prepared with the use of PPBS violate traditional organizational lines by establishing broad objectives in health for the whole Department.

It is important that each operating programme should have an information system that will provide “output”, i.e., quantitative statements of programme accomplishments. Unfortunately, good output measures are scarce in the field of health. Frequently it is not possible to define an output, much less to measure it. The big problem is the incommensurability of programmes with different epidemiological characteristics, e.g., breast cancer and schizophrenia, dental caries and water pollution.

In connexion with maternal and child health care, it has been stated that PPBS analysis makes it clear that the application of a comprehensive care programme for children is not feasible, not for lack of money but for lack of physicians, especially paediatricians. This analysis led to recommendations for legislation to provide experimental centres both for care and for the training of personnel in the medical and allied professions. New insight was obtained also into decision-making that considers such factors as the political situation, the rate and amount of spending, and the ability to persuade people to follow programmes to improve their health.

Many legislative leaders, both in the federal and state governments, have voiced objections to the use of PPBS in health and other fields. Professional groups, particularly clinicians, have disagreed with many of the analyses made by the planners who use PPBS.

The success of PPBS in the health field has been limited; it is difficult to teach entrenched “bureaucrats” new ways of performing their tasks. The deficiencies always seem more tolerable than the changes necessary to correct them.

In the 1960s federal legislators introduced and passed a variety of legislation directed at special interest groups and special problems, I


but not on the basis of a national policy or plan. In 1971, confusion abounded in the federal and state health structures and functions. Special laws were passed for community mental health centres and health services for children and youth. The National Office of Economic Opportunity was established to help impoverished groups in urban and rural areas. This Office makes federal funds available for widespread experimentation in the development of "neighbourhood health centres", the planning of which is unrelated to the Comprehensive Health Planning Amendments of 1966.

At the state and local levels, social service and educational bureaucracies control sizable resources of money, manpower, and facilities assigned to health. Powerful state departments prefer to do their own planning and do not willingly give up status, prerogatives, or funds. Large enterprises, both public and private, concerned with housing, transportation, communication networks, agriculture, and urban development, independently determine their direct and indirect allocations of resources for improving the health of the community. The private practitioners of medicine and other healing arts and their organizations also have considerable power to influence the delivery of health services.

How can planning be comprehensive and carried out expeditiously when the state and areawide planning agencies have no power to cope with this array of conflicting forces? This is the problem that besets comprehensive health planners in the USA today.
CHAPTER 8

HEALTH MANPOWER PLANNING IN PERU,
TAIWAN, AND TURKEY

THE ROLE OF MANPOWER PLANNING

Ideally, as has been pointed out in earlier chapters, health planning should be integrated into broad socio-economic planning for a nation as a whole, within the context of activities in sectors such as agriculture, education, and industry. Within health planning itself there are a number of subsectors, e.g., manpower planning, planning for facilities and equipment, and organization planning, all of which are interdependent. It is not always possible to draw sharp dividing lines between the sectors of national socio-economic planning; agriculture and health obviously overlap in the area of nutrition; and education affects the utilization of health resources. The same is true of the subsectors. Planning for the location of facilities can profoundly affect the distribution of manpower and the organization of services, and *vice versa*.

Despite this interdependence, planning for education is no substitute for planning for health, and facilities planning is no substitute for manpower planning. The proper relationship of health manpower planning to overall health planning must be recognized, as must the relationship of overall health planning to national socio-economic planning.

It is rare that sufficient resources are committed to allow health planning to advance on all fronts simultaneously. However, because of extensive interdependence it is quite feasible to approach planning of the health sector with considerable breadth—although not comprehensively—through one of its subsectors. Thus health manpower planning may move deeply into questions of financing and organizing health services. Similarly, central problems of health planning can be approached from the standpoint of financing or of organization. The subsector approach is a practical expedient that has been adopted in a number of countries. Manpower has often been chosen as the principal focal point of such studies because of the critical importance of manpower problems in health planning.

There are no precise criteria for determining what health manpower
planning should encompass and what problems it should try to solve. There appears to be agreement that it should include an examination of the existing supply of health workers, the sources of supply, and the prospects for future supply. Beyond this, policy questions arise that may or may not lie within the purview of a manpower study. To begin with, a planner needs to know what the health problems are in order to set goals and to plan solutions. Although it may be conceded that planners do not set goals themselves but only make recommendations to political authorities, planners still need some guides to enable them to proceed with their work. The extent to which manpower planners should participate in health goal-setting processes would appear to be affected by the amount of other planning machinery that exists.

Similarly, the reorganization of health services involves not only means but also ends, or goals. It is virtually impossible for manpower planners to avoid organizational questions. Manpower specialists usually delineate two major dimensions to manpower problems: (a) supply, which concerns the number of available workers having various kinds of skills; and (b) organization, which concerns the distribution of workers, the distribution of tasks among workers, and their interrelationships. One of the manpower studies discussed later in this chapter indicates the importance of the organizational dimension as follows:

The greatest hidden resource in manpower planning is to improve utilization and productivity, especially by improving the balance between professionals and auxiliaries.¹

Reorganization affects the location and construction of service facilities, financing mechanisms, and other parts of health planning that are not ordinarily the principal concern of manpower planners. For this reason, and also because reorganization will probably affect goals, responsibility for decisions about reorganization should rest with a higher authority. However, there is no reason why a manpower group should not also be asked to consider organization, an important dimension of manpower. Moreover, the findings of manpower and other subsector planners are of considerable relevance to the decision-making process of the overall planner. In determining the breadth and depth of a manpower study, the essential thing is to ensure that the study fits in as well as possible with other planning activities.

What should be the scope of health manpower planning where no overall health agency exists? Again, planners must have some goals

to aim at, and if none are provided by higher agencies the manpower planners must develop their own. Although it is possible to conduct manpower planning without information about organization and financing, such efforts are likely to be sterile; terms of authorization should take this into account.

Preparation for providing manpower is the most difficult part of this type of health planning. Manpower consists not only of people, but also of knowledge and skills acquired through education and training. The difficulty arises from the long "lead time" required to bring about changes through such education and training. The education and professional preparation of physicians takes about 20 years. Moreover, the medical schools necessary to produce doctors require large sums of money and take a long time to reach full operational effectiveness. "For a profession such as medicine, even a ten-year planning period is insufficient. Decisions made in year one can begin to affect supply only by year eight or nine." ¹

Physicians are key personnel in the health field not only because they possess the crucial skills in the medical sciences but also because of their central role in determining how efficiently, and to what ends, health services are rendered. Manpower studies in Turkey and Taiwan reveal that doctors waste much time doing work that could well be delegated to nurses and others. In Peru and Turkey there are great shortages of preventive and curative services in rural areas and surpluses of private doctors in urban areas. Doctors' attitudes and values are clearly of the utmost importance in shaping the delivery of health services. Indeed, the willing support of doctors is essential to the improvement of medical care systems.

It is not possible to lay down a set of specific instructions telling a health manpower planner how to go about his work. It is possible, however, to describe the steps that have been taken by other planners. Three manpower planning studies are considered in detail in the following pages. The steps are essentially the same, although there are variations in the sequence and in the manner of approach. Briefly, each study reflects the following pattern.

Assessments are made of existing demand for some base period and of the supply of health manpower. Both these assessments examine the distribution and character, as well as the quantity, of demand and supply. The productivity of health workers is also considered in order that supply may be viewed in terms of services rather than of personnel, The sources of supply, i.e., the educational institutions preparing doctors,

nurses, midwives, and others, are studied from the standpoints of productivity, quality, and cost. Demand is projected for a period of 15–20 years; supply is projected for the same period. Alternative projections are made according to different conceptions of demand and the costs of different supply levels, or because of alternative supply policies. The studies conclude with comparisons of projected supply and demand, which reveal gaps, surpluses, and priorities; policies are recommended accordingly.

THREE STUDIES OF MANPOWER PLANNING

The Division of International Health of the School of Hygiene and Public Health of Johns Hopkins University, with the financial support of the US Agency for International Development, has conducted health manpower studies in three developing countries, with the primary aim of developing methodology for health manpower research. The study of health manpower in Taiwan began in 1962.¹ A co-operative project with the Ankara School of Public Health, under the Ministry of Health of Turkey, started in 1963.² The third study, also begun in 1963, examined health manpower in Peru with the co-operation of the Health Sector Planning Office of the Peruvian Ministry of Public Health and Social Assistance.³ The three studies, which were carried out by members of the same academic institution, have a common intellectual structure and approach. They offer useful comparisons because they apply a basically common methodology to countries with different problems, where planning is at different levels of advancement and where there are variations in the amount and quality of available data.

An interesting pilot study on health manpower and medical education, not discussed in detail in this chapter, was carried out in Colombia from 1964 to 1968 with the joint support of the Ministry of Public Health, the Association of Colombian Faculties of Medicine, the Pan American Health Organization, and the Milbank Memorial Fund.⁴ The study encompassed the whole spectrum of health. It undertook to relate health manpower to an educational system for professional health workers, to a delivery system for health services, and finally to the social and economic development of the country.

The study illustrates the intricacies of health planning and manpower planning when the political and administrative aspects are considered as well as the technical aspects. At this stage of our knowledge of health manpower methodology, research is still the dominant activity. There is still plenty of room for innovations, new patterns, and a variety of approaches.

Types of demand

Central to the thinking of the Johns Hopkins group is the idea of demand. Demand comprises the desired character and amount of services to be rendered by health manpower. In other words, it specifies the manpower goals. The studies discuss a variety of concepts of manpower demand, two of which are of importance to this discussion.

(1) Biological demand. This is ascertained by conducting a survey of the mortality and morbidity of a country and determining the numbers and types of health workers needed to provide optimum management of each disease found. The authors of the three studies recognize that biological demand is relevant for health planning purposes, since services cannot be planned unless the health problems are known. However, they do not accept it as the sole basis for determining the services to be provided, on three counts: (1) no country has the capacity to gather the necessary data on every disease afflicting man; (2) it is by no means clear how each disease should be treated, if at all; and (3) there is no point in planning for a service that a society does not want and will not pay for; societies often do not want what is biologically good for them.

(2) Effective demand. This is what people will pay for, whether it is good for them or not. This concept clearly springs from economics and is closely related to the idea of people making their own choices in the market place. However, in some countries extensive purchases of health services are made not by individuals but by governments. This too is included in effective demand.

In using biological demand, planners must consider whether the funds will be available to pay for the services recommended; this is a critical issue. In using effective demand alone, the funds are available by definition. (It appears that any demand base used for health planning must consider both biological and effective demand, and, moreover, that all types of demand are ultimately reducible to these two). Effective demand was used as the planning base for the Taiwan study (where it is

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1 Baker & Perlman, op. cit., pp. 112-115; Hall, op. cit., p. 38; Taylor et al., op. cit., p. 227. See also Leo, R. J. & Jones, L. W. (1935) The fundamentals of good medical care, Chicago, University of Chicago Press.
called "economic demand"). It is also an important component of the planning base for the studies in Peru and Turkey.

**Determination of demand**

The Peru study explicitly recognizes manpower-to-population ratios as a method of determining demand. This method has often been used to gauge how many doctors or nurses are needed in a given community. The author points out that the acceptance of a particular ratio gives no assurance that it is justified or that personnel are appropriately distributed. With the warning that such ratios are used as the basis for providing the right mix of doctors, nurses, technicians, and auxiliaries, the author includes manpower-to-population ratios in a pragmatic balance, together with effective and biological demand, for use in demand analysis.¹

This study reflects the Peruvian health planning orientation to the PAHO-CENDES Method, which is based largely on the concept of biological demand (see chapter 6).

The technique used for establishing existing demand in the Turkey and Peru studies is to be distinguished from that used in Taiwan. Existing demand was considered to be all existing personnel and facilities (met demand), plus any known shortages (unmet demand). Unmet demand was determined by counting the number of budgeted but unfilled posts. It is explained that in Turkey a post may not be budgeted unless the necessary funds are available. However, the Peruvian study suggests that the procedure underestimates the demand for nurses, since more nursing posts would presumably be budgeted if people could be found to fill them. Since budgets relate only to governmental and institutional posts, this procedure is not applicable to private practice areas.

Consistent with its adoption of the concept of effective demand as a guiding principle, the Taiwan study does not recognize unmet demand. If the demand is not met, it cannot be effective. Budgeted vacancies are not counted, for they represent an inability "to meet the estimated need by providing adequate salaries".²

In each of the three studies, enumeration of the existing supply required extensive surveys. Nationwide censuses of all health workers, involving the use of repeated waves of census takers, were conducted in Taiwan and Peru. Mail questionnaires were among the techniques used in Turkey to compile information on doctors. To ascertain the

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¹ Hall, op. cit., pp. 42-44.
² Baker & Perlman, op. cit., p. 4.
unmet demand for hospital beds (and the personnel needed to man them), the geographical distribution of hospital beds was examined; a minimal norm was then established, and the number of beds and personnel needed to supply all areas of the nation with enough beds to meet that norm was calculated.

The future manpower demand for Peru was determined largely by the national Health Sector Planning Office at the request of the national agency in charge of economic and social planning. In 1966 the Health Planning Office prepared three alternative projections of manpower demand to the year 1985, on the basis of estimates of population increase. The socio-economic planning office adopted the intermediate proposal, and this was used by the manpower planners as a point of departure for their study.

The projected demand was represented as numbers of services—hospital discharges, doctor visits, dentist visits, immunizations, and percentages of the population provided with potable water and sewage facilities. Staffing standards—indicating the manpower hours of various kinds of personnel needed to provide each service—were developed by the Health Planning Office, and costs were computed. This follows the PAHO-CENDES Method. The private sector was expanded proportionally so as to maintain the existing ratio between public and private hospital beds (6.5: 1) and between public and private physician time (2: 1).

After some consideration of this demand projection, doubts were expressed as to (1) whether Peru could increase the proportion of its gross national product devoted to health from 4.2% to 5.5% by 1984, which the projection would require; (2) whether the country could train manpower fast enough to meet the demand; and (3) whether the additional resources would actually be utilized (for example, a threefold increase was called for in rural areas). As a result, an alternative demand projection was made, in which the amount of public sector hospital care and doctor visits was slightly reduced. It was estimated that this new projection would cost only 5% of gross national product in 1984.

The Turkey study argues for the recognition of "administratively and technically feasible demand" as distinct from effective and biological demand. It notes that what should be done in health care often cannot be done because it is not technologically or administratively feasible. (Such difficulties appear to be constraints upon meeting demand rather than manifestations of demand. For example, it is in no sense true to say that there is greatly limited demand for handling drug-dependence problems in the USA, even if the technology for handling these problems is greatly limited. It would be more accurate to speak of biological and effective demand that is attainable, given technical and adminis-
trative feasibility.) The authors of the Turkey study state that they have discarded biological demand, and chiefly use “technically and administratively feasible demand” and “effective economic demand”.

The Turkey study projected future demands according to three different sets of guidelines. First, a minimum projection was drawn up for the additional health manpower needed to maintain the present manpower-to-population ratio as the population increases. This was intended primarily to keep the ratios of low-priority categories from becoming too lean; the enriching of ratios of high-priority categories was left to the other projections.

The second projection was based on standards set by a programme to nationalize the health services, which was inaugurated in 1961 and is scheduled for completion in 1977. The programme specified the numbers of health facilities and personnel to be provided on a regional basis throughout the country. It is maintained largely at government expense, emphasizes health centres, and is being instituted first in the more rural areas. Turkey has a severe shortage of nurses, so additional projections were drawn up to improve the bed-to-personnel ratios of nurses and nursing aides for all institutions, including those not covered by the nationalization programme.

The third projection, and the maximum one, was of manpower-to-population ratios recommended for use in Turkey by WHO.

It is interesting to consider the demand projections for Peru and Turkey in the light of the earlier discussion of the scope of manpower planning. Demand analysis indicates to health planners what their goals should be. In each of these countries the manpower planners relied largely upon other authorities for these determinations. In Peru the national Health Sector Planning Office provided the initial targets for services, although the manpower planners reduced these slightly in the light of cost projections to develop an alternative set of targets. In Turkey, beyond the minimum goal of preserving existing manpower-to-population ratios, the manpower planners relied for their targets upon WHO experts and the designers of the nationalization programme, although they did prepare alternatives for nursing services. This is not to infer that the planning goals did not meet the tests of demand analysis prescribed by the manpower planners.

In contrast—whether by some official authorization, implicit policy agreement, or autonomy of the manpower planners—the Taiwan study is relatively self-contained. Once effective demand is accepted as a base, the succeeding steps follow automatically, and there is no room for further intervention by varying sets of assumptions. This statement can be clarified: if planners use a mix of biological and effective demand, the relative importance of each must be determined pragmatically.
Such value judgements will have policy implications, and provide a justification for turning to some authority more accountable for policy, such as the National Health Planning Office in Peru. On the other hand, biological demand must deal with varying states of health and the value of treatment and is less quantifiable than is effective demand, which can be expressed in precise monetary terms. Biological demand therefore involves more assumptions and provides more reason for turning to outside experts than does effective demand.

In Taiwan, important policy decisions were involved in the adoption of effective demand as an analytical base. Such decisions must have been based on the conclusion that the health services were reasonably satisfactory, since any plans for the improvement of consumption patterns would have involved biological demand. Where no change is contemplated, effective demand would appear to suffice. Projected effective demand is that future demand for which payment can be expected. If the present population pays for services in a given pattern, future patterns may be expected to differ only in proportion to changes in the population. Essentially the Taiwan study preserves the status quo, changing services only to accommodate population growth.

No health planning study can afford to ignore biological demand completely. In the Taiwan manpower study, a number of tests were run to determine whether this demand could be omitted from the projection of future demands. The distribution of health manpower was found to be superior to that of many countries. For example, there were not the gross disparities of facilities and personnel between rural and urban areas that were found in Turkey and Peru. The study found that the primary reason why people go to doctors is because they are ill (biological demand), economic ability to afford care having only a secondary effect. It was also concluded that disease patterns would not change sufficiently to affect the existing patterns of health manpower consumption over the next two decades. On occasion the authors of the study deserted effective demand and called for change, as for example when they advised that preventive medicine should be given increased emphasis in the training of health personnel.

Private sector physician demand for Taiwan was projected from 1963 to 1983 by a highly sophisticated statistical process. A sample of approximately 5000 persons were asked how many times in the last month they had visited a doctor. Their answers were analysed according to a number of variables, and it was found that the chief characteristics associated with doctor usage were, in order of importance: (1) age, (2) economic status, and (3) whether the person lived in an urban or rural area. No correlation was found for sex or level of education. Population projections to 1983 were then prepared to estimate the shifts
in age groups, economic levels, and rural-urban distribution. The last factor proved to be negligible and was omitted from further calculations. The sample was then divided into groups defined by age and economic levels, the rate of doctor usage for each group was computed, and these rates were multiplied by the estimated future populations in the corresponding groups.

Population projections were made for both a low increase (49%) and a high increase (69%). Assuming the high population increase, the results indicated a demand for 9,800 doctors in 1983. The authors report that the use of an undifferentiated population increase would have indicated a demand for only 8,300 doctors. However, demands for midwives, dentists, and other health workers in the private sector were projected according to undifferentiated population increases.

The public sector in Taiwan is not large and consists almost entirely of institutional services such as hospitals and health stations. Private hospitals were grouped with public ones for the purpose of manpower demand projections. With minor exceptions, the projections were the numbers of personnel necessary to preserve the existing bed-to-personnel ratios. Exceptions were based on the assumption that the ratio of doctors in health stations and of nurses in certain classes of hospital would improve.

Projections of supply

"The supply of health manpower at some future point in time is composed of the supply at the starting point, plus increments to supply during the intervening period, minus losses." ¹ The supply at the starting point for the Taiwan study was the same as the demand. For the other two studies it was total demand minus unmet demand.

For all three studies the increments to supply were, with the exception of a small number of immigrants, the graduates of local educational institutions preparing health workers. Enumerations of graduating classes are therefore of importance. In the case of Turkey, alternative projections of the supply of doctors were prepared to estimate the results of (1) changing the educational policies of existing medical schools so as to reduce dropout rates and repetition of courses, and (2) proceeding with the proposed establishment of five new medical schools.

The calculation of attrition rates proved hazardous because of the absence of reliable data. In Turkey and Taiwan, estimates were compiled of the death and retirement rates of doctors and of the proportions leaving to practise elsewhere. The migration of Turkish physicians to the Federal Republic of Germany and of Taiwan physicians

¹ Hall, op. cit., p. 8.
to the USA are serious problems. The Peruvian planners despaired of finding enough satisfactory data to calculate attrition rates in this way, especially in view of the additional complication of personnel, particularly pharmacists and dentists, leaving their profession for other work.

The Peruvian approach was to determine the proportions of each manpower category licensed during each preceding decade who were still found active in the census conducted to determine the present supply. This established a "loss per decade" that subsumed losses through death, retirement, or any other cause. The loss per decade could then be applied to licentiates of any profession of any decade. In Peru—and Taiwan as well—younger personnel are more likely to leave the market than older ones. Because of this, a more discriminating alternative was developed on the assumption that some health workers who left their profession because of insufficient employment opportunities or to study abroad would return to active practice. Having gone this far, the Peruvian planners took another step and prepared a schedule that assumed that no graduates would leave their practices and that the only attrition would be from death and disability. This had the advantage of showing what supply would be under conditions of full utilization. Thus there were three alternative projections of supply in Peru.

For estimating the supply of nurses, the Turkey study undertook to determine not the attrition rate but the accretion rate, showing the increasing numbers of practising nurses from 1928 to 1964. To maintain the growth rate, regarded as a minimal requirement, the numbers of graduates would have to be increased. An alternative projection was therefore prepared indicating the amounts by which the schools would have to increase their production of nurses.

Comparison of projections and consideration of policies

The "pay-off" of manpower studies comes when the supply and demand projections are brought together for comparison. At this juncture the planners look at how many doctors, nurses, pharmacists, midwives, and others there will be at some future date under current rates of production, and also under alternative rates of production. They then compare these supply projections with the numbers that will be needed, possibly also under alternative patterns of demand.

It should be noted that manpower planners make many tangential observations in the course of their work. The findings of a manpower study are rarely expressed only in quantitative terms; some of the recommendations are not quantitative at all, but judgemental and qualitative. For example, both the Peru and Turkey studies show great concern about the education of physicians:
There is a growing concern as to whether the medical schools are producing the type of physician needed for Peru. These doubts center on the emphasis currently being placed on the medical student's scientific and technical background. Unless this is matched by comparable improvement in the way students are prepared in the social and preventive aspects of health care, young graduates may have a "trained incapacity" to meet their country's most pressing health needs.\(^1\)

A number of important ancillary studies were carried out in the course of the three investigations. An attitude survey of medical and paramedical students conducted in Taiwan indicated, among other things, that there would be an increasing inclination for young doctors to practise in urban areas. In Turkey, psychological tests—a rural thematic apperception test and a story completion test—conducted on a sample of physicians revealed a correlation between experience in rural areas and understanding of public health.

Cultural attitudes about professions are of great importance in manpower planning. The studies raise some interesting questions on this subject. In all three countries doctors outnumber nurses substantially, leading to a waste of physicians' time. In Taiwan and Turkey the small numbers of nurses are apparently associated with tendencies of doctors to look upon nurses as servants, but this did not appear to be a factor in Peru.

In addition to quantitative measures of supply and demand, many social, cultural, and psychological factors are given consideration in health manpower planning. The results consist partly of policy recommendations arising from the examination of an extremely complex mixture of factors, partly of policy considerations that do not reach specific recommendations. Many alternative choices may be presented for consideration to the political authorities empowered to make final decisions. However, these choices can be made on the basis of improved understanding because the planning has revealed many of their implications.

What kinds of recommendations and policy considerations does manpower planning have to offer? The most obvious, judging from the three studies considered in this chapter, have to do with the educational institutions producing health workers. The educational institutions constitute a major channel for bringing about changes in manpower, for two reasons. The first is the simple question of quantity: if more or less personnel are required, the educational institutions are the sources where adjustments must be made. The second is that the educational institutions are the most important mechanisms for teaching new

\(^1\) Hall, op. cit., pp. 193-194.
attitudes and new organizational techniques, where these are called for.

The Peru study proposed alternatives for increasing the numbers of doctors by projecting supply at moderate and at rapid growth rates. Because of the long time-lag inherent in changing physician output, the latter option would demand prompt action. The timing for increasing medical school enrolment and for opening new schools to meet each of the projections was worked out. Then the caveat was offered: "A decision to adopt the higher physician target should be taken only after a careful consideration of the costs".¹ Not only the educational costs were involved, but also the costs of maintaining 900 additional physicians once they had graduated; moreover, the nurse-to-doctor ratio would be made even worse.

This study in Peru posed no alternatives, but made a straightforward recommendation concerning the quality of physician education. After discussing the "trained incapacity" of Peruvian doctors in social and preventive medicine, it stated: "Students and faculty both must be involved in the problems of the community".² Similar recommendations were made in the Turkish study.

The recommendation of the Turkish study concerning nurses is instructive. For the sake of achievable realism, it reports, the demand was set at a low figure. Even so, production of the numbers of nurses needed would require not only the opening of new schools but substantial changes in school utilization and educational policy. Finally it was noted: "These projections will have meaning only if positions are created in the health services which provide nurses satisfying work opportunities and remuneration".³

With regard to the supply of physicians, a major recommendation of the Turkish study was to increase the productivity of the medical schools by reducing the proportions of students who repeated courses or dropped out. This was to be accomplished by more careful screening of applicants.

The Taiwan study, after comparing demand and supply projections and finding an impending severe shortage of physicians, listed a number of courses that the authorities might follow: they might do nothing, in which case "the public would get worse care for the same price". They might empower a commission to supervise the expansion of medical education capacity; this should mean that "the public would get better care for the same price". The study criticized as "shocking" the tenfold

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¹ Hall, op. cit., p. 193.
² Hall, op. cit., p. 198.
³ Taylor et al., op. cit., p. 284.
differential it discovered between the incomes of private practitioners and government doctors working in health stations. It proposed that compulsory military service for physician graduates of the National Defense Medical Center be reduced from 10 to 5 years; the Center had been operating below capacity.

The importance of the organization of health services has already been pointed out. By and large, the studies on Peru and Turkey did not call for departures from existing policies on organization. They recommended some changes, but were largely in line with policies that had already been adopted, although not yet implemented. In Peru the proportions of services in the public and private sectors for which planning was to be carried out were determined by policy of the Health Sector Planning Office. The planning decision as to what the proportions of physicians, nurses, pharmacists, and other health workers should be, i.e., the appropriate mix of personnel per “instrument” (hospital bed or health centre visit), was initially made by the Health Sector Planning Office. It was modified slightly by the manpower planners to produce an alternative demand projection.

In Turkey, the political leadership had already decided to reorganize and expand the health services, and the study referred to in this chapter aimed largely at helping with the implementation of this policy. It recommended steps for more vigorous implementation, for example, a period of compulsory public health service for all medical graduates.

The Taiwan study made no proposals for drastic revision of the way health services are rendered. However, it did make one recommendation that could, if implemented, constitute a significant change. Its projection of nursing supply indicated that there would be more nurses than the market, as then constituted, could accommodate. The study proposed that the authorities explore ways to induce private practitioners, who almost never employ nurses in their offices, to do so for the purpose of increasing physician productivity.

It is reasonable to ask whether, in the three studies under consideration, health manpower planners helped to clarify or determine policy. No full answer can be given without follow-up studies to determine the extent of the implementation of the plans. However, it is noted that the planners relied quite heavily upon other authorities. As to the means of meeting demand, the studies recommended considerable changes in policy on the education of health personnel. Regarding the organization of health services, by and large the studies called only for changes that were in line with existing official policy.

This discussion of the kinds of recommendations that can arise out of health manpower planning should not be closed without mentioning
one recommendation that clearly recognizes the importance of politics to planning. The Peru study proposed that the health schools, professional associations, and other groups interested in health manpower planning should join forces, organize, and engage in political activity to influence legislation for the improvement of health manpower. This practical recommendation is applicable to all health planning.
In both developed and developing countries there is an increasing tendency for health planners to use quantitative methods in their work. The social sciences have been seeking to adopt the quantitative, mathematical approach of the physical sciences, and there is a general desire among planners—especially economic planners—to think in terms of mathematical models and operational research:

It is only when we start counting and measuring that we give ourselves a reasonable chance to reduce the confusion, to make explicit our assumptions, to clarify the processes by means of which conclusions are reached, and to verify these conclusions by references to observed data in the real world.¹

The computer, which has brought within reach a vast number of investigations that previously were not feasible, will come to play an increasingly important role in health planning in the future. Two different types of computer usage are of particular importance: (1) the broad area of data processing, and (2) the scientific and mathematical analysis of complex health problems and operational activities.

As Bailey points out, operational research today “is both a general attitude to the use of scientific methods in administration, and also a collection of useful mathematical and computational techniques”¹, i.e., queueing theory, linear programming, stochastic models. He suggests that although there is a tendency to think that these types of sophisticated techniques are applicable only in the most developed countries, it is actually in the developing countries with political, economic, and social difficulties that there is the greatest need to achieve the best possible allocation of scarce resources. The most urgent problem is not so much to find a mathematical or computer technique that will tell administrators and politicians what to do, “but to devise predictive methods, based on appropriately constructed mathematical

models, that will tell the administrators and politicians the probable consequences of each of a number of clearly specified alternate strategies".1

Operational research is already an important function in a number of health departments. Thus, the Department of Health and Social Security in the United Kingdom carries out a considerable amount of research into the need for and efficient use of its health services. The research is almost entirely extra-mural, and is carried out under contract, since investigations concerned with the provision of health services must generally be performed where the services are being provided. Participation of local people is also desirable. Under the auspices of the Nuffield Provincial Hospital Trust, pioneer work in this field was undertaken on appointment systems.2,3 Efforts to define needs for hospitals continue to influence planning.4,5

Stringer believes that the present widespread support for a unified administrative structure for health services in the United Kingdom will bring a need and opportunity to plan in a fuller sense than hitherto. He suggests:

Planning is still based on arbitrary standards of provision of means, which limits the scope for considering alternatives. Models such as I have described can help select efficient alternatives; epidemiological and demographic knowledge help us understand the problem in the population.6

He also believes that the immediate task for operational research and health services planning should be concentrated on (a) the referral process, (b) public education in the use of health services, (c) manpower planning, and (d) a technology of planning involving public participation.

Operational research methodology, e.g., cost-benefit analysis, PPBS, and programme evaluation and review techniques (PERT), is increasingly being utilized in France, although it is still in its early stages.

Since 1968, WHO has been developing a research programme on the organization and strategy of health services. It was felt that further research could take either of two directions: (1) investigation of individual aspects of the planning process in the hope of fitting the pieces together, or (2) investigation of an entire functioning planning system. The

second of these courses was chosen for the WHO programme, which will use a multidisciplinary approach that is not limited to the classical epidemiological approach, but is based also upon systems engineering and operations research. The project proposal included a three-phase programme:

(1) Observation, description, and analysis of a functioning regional health system in a developing country to determine the adequacy of current health planning methods, and to identify potential sites for improvement;

(2) Research and development to improve health planning techniques that can be productively adapted by health planners in developing and developed countries;

(3) Innovation and evaluation: investigation of new methods for facilitating the adoption and use of new planning techniques in planning systems; emphasis during this phase will be on evaluating planning interventions in order to extract planning principles and to establish guidelines to improve health planning in other localities.

The study would need to be adequately funded, and should extend over 5–10 years.

To obtain the knowledge and resources necessary for adequate investigation of the relevant aspects of a health planning system, it was necessary to create a partnership of local, national, and international organizations and institutions concerned with administration and research. An area of Colombia, including the Department of Valle and the Municipality of Cali, seemed to meet all the administrative, financial, and research requirements. Early in 1970 WHO, the Pan American Health Organization (PAHO), and the Government of Colombia negotiated a contract for a joint project to be developed primarily, but not exclusively, in the State of Valle. Introductory studies in planning methodology were already in operation before the project officially started on 1 July 1970.

The project will be carried out by a team of full-time research workers from WHO and Colombia. Foreign research groups and institutions will be invited to undertake special studies within the overall research project. Methodological studies and basic studies in urban and rural ecology were being developed in 1970.

One problem to be faced is the strong commitment of the Valle Public Health Department to the PAHO-CENDES Method of Health Planning. Moreover, PAHO has already invested considerable resources in the Pan American Health Planning Center in Santiago, Chile, which is already changing the direction and content of its programme, both in services and research.
There are still a number of problems to be solved with regard to co-ordination, communication, and interrelationships between the many individuals and organizations involved. The head of the planning research team and the executive officer of the project will have to exercise considerable skill in the political, administrative, and technical areas. The progress and results of the project will be awaited with keen interest by all health planners.

In the USA, the expansion of the use of operations research in health services has been particularly noteworthy. An enormous literature has already developed in the field of hospital planning and methods of estimating hospital bed requirements, and the literature on operations research and the use of mathematical models in health delivery systems is steadily growing.

It is evident that more and more attempts will be made to formulate the basic purposes of health care systems and to develop quantitative approaches to comprehensive health planning. Planning "is always one of several input-output processes, i.e., processes that receive some inputs from themselves or from other processes, and produce one or several outputs". As Correa has pointed out, health services are an example of an input-output process, the output being health, the input being physical and human resources. This raises two main problems: (a) the optimum allocation of resources, and (b) the integration of health planning with other types of planning. Correa argues that this basic similarity between health and other planning should make it possible to construct fairly simple mathematical models—particularly to deal with the measurement of the health output. He attempts "to set a conceptual basis for health planning by itself". Unfortunately, although a theoretical approach is intellectually rewarding, it is difficult to see how the simplistic models suggested by Correa would be of any assistance to most health planners. Other attempts are also being made at setting up mathematical models for planning. However, Myrdal writes:

From the planning point of view the effect of any particular policy measure in the health field depends on all other policy measures and is, by itself, indeterminate. This means that it is impossible to impute to any single measure or set of measures

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4 Navarro, V. & Parker, R. (1967) A planning model for personal health services, Baltimore, Johns Hopkins University, School of Hygiene and Public Health.
a definite return in terms of improved health conditions. A generalized model, in aggregate financial terms, visualizing a sum of inputs of preventive and curative measures giving rise to an output of improved health conditions, cannot be of any help in planning.  

A different type of model is suggested by a member of the WHO group. It is descriptive, attempting to outline the desired and necessary characteristics of an effective system in health planning. It indicates the functions that such a system should be able to perform, and the methodological tools required to carry out those functions. It will be interesting to see how the model is applied under field conditions in Colombia.

In another approach, Friedman defines planning as the guidance of change within a social system. He presents a conceptual model and derives hypotheses as a means for ordering the data of empirical research with planning processes. According to him, the idea of planning involves a confrontation of actual with intended performance, and the application of controls to accomplish the intended performance when it is not met.

In the immediate future there will probably be more and more studies attempting to arrive at an integrated concept of planning so that planning decisions made in one functional area (e.g., health) will be correlated with those of other areas.

Under the systems concept, the planning process is considered as the vehicle for accomplishing change in systems. Most of the techniques used in systems analysis are of recent date and have not been applied to health, but there can be little doubt they will be utilized to an increasing degree in the health field.

It should, however, be kept in mind that the above approaches are all based on the idea that planning should be as rational as possible—that the more scientific the methods, the better will be the planning. But as Kahn points out, there are, and will continue to be, constant attacks from those who say:

Reality is too complex to be encompassed by a comprehensive planning effort. Planning is irrelevant in a world of political power struggles and decisions by bargaining.

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Modest, pragmatic strategies which involve seizing opportunities are more relevant than rational frameworks.¹

One response of social scientists to rational planning has been "disjointed incrementalism", a term and strategy suggested by Dahl & Lindblom.² The situation has been summed up as follows:

Charles E. Lindblom, the leading skeptic, has concluded that rational decision-making, as it has commonly been understood, is not possible. He declares that men do not guide their work by fully-developed designs, drawn up after complete examination of facts and comparative analysis of all alternative means. Instead, he argues, they take only small steps, each involving only slight change from the past and affording ready retreat to the previously-existing status should that prove desirable. The decisions leading to these steps are based upon partial perspectives growing out of information with which the decision-maker is already familiar, and upon thinking that is customary to him. The steps are successive, unsure increments of change unguided by long-range goals... rather than decisive steps toward future goals of production. They involve more trial and error than design.³

This brings the planner back again to pragmatism, but must planning be either wholly rational or wholly pragmatic? To repeat what was said on page 11, "the problem appears to be to determine what pragmatic planning can do best, and what non-pragmatic planning can do best, and create the optimum mix".

Even though the world is full of examples of the great influence of political power struggles and decisions by bargaining, many experienced planners do not believe that planning is truly irrelevant. To Kahn, the future will not call for the abandonment of planning to politics, but rather for the inclusion of political variables among the variables relevant to the choice of policy, the definition of tasks, and the allocation of scarce resources.⁴

Finally it may be added that it is possible not only for political considerations to be included in planning, but also for planning considerations to be included in politics. To reaffirm what was stated in the introduction (page 10), health planners have a contribution to make to the political decision-making process.

It is hoped that this brief description of health planning in a number of different countries throughout the world will assist health administrators to understand, accept, and use the planning process. Each country

⁴ Kahn, op. cit., p. 339.
has its own approach to health planning because of its cultural, demographic, and epidemiological characteristics.

Taking these characteristics into consideration, health administrators in a country or area will wish to make their own choice from the variety of planning processes available. When the choice has been made, a particular planning process can be pursued in depth by studying the literature referred to in the relevant chapter of this book. In this way, the health administrator can give proportionate weight in his decision-making to the political, technical, and administrative aspects of health planning for a particular time and place.