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AN ANALYSIS OF THE COLOMBIAN PUBLIC HEALTH SECTOR

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AN ANALYSIS OF THE COLOMBIAN PUBLIC HEALTH SECTOR

PART ONE - FOREWORD

This is the first analysis of the Colombian health sector attempted by the USAID Mission to Colombia. It is based largely on the Colombian Government's own "diagnosis" of and "prescription" for its public health system, whose infirmities the Government bluntly acknowledges. Despite heavy reliance on the work of Colombian health planners, this is our analysis; we have had to interpret much of the material by our own lights and we offer value judgments which, hopefully, are neither pretentious nor excessively misinformed.

Beyond the invaluable contribution of the Colombian planners, we have benefited from brief advisory visits by a specialist in hospital planning and a nutrition expert contracted from the private sector, as well as a week-long assist by a team from AID/W. Special appreciation is also due to Merton M. Vogel (AID/W, SER/ENGR) for his skillful assessment of architectural and engineering aspects of the Colombian health program. Otherwise, this document is a product of the Mission's normal staff.

This paper contains much statistical information. Inevitably, there are some inconsistencies in it. In the weeks ahead, we will search for them and issue errata pages for those we find. Readers are encouraged -- rather, urged, to call any such deficiencies to our attention.

In general, we believe the Colombian Government has produced a candid and comprehensive assessment of the health situation, and the problems and potentials of the public health system. In response to these findings, it has formulated a health policy and strategy which we would characterize as a rational mix of some of the best advice offered it by many public health experts who have served the GOC over the years. Rarely, we think, has developing nation brought together so much of that advice and formalized it as coherently as definitive policy.

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PART TWO - ANALYSIS OF CURRENT SITUATION

CHAPTER I - COLOMBIAN HEALTH CONDITIONS

A. A Comparative Perspective

The first question that arises in a health sector analysis is: how bad or good are general health conditions in the country under study? Where they are exceptionally good, an analysis would seem to be unnecessary, except for its utility as a model for other countries to emulate, if they can. But where conditions are bad, analysis is vital to decisions on how to employ extremely scarce resources to attack the most serious deficiencies.

What of Colombia's health conditions? We have not attempted a detailed comparison between Colombia and the rest of the region on many indicators of the status of health. However, several basic measurements<sup>1/</sup> have been selected which illustrate clearly enough that by general standards prevailing in Central and South America and the Caribbean, Colombia's health situation is relatively adverse, e. g.:

1. Of 18 Latin American nations for which data is available to us, Colombia ranked fourteenth in number of hospital beds and practicing physicians per capita, and thirteenth in practicing nurses per capita.

2. With regard to the percentage of deaths caused by infections or parasitic diseases, Colombia is in a median group of six countries; seven nations have lower (more favorable) percentages and seven others are in worse condition.

3. As concerns the proportion of deaths in the 1-4 year age group due to infections or parasitic illness, Colombia is ranked in the highest (worst) category, with thirteen countries having lower percentages.

4. Of sixteen countries reporting, only four have higher rates than Colombia of death from tuberculosis, and in only seven out of twenty is the mortality rate from measles higher.

5. Colombia stands fifteenth out of twenty-six countries reporting on the percentage of population served by piped water. (Data on water quality is not available to us.)

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<sup>1/</sup> Comparative indicators have been drawn from the following sources: "Informe Anual del Director, 1971," Organizacion Panamericana de la Salud, Washington; and "Economic and Social Indicators: 18 Latin American Countries, 1960-1971," AID, June, 1972.

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Among the indicators selected, Colombia shows comparatively favorable conditions in two categories:

a. Only six other countries have significantly lower (better) percentages of deaths caused by diseases preventable by vaccination. (This illustrates the emphasis and success of Colombia's immunization campaigns.)

b. Colombia ranks first among 26 countries reporting on the availability of sewerage services. (This probably reflects the relatively higher proportion of urban population in Colombia. The percentage of population reportedly served by connected sewers is 49%, and the urban population is slightly over 50% of the total.)

Despite these two exceptions, it is evident that Colombia as a nation suffers from poorer health than most of its Latin American neighbors. Thus, the case for assigning high priority to investment in public health is not difficult to defend.

Prior to examining the particulars of Colombian mortality and morbidity, a brief recapitulation of Colombia's demographic characteristics is useful because the latter are the single most important determinant of both total demand for health services and priorities among the various kinds of services. For example, Colombia's high fertility rate, together with a fairly low life expectancy, yields a youthful age structure which in turn calls for heavy emphasis on maternal/child care, together with family planning services.

B. Demography

1. Population Growth

Colombia's population has grown from 3.8 million in 1900 to an estimated 21.6 million in 1970, and is projected to reach 25.3 million in 1975. Immigration having had but a negligible impact on the overall population growth during this century, the rate of growth has been primarily a function of birth and death rates.

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Although recent studies suggest that the rate of natural increase is beginning to fall, demographic authorities agree that Colombia has had one of the highest population growth rates in the world; the conventional estimate is 3.2% annually. There is underreporting of both deaths and births, but the available data leave no doubt that mortality rates have declined much faster than birth rates, i. e., the death rate steadily diminished from 19 to 8.52 per 1,000 inhabitants between 1945 and 1968, while births remained on a high plateau until some point in the 1960s.

Reduced mortality is not a result of better access to general health care for a majority of Colombians; rather, it is the product of medical and sanitary technology: immunization, antibiotics, cleaner water, sewage disposal, insecticide, and other applications of science.

Despite a rapid decrease in recent years, infant mortality is very high (69.9 per 1,000). Infant deaths most frequently are caused by pathological infections and malnutrition. These conditions are preventable, treatable, and generally related to economic and social factors, which are also agents of sickness and death (unemployment, small incomes, low educational backgrounds, and unhealthy homes). Adverse conditions are found precisely in those locations where existing medical resources are most limited and least efficient.

Better control of the causes of death of children under five years -- largely through nutritional and maternal/child care programs -- should cause a further decline in overall death rates, since deaths of young children account for half of Colombia's total mortality.

Colombia's birth rate appears to have held steady at between 44 and 48 per 1,000 until recent years. Official statistics continue to report rates at approximately this level. There are, however, various indicators of a peaking out and reversal of the previous trend, e. g., declining numbers of births in many large urban hospitals, fewer birth registrations, significantly larger numbers of women seeking family planning services, and increased commercial sales of contraceptives.

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In 1968, the Colombian Association of Medical Faculties carried out a National Fertility Survey, using a sample of 6,500 families. While definitive conclusions from the survey are not yet available, a preliminary assessment<sup>1/</sup> indicates that crude birth rates began to fall in the early 1960s, and that the rate of decrease accelerated around 1966. The rate seems to have been as high as 48.3 in the 1960-64 period, declining to 44.6 in 1965-66, and further to 41.5 by 1968. Projecting from these data, the 1972 birth rate conceivably could have fallen to 37.5.

Even assuming the validity of such estimates, it is clear that population growth is still very high. Present trends will begin to alleviate the burden of high fertility on individual families and also gradually moderate the demand for maternal/child health services and primary education. However, effects at the macro-economic and social level will not be tangible for some time to come.

2. Composition of the Population

One of the consequences of accelerated population growth is an age structure in which young people predominate, reflecting the continued high birth rates and declining death rates. While high birth rates have generated a higher proportion of children and young adults, reduction in mortality has further broadened the base of the pyramid because reduction in mortality rates has had greatest impact on the 0-5 age group. The 1964 census shows an age structure with 46.5% of the population under 15 years of age and 56.7% under 20 years of age. The dependency ratio -- (the total number in the under 15 and over 64 group to the 15-64 group) -- was 99 at the time of the 1964 census. The age structure also fields an elevated proportion of fertile women (15-44 years) in the population -- currently 22% in Colombia. (See Table 1. )

3. Spatial Distribution

The accelerated growth of urban population in Colombia is in part a consequence of the fertility and mortality pattern, as well as of many economic and social phenomena. At present, an estimated 54 to 57% of the

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<sup>1/</sup> By Henry Elkins of the University of Chicago.

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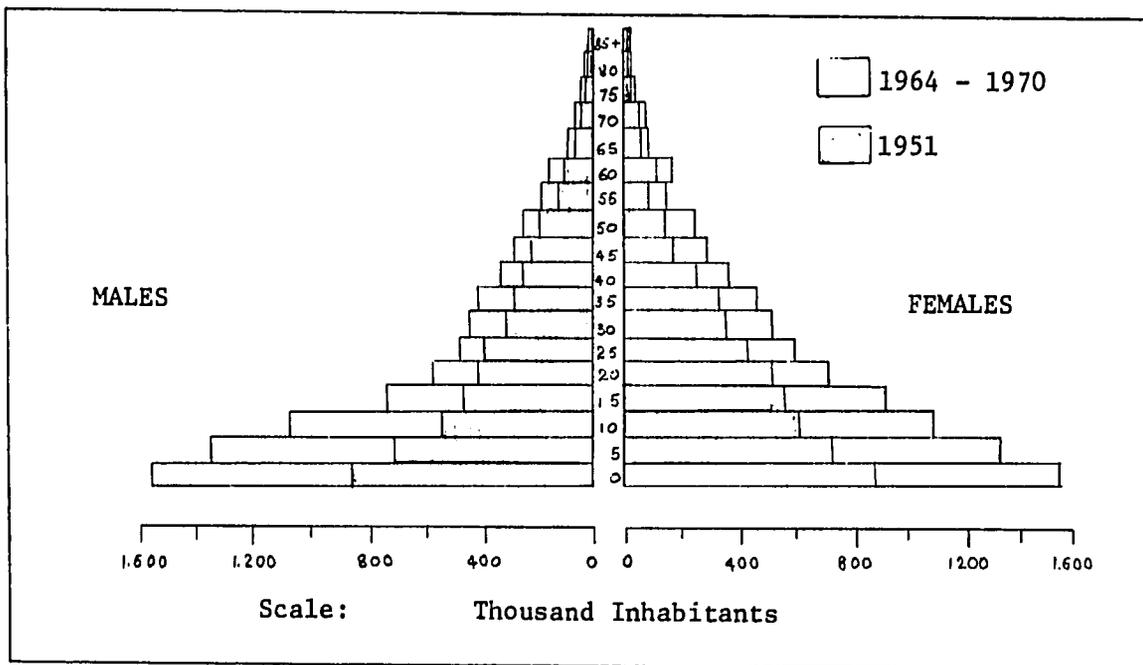
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TABLE 1

AGE PYRAMID OF THE COLOMBIAN POPULATION

Based on the 1964 Census Age and Sex Breakdown  
and 1970 Estimated Population



SOURCE: "Informe al Honorable Congreso de la República de Colombia"  
José María Salazar Bucheli, Ministro de Salud Pública,  
1970-1971.

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population resides in urban areas, and current projections indicate that by 1980, some 75% of Colombians will live in cities of 12,000 or more inhabitants. The natural increase of rural areas is higher due to generally higher fertility, yet, due to migration from the hinterland, overall growth rates of the cities have been averaging 5% compared to 1.5% in rural areas. In many large cities over half of the inhabitants are not born in the cities in which they reside. Many factors, including the difficulty of acquiring cultivable land and the scarcity of educational and health facilities, are forcing rural inhabitants to seek opportunities in urban areas.

Whatever the underlying causes for the heavy rural-to-urban flow, the accelerated growth of the last few years has placed extreme pressures on the cities to provide employment, education, health and other public services. As in most Latin American cities, a great and increasing proportion of Colombian migrants from rural areas lead marginal lives in squatter communities. Authorities must endeavor to extend the urban infrastructure to squatter areas while trying to close the gap in housing shortages to alleviate crowded conditions: in 1970 departmental capitals alone had a total deficit of well over half a million dwelling units, while deficits in urban services were of comparable magnitudes. (For information on Colombian policies and programs in response to such challenges, see the Sectoral Analyses for Agriculture, Education, and Urban/Regional Development, available in AID/W.)

4. Population Growth and Health Policy

The major implications for Colombian health policy of population growth are obvious:

a. Maternal/child care must receive very high priority because the incidence of health problems is greatest in absolute terms among mothers and small children; and

b. On an ever broadening scale, Colombians must have adequate information and services in order to plan the size of families.

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As will be seen in Part III of this analysis, the Government has accepted such implications and adopted strong policies which are fully consonant with them. This being the case, no further discussion of these particular topics is necessary at this point.

C. Mortality

As noted above, deaths in Colombia are underregistered; moreover, many registered deaths are from "unknown" causes. These phenomena suggest that a large portion of the population does not have access to medical attention. (They also counsel a degree of skepticism with regard to the data.) In 1965, only 60% of the deaths were medically certified -- still deficient but an improvement over previous years. The ten principal causes of death (Table 2 ) represent approximately half of total deaths registered in the country in 1967.

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TABLE 2TEN LEADING CAUSES OF DEATH \*  
COLOMBIA - 1967

<u>Cause of Death</u>	<u>Number of Deaths</u>	<u>%</u>
Gastroenteritis	20,831	11.6
Bronchopneumonia	11,643	6.5
Bronchitis	9,312	5.2
Arteriosclerosis and Degenerative heart disease	6,886	3.8
Other heart diseases	6,403	3.6
Vascular lesions affecting the central nervous system	6,382	3.6
Neonatal infections	5,874	3.3
Senility without psychosis	5,159	2.9
General diseases of early childhood	4,997	2.8
Prematurity (unspecified)	included in above	

\* The 10 leading causes of death account for 45% of all deaths.

SOURCE: Boletín Mensual de Estadística DANE No. 211 de 1968

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It will be noted that the Colombian source of Table 2 did not explicitly identify among the leading causes of death: diarrhea of the newborn (109.4/100,000 inhabitants), and diseases of infancy (105.1/100,000). These may be subsumed under the more general categories in the table, but it seems important to emphasize here their high incidence.

Among the causes of death of children under five years, malnutrition is present in 45% of the cases, either as a basic or associated cause. This death rate of children under five represents a serious health problem -- 40,000 die each year. This situation is more critical in that the child population most affected is of the lower socio-economic and cultural groups and that the deaths represent only the tip of the iceberg; malnutrition causes long-term physical and mental damage among many others who will continue to live.

A recent study, "The Investigation of Death in Children Under 5 Years," undertaken by the Pan American Health Organization and three Colombian universities, showed also that one of the causes of premature birth, in a high percentage of cases, was malnourished mothers. So the problem affects both mother and child, the latter often fatally. The high level of mothers' deaths during childbirth may also be partly ascribed to this cause.

D. Morbidity

From a review of 12 million consultations carried out by Colombian health institutions in 1965, it was ascertained that the 10 major reducible illnesses in order of magnitude were:

- Intestinal infections
- Parasites
- Tuberculosis
- Gonorrhoea and syphilis
- Measles
- Malaria
- Abortion
- Whooping cough
- Leprosy
- Diphtheria

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The ten major "irreducible" illnesses according to the study were:

- Pregnancy and normal childbirth with complications
- Other diagnoses not included in the 36 causes included in the study
- Illnesses of the respiratory tract
- Illnesses of the urinary-genetal system
- Illnesses of the gastro-intestinal system
- Accidents
- Illnesses of the circulatory system
- Anemia and deficiency states
- Mental problems (psycoosis, neurosis, mental deficiency and epilepsy)
- Illnesses of the sense organs, tonsils, and adenoides

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The same study utilized an interview sampling technique to determine how many people in the population felt ill during the two week period of the study. 387 persons per 1,000 said they experienced some illnesses. For older persons the rate was 655 per thousand, for lactant children (according to parents) 433 per thousand, and students 195 per thousand. Women over 15 had a higher rate of perceived illness than men and the rural rate was slightly higher than that in the city. 1,530,582 persons reported feeling sick enough not to work during the study period. Of these, 75 per 1,000 were in bed and 109 per 1,000 restricted their activities.

The age group of 6 to 14 lost 10.1 days per person a year, a good part of that from school. In the working group of 15 to 64, an estimated 166 million days per year were lost or a labor force loss rate twice that found in the U.S. This gives some idea of the economic effect of illness in Colombia.

In Colombia approximately 7.5 million accidents occur each year, or 416 per 1,000 inhabitants. For each 1,000 persons over 6 years old who had accidents, 95 spent a minimum of 4 days in bed, and 480 received incapacitating wounds. In the working population, 2,874,000 accidents occur annually, 1,900,000 of which are job-connected; 57% of the job-connected accidents are incapacitating.

Dental problems affected 435 out of each 1,000 inhabitants.

E. Direct Causes of Mortality and Morbidity

The characteristics of a population -- age structure, rural-urban distribution, occupation, educational level, etc. -- largely determine the patterns of health needs and kinds of health services required to meet them.

The age structure of the Colombian population is conducive to a predominance of infectious diseases, particularly among the 0-5 year age group, while chronic and degenerative diseases are less significant. Generally, poor nutritional status, inadequate waste disposal, lack of access to potable water, and poor housing give rise to a high incidence of enteric diseases and favor an endemic state of respiratory illnesses, intestinal parasites, typhoid, and malaria.

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HOSPITAL ADMISSIONS - FIVE LEADING CAUSES  
COLOMBIA - 1967

Cause	Number of Cases	Total Number of Days In Hospital	Average Number of Days Per Cause
Births without complication	281,210	906,416	3.2
Abortion without infections or toxemia	56,146	150,354	2.6
Gastroenteritis and colitis of 4 weeks or more	50,782	312,530	6.1
Other diseases of the genital- urinary tract	34,692	260,286	7.5
Swollen tonsils	28,562	78,110	2.7

SOURCE: Boletín No. 211 de octubre de 1966 - DANE

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The result is seen in the mortality rates of the most vulnerable groups in the population, as reported above. The infant mortality rate was estimated by the Ministry of Health to be 69.9 per 1,000 live births in 1968. Deaths of young children (5 and under) contributed 46.6% to overall mortality in 1967, although this age group constitutes only 17.7% of the total population. Maternal mortality was estimated at 2.28 per 1,000 live births. Thus, since children under 15 years and women in the child-bearing ages constitute nearly 70% of the population of Colombia and are most prone to those kinds of health problems which predominate in the population, it is clear, as previously mentioned, that maternal and child care has a strong claim to priority in provision of health services.

The five leading reasons for hospital admissions in 1967 and the ten leading causes of death provide a useful basis for analyzing the vulnerability of the population. Included in the five leading causes of hospital admissions are births and abortions which reflect the heavy demands placed on the health care system by women in the child-bearing age. Also of significance are gastroenteritis and colitis of four weeks or more, which have a major impact on the health of infants and children under five. The ten leading causes of death likewise include a great proportion of conditions and diseases which are most destructive to the lives of mothers and the very young.

As is true in most Latin American countries, gastro-intestinal problems, respiratory illnesses, and infectious diseases have long been responsible for a high proportion of deaths in Colombia, especially among children. Moreover, the magnitude of the health problem would be better understood if reporting and registration of medical and vital events were complete. This is particularly relevant in assessing child mortality.

It is also important to note that the reported rates of nutritional deficiencies and deaths from malnutrition, which do not even appear in the above tables, do not adequately define the size of this problem. Malnutrition contributes to many infant deaths which are attributed to other concurrent problems such as infections or diarrheal complications. (See Chapter VI, Part TWO, for a comprehensive review of nutrition.)

F. Underlying Causes: Economic, Social, Cultural

As with other developing countries, the underlying causes of Colombia's health situation include economic, social, and cultural factors which are more difficult to cure than the illnesses which are one of their consequences.

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The nation has only recently achieved a favorable economic growth rate and still has an estimated 30 to 35% of its working population unemployed or underemployed. Health services are available to a small fraction of the population from governmental and industrial health insurance plans which charge fees to pay for the costs of the system. The affluent, of course, use private services.

Culturally, there exist traditional customs and religious beliefs which continue to impede health progress. Unless more attention is paid to health education in the schools, with adult groups through the communications media, and by health workers, these ideas will slow the work of general health improvement. The maternal/child worker can talk about boiling water, the DDT sprayer clean homes, and the nutrition worker develops proper diets. But each of these health team persons who touch the home directly ought to be trained beyond his own specialty. They also need to humanize the technical aspects of their tasks, so that people understand why a particular service is important. Above all, rapid economic development accompanied by substantial income redistribution is essential. Colombia obviously does not possess the resources to provide all essential services to all the people. Eventually, a majority of Colombians must be raised to an income level which will enable them to pay for a reasonable share of such services.

G. Trends: Advances or Retrogressions

Despite Colombia's relatively unfavorable status in Latin America, as regards health, some advances have been registered. For example, the decline of death rates from 19 per 1,000 in 1945 to 8.52 per 1,000 in 1968, a decrease of infant deaths per live births from 114.4 per 1,000 in 1951 to 69.9 per 1,000 in 1968, and a 30% reduction in maternal deaths at child birth. Minor increases have been achieved in number of hospitalizations, and doctors and nurses per capita. Significant improvements have occurred in life expectancy, dental treatments, immunized population, coverage by sewer and potable water projects. Malaria, smallpox, tuberculosis, whooping cough, and measles have been reduced. Although this chapter is concerned with health conditions per se, it must be noted that one of the major advances is the substantial effort of the Government in producing studies, and experimentation which laid the basis for the formulation and adoption of the comprehensive new health policy and strategy specifically oriented toward Colombia's fundamental health problems.

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Retrogressions or stagnation are evident in hospital beds per capita, the decline in availability of animal protein in diets, lack of any increase in all proteins, and the estimate that some 60% of the population does not receive any professional medical attention. Per capita expenditure on public health, while increasing in nominal terms, has remained almost stationary in real terms.

H. Policy Implications of Colombian Health Conditions

The Colombian economic and social development strategy gives strong emphasis to redistribution of income and opportunity, and to expanded and improved services which directly enhance the quality of life of a majority of the people. It is obvious from the above summary that health is one of the most serious deficiencies afflicting most of the Colombian population. This sector, therefore, merits significantly greater attention than it has received in the past. In the material which follows, we shall depict the emerging response of the Government to this urgent challenge.

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CHAPTER II - COLOMBIAN RESPONSE TO HEALTH PROBLEMS: HISTORICAL PERSPECTIVE

A. Evolution of Health Policy

Current health sector problems and prospects can be best understood in the context of the sector's historical development. Colombian health services may be categorized in terms of the initiatives and special interests which originated them, i. e. :

- Community Action
- Government Action
- Welfare Insurance
- Private Medicine

1. Community Action evolved from the traditional concept of eleemosynary and voluntary work espoused by religious groups and charities, and has been oriented toward protection of the helpless and assistance to the sick. Consequently, its philosophy was almost entirely curative. Community action usually began with founding of hospitals and old peoples' homes, and later was broadened to include social protection, support of orphanages, insane asylums, and shelters.

2. Government Action started with the creation in 1913 of the Superior Health Council, later the National Directorate of Hygiene, and the Ministry of Hygiene in 1938. The Ministry of Public Health was established in 1953. Governmental programs originally concentrated on health protection and eradication of communicable diseases, with programs directed at environmental control (potable water, sewage, and garbage collection), vaccination campaigns, and isolation of groups which were dangerous to the rest of the population. The program-oriented institutions which developed unfortunately had little direct relation with the community programs mentioned above.

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The preventive and eradication philosophy evolved into a "health attention" concept, defined in a 1963 law as "the aggregate activities of the State that act upon man and his environment to seek the preservation of health, the treatment of the sick, the rehabilitation of the incapacitated, and the protection of abandoned children and old people, using the necessary epidemiological and administrative methods." The principles thus established in Decree 3224 of 1963, are the legal base for advancing the integrated health concept. A vital tool in the integrative progress to date has been the creation of sectional health services which have sought to absorb the old local charity groups. Each departmental government (a geographical administrative unit similar to a U. S. state) has attached to it a sectional health service which supervises all public health activities in the department.

3. Welfare Insurance plans of public and private workers constitute the third health service group, providing attention through ICSS (Colombian Social Security Institute) and the various Cajas de Prevision Social. Within this group, emphasis is placed on health recuperation, limited action in the occupational health field, and preliminary stages of health protection activities as a first step to an integrated national public health service.

4. Private Medical Practice provides the fourth component of health attention, ambulatory as well as institutional. This resource covers a large proportion of the limited number of Colombians who actually receive medical services (50% of the medical consultations in a year), but this subsector is within effective economic reach of only about 15% of the population. Recourse to private health services is growing less rapidly than use of the other three types of services.

B. Emergence of New Concepts in 1960s

1. Current Problems

As concerns institutional resources, and ignoring private practice over which the state has no direct control, there exist three systems (official, mixed, and decentralized) of diverse origin and orientation, with a variety of

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mechanisms and sources of finance and different types of administration. They have generated over time institutional methods of operation whose implications and repercussions in the organization and performance of service have resulted not only in the fragmentation of medical attention, but also in a great diversification and duplication of installations to the detriment of overall efficiency and usefulness.

Because of local political pressures, or as a result of the enthusiasm of groups or persons motivated by community service, but in general without knowledge of the relative needs of different regions, hospitals have been located somewhat haphazardly. The distribution of hospital beds is uneven too many in some areas, too few in others. Hospital construction was started without analysis of the requirements of the communities they were meant to serve, thus often leading to later poor utilization. In the last ten years, only 60% of the total hospital capacity has been utilized. In addition, costly equipment was purchased to provide institutional independence. The unfortunate lack of stratification of hospital service occurred because each entity was conceived, developed, and administered as an individual and virtually self-sufficient institution.

On the other hand, the preventive orientation given to original direct governmental organizations, their isolation from the hospitals, and restrictions against their participation in curative medicine created a fragmentation of services and identified two spheres of action, even though today they are recognized as inseparable. In practice, two parallel systems (official and mixed) were organized with different work patterns and separate mechanisms for training, assignment, and utilization of resources. Each developed its own administration, with different salary scales and conditions of work. While personnel, especially doctors, in the direct government system are employees and receive fixed salaries, those doctors connected with hospitals in the "mixed" system are almost without exception voluntary workers, who give institutional service frequently as an act of charity.

The welfare insurance plans, the "decentralized" institution providing health services, tie together under governmental auspices the private medical sector with corporate and public sector medical plans in order to provide

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attention to certain employee groups. Primarily recuperative medicine, the quality of service varies with each plan. Each one under its own administration, establishes salary scales, purchases its needs, and develops its own structures.

The development of these three types of services, of different origin, methods of finances, and objectives, has induced an inefficient splitting of resources, authority, and criteria in the sector. The attachment of the special interest groups to the different types of service creates an increasing divergence of programs, and tends to "freeze" existing inequities in distribution of total health resources. (See Table 3.)

2. Recent Planning Activities

Colombia, then has "an uncoordinated health system, with resource fragmentation, variable actions, deficiencies in information, without planning or training unity, and a poor coverage of the population." <sup>1/</sup> Its resulting coordination with other sectors has been weak.

In the last few years, action has been taken to improve the sector's institutional structure. Decrees 1423 and 3224 of 1960 and 1963, have strengthened the Ministry of Health and have established integrated policy lines; Law 12 of 1963 charged the Government with the formulation of a National Hospital Plan; and Decree 1499 laid the Constitutional basis for the sectional health services. Law 39 of 1969 established, finally, the National Hospital Plan. This legislation placed the Ministry of Health in a position to develop a more integrated approach. It also provided additional Government resources to hospitals which were not able to keep pace with rising costs of medical attention.

At the same time that legal steps were being taken to strengthen the role of the Ministry and provide a centralization of functions, policies were being developed to provide the new system with more rational planning.

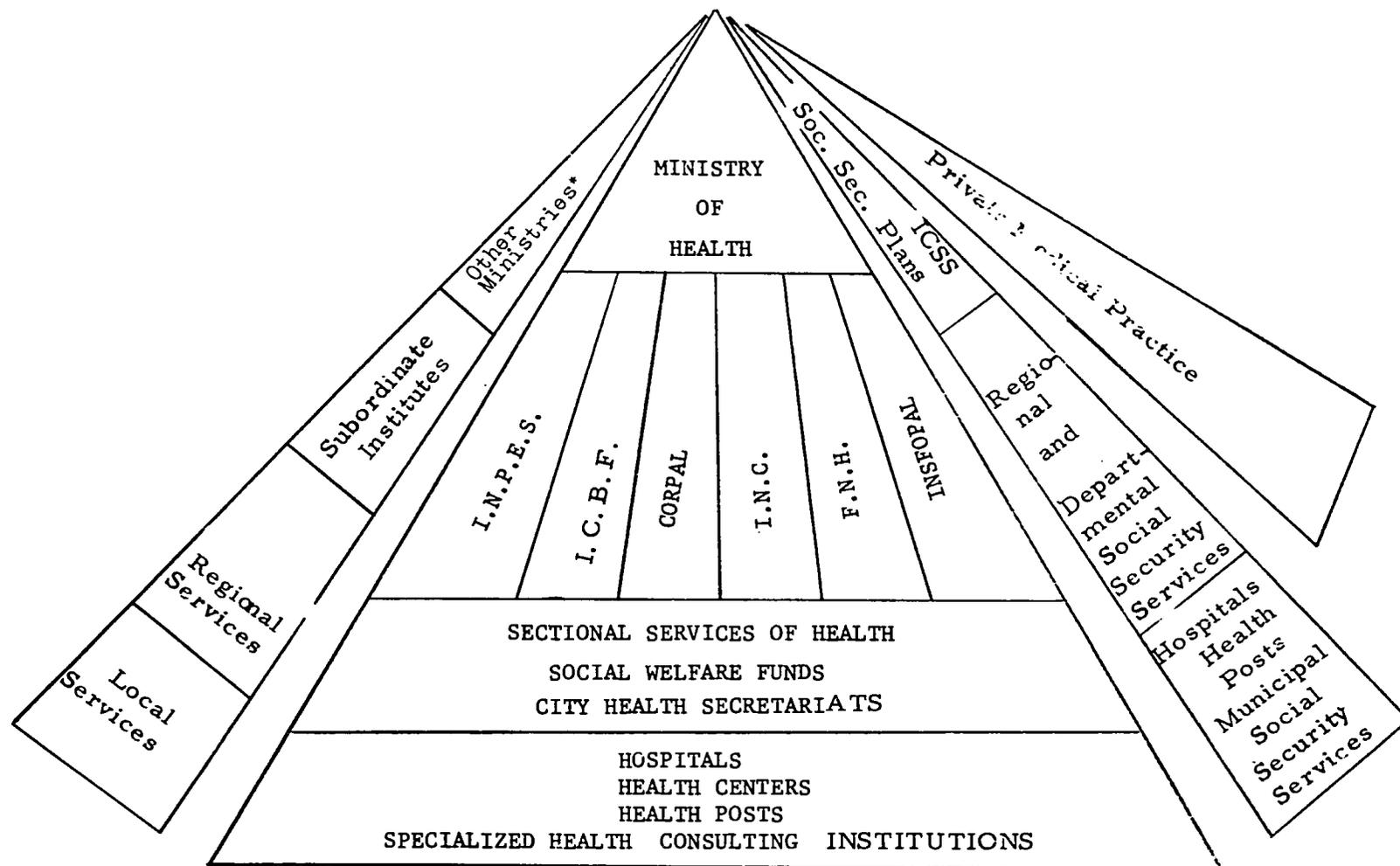
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<sup>1/</sup> "Estrategia y Mecanismos Para la Ejecucion de Politicos de Salud, Primer Parte," DNP Document #878.

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PRESENT ORGANIZATION OF THE COLOMBIAN HEALTH SECTOR  
HEALTH SYSTEM - DISTRIBUTION

TABLE 3



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These efforts include: the National Ten-Year Health Plan (1968-1977), the National Hospital Plan (1970-1972), and the Strategy and Mechanisms for the Extension of a Health Policy (1972). (The 1972 Plan is the subject of analysis in Part III of this document.)

a. National Ten-Year Health Plan (1968-1977)

Background

In 1956, with technical assistance from UNICEF, WHO, and PAHO, Colombia began to draft a long-term public health program. This resulted in an initial ten-year plan (1962-1971), which revealed many of the severe limitations and constraints under which the Colombian health authorities functioned.

Dispersed and fractionated responsibilities were the norm rather than the exception; funds from a multiplicity of sources in inadequate amounts were expended without reference to priority needs or national plans; unqualified personnel, subject to patronage appointment and removal, were devoid of professional guidance and supervision. But not the least of the difficulties identified was the lack of reliable data on even the most prevalent of major health problems. Data was essential for evaluating the effectiveness of established activities or the shortcomings of traditional organizational patterns, some of which dated back to the colonial era.

In light of this need, the Ministry of Health responded creatively in 1963 to the overtures of the Colombian Association of Medical Faculties (ASCOFAME), which was then seeking to plan a course of action for its own, then seven, institutional members. ASCOFAME sought guidelines for the development of an adequate national supply of physicians and other health manpower and the adaptation of their educational strategies to contemporary, internationally-accepted, professional standards. The Pan American Health Organization and a private international foundation, the Milbank Memorial Fund of New York, agreed to provide technical assistance and financial aid. Thus, the way was paved for the nationwide collaborative study of "Health

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Manpower and Medical Education in Colombia (1965-1966)" incorporating a scientific appraisal of the health conditions and total health resources of the country -- a truly national health survey.

This national health survey, a unique undertaking in a developing society, for the first time has placed in the hands of health authorities and planners in Colombia a fund of concrete, reliable knowledge on which to base a sound national health plan and program. <sup>1/</sup> Its findings form an integral part of the National Ten-Year Health Plan, 1968-1977. But its benefits have not stopped there; in addition, the study's economic and social profiles of the population and its analyses of rates and patterns of population increase and of other demographic characteristics have been of invaluable assistance to other agencies of government as, for example, the Ministries of Education and Labor and the National Departments of Planning and Statistics. It is also noteworthy that the design and use of this national health planning procedure are being increasingly emulated in other Latin American countries as well as elsewhere.

Important national legislative enactments have accompanied and paralleled the formulation of the National Health Plan, including Decrees 3224 of 1963, 1499 of 1966, and 2470 of 1968. These have authorized and formalized institutional and administrative reorganizations required for sound development of national, regional, and local activities in the health field. Specifically, the above legislation provides for the reorganization of regional (departamento) and local (municipio) health services as a decentralized function of the Ministry of Health; fosters coordination through a National Health Council chaired by the Minister of Health, of the efforts of previously dispersed entities of government responsible for health functions and for the unification of their financial resources; organizes and consolidates within the Ministry of Health the mechanisms for supervision, control, programming and periodic evaluation of health activity at all levels of government; and finally, defines the fields of activity as well as creating the organizational structure required to carry out the new health programs called for in the National Plan. A more detailed appraisal of the organizational pattern in the health sector is presented elsewhere in this analysis (See Chapter III).

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<sup>1/</sup> For an independent assessment of the National Health Survey, see Dr. Dieter K. Zshock, Department of Economics, State University of New York, "Health Planning in Latin America," Development Digest, Vol. IX, No. 3, July, 1971.

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### Major Elements of the Plan

Following a general description of the geography and climate of Colombia, the major demographic attributes of its population and the significant economic and social circumstances influencing the standards of life throughout the country, the National Health Plan (1968-1977) critically assesses current mortality and morbidity rates for Colombia and takes note of recent time trends. Each of the major causes of death and of illness are reviewed for various age groups of the population. An appraisal is then made of the availability and utilization of health care resources in the various geographic zones and among the various social strata of the population. Thus, having the extensive data assembled in the national health survey, the health authorities of Colombia, for the first time, have been placed in a position to formulate on defensible grounds a set of health priorities to guide both immediate and long-range programs.

For purposes of planning, diseases or other health problems have been arbitrarily categorized into those that are "reducible" or "not reducible." Among the former are listed the major communicable diseases in the following order: the diarrheal diseases, intestinal parasitism, tuberculosis, measles, whooping cough, malaria, syphilis and gonorrhoea, diphtheria, tetanus, leprosy, poliomyelitis, smallpox, rabies, and yellow fever. Two other conditions, not of infectious origin, are included in this list of "reducible" conditions -- abortion and endemic goiter. It is somewhat surprising that two additional health problems, known to be highly prevalent in the country, and to contribute significantly to high morbidity and mortality and also clearly susceptible to preventive measures, are conspicuously absent from this list. These problems, malnutrition and, to a lesser extent, accidents are, however, given high priorities in the subsequently developed health plan. Additional challenges can be raised to the justifications for placing other significant health deficiencies in the category of "non-reducible" conditions, but, in the main, those too are covered in the subsequent development of programmatic plans.

The major programs developed in the Ten-Year Plan are listed as follows:

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Reduction of Morbidity and Mortality from "Reducible Causes"

- Program of basic sanitation (diarrheal disease and intestinal parasitism).
- Tuberculosis control (preventive vaccination and treatment of the sick).
- Five-year mass vaccination campaign (measles, whooping cough, diphtheria, tetanus, poliomyelitis, and smallpox).
- Ten-year malaria control effort.
- Venereal disease reduction.
- Family planning (in lieu of abortions).
- Leprosy control.
- Goiter control.
- Rabies control.
- Aedes aegypti control (yellow fever).
- Yaws eradication.

Reduction of Mortality from "Non-Reducible" Causes

- Nutrition and feeding.
- Occupational health.
- Comprehensive health and medical care (hospitals, health centers and health posts).
- Mental health.
- Dental health.

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Organization of the Health Sector

- Development of health policies and programs.
- Evaluation and supervision of decentralized health activities
- The training and organization of health personnel.
- Health investigation and research.
- Budgeting for health operations and investments for health.

b. National Hospital Plan (1970-1972)

In the ten-year plan (1962-1971), the Ministry first started to develop what has become an endeavor to regionalize the health services. The plan proposed that about 40 integrated health districts be established between the sectional health services and local institutions. Each district was to have all the resources for prevention of disease, recuperation of health, and social welfare integrated for unity in programming, budget, and administration. Not surprisingly, it was found that neither the legal requisites nor the resources then were available for the task.

With the strengthening of the Ministry in Decrees 1423 of 1960 and 3224 of 1963, and the development of the sectional health services with Decree 1499 of 1963, the health sector became ready for a serious attempt at integration of services. In 1969 a combined committee from the Ministry of Health, the Colombian Association of Medical Faculties, and the Special Health Projects Institute, with the assistance of 104 doctors, dentists, nurses, and nutritionists, developed a policy document entitled "Levels of Medical Attention for a System of Regionalization in Colombia." The tiered system of preventive and recuperative health facilities which was described in the document are treated elsewhere in this paper; however, the policy was formulated to create the following advantages:

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- Improved resource use.
- Improved quality of attention.
- Broadened area of coverage.
- Enhanced conditions of professional work.
- Orientation of training institutions.

In order to function, the system would have to include the establishment of contracts among the university hospitals, sectional health services, regional hospitals, and local hospitals. A second, but, for the present, politically difficult alternative would include the social security and welfare plan hospitals as well. The plan described several mechanisms which would have to become operative before regionalization would work. These were:

- Patient referral, which required unified clinical histories, patient background, classifications, statistical registers, and medical criteria for reference;
- Delegation of medical preventive and curative tasks to the lowest level of personnel capable through training to perform them;
- Supervision of each level by the next higher level, and periodic central supervision of the entire system;
- An adequate system of communications between all levels;
- Transportation for both patients and personnel to make possible the referral system, supervision, and visits.
- Coordination between training institutions and sectional services to prepare new personnel and to provide in-service training for those working;

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- Basic clinical and operational research linked with the educational programs;

- Provision for evaluation of the system;

- Centralized laboratory work and equipment purchasing.

In the same year, the National Hospital Plan for 1970-1972 was prepared. This guides the completion and/or construction and equipping of hospitals in all of Colombia, and encompasses the following stages:

- An analysis of institutional, economic, and human resources and their organization and output;

- A regionalization model;

- An expansion plan based on the model, including the criteria for priority construction projects, special projects, transportation, and communication.

The most significant part of the plan is the criteria established for the hospital construction programs. These are:

- Level of medical attention -- university hospitals, central regional hospitals, and regional hospitals were considered first and in that order since they are the center of the system;

- Number of beds per 1,000 inhabitants. This was based on the following stratification of municipalities.

First Stratum: to 10,000 inhabitants - 0.8 beds per 1,000.

Second Stratum: 10,000 to 40,000 inhabitants - 2.0 beds per 1,000.

Third Stratum: 40,000 to 70,000 inhabitants - 2.4 beds per 1,000.

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Fourth Stratum: 70,000 to 100,000 inhabitants - 2.8 beds per 1,000

Fifth Stratum: 100,000 to 160,000 inhabitants - 3.2 beds per 1,000.

Sixth Stratum: 160,000 to 500,000 inhabitants - 4.0 beds per 1,000.

Seventh Stratum: Over 500,000 inhabitants - 5.6 beds per 1,000.

The above criteria imply an increasing relative size of hospitals as the population of urban areas increase. The size distribution of hospitals would thereby conform with the regionalization scheme, which puts the most complex institutions in the larger cities. Because those institutions receive referrals from smaller localities, the total number of beds per inhabitant of the larger city would have to be greater than that of smaller cities in order to equalize effective coverage throughout the system.

- Initiated investments -- High priority will be given to completing structures near termination;

- State of the institution -- Older and poorly functioning units will be replaced or reconditioned;

- Integration with ICSS and other entities -- Wherever possible, units will provide service to welfare insurance groups on a contract or lease basis;

- Technical status of the project;

- Integration with training programs;

- Emergencies -- Institutions destroyed by catastrophies will receive early consideration.

Originally, the Plan had an immediate goal of completing 91 priority projects; however, the Plan has since been expanded to cover the period 1972-1975 and to include 141 projects. It should be noted that in this

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second stage, the Hospital Plan has further enhanced the national development impact of the proposed projects by selecting those compatible with the policies of intermediate city and rural concentrated development. The hospital investment policy then brings the actions of the Ministry of Health into much closer relationships with the overall national development policy, as can be seen in the current strategy document.

Thus, prior to GOC promulgation, the strategy, policies and programs that are the focus of analysis in Part III of this document, a number of concrete, positive, steps had been taken to rationalize planning and coordination of sectoral activities.

C. Legal Framework

The legal framework within which the public health system operates today was largely created during the Lleras Administration. The laws and their effects can be seen in the following chart:

<u>Institution</u>	<u>Laws and Decrees</u>	<u>Effect</u>
Institute of Social Security	Law 90 (1946)	Created the semi-autonomous institute. Attached to the Ministry of Labor.
CORPAL	Law 0593 (1956)	Created the state corporation to centralize purchasing medical supplies and equipment.
Ministry of Health	Decree 1423 Decree 3244 (1963)	Strengthen M.OH and established policy lines.
Special Health Projects Institute	Decree 477 (1968)	Founded the institute. M.OH dependency.
Sectional Health Services	Decree 1499 (1968)	Instituted departmental and territorial services and their contractual relationships to MOH.

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<u>Institute</u>	<u>Laws and Decrees</u>	<u>Effect</u>
Ministry of Health	Decree 2470 (1968)	Reorganized MOH.
National Institute for Municipal Development	Decree 3178 (1968)	Reorganized the institute. MOH dependency.
National Hospital Plan	Law 39 (1969)	Formalized the national health facilities building plan. MOH dependency.
Family Welfare Institute	Decree 433 (1971)	Established the institute. MOH dependency.
National Welfare Fund		Semi-autonomous fund. Attached to Ministry of Labor.

It is clear that the laws and decrees cited above allow the Ministry of Health to plan, program, implement, and evaluate the use of all the funds of the National Government allocated to programs in the health sector. They do not affect the semi-public social security and welfare plans, except through their current inclusion in the National Hospital Plan, and MOH participation on their governing boards. The problems that exist in the gradual development of the regionalization are no longer legal in nature; rather, they are a function of administrative system relationships with the hospitals and sectional health services, the scarcity of human and financial resources, the need for improvement, planning, and programming of sector funds and strengthened intra-sectoral contractual and financial relationships, the need for changes in training curricula and training institution/health sector institutional relationships. The expansion of current program initiatives will do much to strengthen the sector and its operational capabilities within the bounds of present legislation.

However, the Ministry of Health and the National Planning Department in the 1972-1975 strategy document seek further legal powers for the Ministry to create a unified national health system (see the draft law). The main purposes are to: unify the planning and administration of all entities giving health attention (including the social security groups); improve the services offered

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(UNOFFICIAL TRANSLATION)

DRAFT LAW  
PRESENTED TO CONGRESS BY MINISTER OF HEALTH  
September, 1972

By which the President of the Republic is invested with extraordinary authority to reorganize the National Health System and the Ministry of Public Health, and other pertinent dispositions, are introduced:

THE CONGRESS OF COLOMBIA

DECREES:

FIRST ARTICLE:

It is understood that the National Health System was founded by the Decree Number 2470 of 1968 (Title I: Chapters I and II; Title II; Chapter I) and established according to the exercise of extraordinary authority bestowed on the National Government by the Law 65 of 1967.

SECOND ARTICLE:

Based on this definition, and for the purpose of reorganizing the National Health System, the President of the Republic is given extraordinary authority for a period of two (2) years, after this Law is in force, to do the following:

- (a) Modify the structure of the Ministry of Public Health, being able to create, merge, abolish, and transfer its offices.
- (b) To integrate into the National Health System the entities created by Law and that deliver medical attention services.
- (c) To integrate into the National Health System the medical attention services given by other entities of the public sector.

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(d) To abolish, merge, or reorganize the decentralized entities ascribed to the Ministry of Public Health, and transfer to other organizations of the State non-specific activities of the health sector.

(e) To determine the juridical regime and the fundamental norms of reorganization and functioning of public assistance entities, associations, and institutions of public utility which are devoted to deliver health services.

THIRD ARTICLE:

For the effect of this Law the public entities and associations which supply health services are declared to be public interest institutions.

FOURTH ARTICLE:

Sectional health services are technical organisms of the National Health System and will operate at the capital cities of the departments, intendencies, and commisaries, and in the Special District of Bogota. The President is, by means of present law, invested with extraordinary authority during two (2) years, after this law is in force, to determine the organization and the operating system of these organisms.

FIFTH ARTICLE:

The National Government, at any moment, will be able to take, directly or through sectional health services, the measures deemed necessary to secure the normal operation of hospital and health care entities.

SIXTH ARTICLE:

The purchase of pharmaceutical products for medical and odontological attention, instruments and equipment, and the facilities for the operation of health organisms will be carried out according to the Ministry of Health regulations.

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SEVENTH ARTICLE:

The National Government is hereby authorized during two (2) years after the passage of this law to work out the personnel regulations and salary scale for the employees of the National Health System, in accordance with the general policy on this matter, and within the existing budgetary availability.

EIGHTH ARTICLE:

The National Government can take all the pertinent administrative provisions, within the attributions conferred by the Constitution, for the fulfillment of this law.

NINTH ARTICLE:

All dispositions to the contrary are hereby nullified.

Submitted to the Honorable Congress for consideration by,

JOSE MARIA SALAZAR BUCHELI  
Minister of Public Health

Bogota, D. E. , September 20, 1972

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to all Colombians; reorganize and realign the health sector institutions (including the Ministry) to effect service improvement; and more tightly integrate by legal means the hospitals and health institutions with the sectional health services and the Ministry.

As pointed out earlier, it does not appear that this new law is essential to execute the programs laid out in the strategy. It would make the regionalization process somewhat easier as an imposition from the central government. No doubt it would speed the process. In the meantime, the Ministry is proceeding with the present set of carrots and sticks at its disposal to encourage the development of the system. It is also initiating a group of studies discussed in more detail in Part THREE which are aimed at creating improvements in the operations structure of the health system. Following are a listing of other significant actions being taken to improve the functioning of the system:

1. The Development of an Improved Model Contract between the sectional health services and the hospitals. This contract will have, among other clauses, the following:

Objective: To apply the Government's policy of improving the level of health through integrated and regionalized attention to the population for which the institution is responsible, utilizing to the maximum all the institutional resources with the fundamental policy being one of unifying the programming, implementation, supervision, and evaluation of the sector activities.

Organization: The hospital will be organized as the sectional service determines, according to the level of service it provides within the system of regionalization, and according to the standards which the Ministry establishes.

Responsibilities of the Hospital: Adhere to the policy of regionalization of service in accordance with the hospital's level (in the system).

2. Experimentation with Different Administrative Procedures for clarifying and/or making more direct and functional the relationship of the sectional health service to the university or regional hospital. (For example, in the Department of Meta the director of medical attention of the sectional health services will also be the director of the major departmental hospital.)

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The possibility is also being studied of a Presidential Decree which would determine that the directors and administrative assistants of the university hospitals will be appointed by the chiefs of the sectional health services.

3. The Standards for Organizing the Board of Directors of hospitals have been changed to give more authority to the director (under the authority of the sectional health department) in managing the hospital program. The Board of Directors, which previously determined all hospital policy and program, is now only in an advisory capacity.

4. Changes in the Medical Curriculum oriented toward better preparing medical leadership for building and using the regional system. Details are found in the section on human resources.

5. Increased Emphasis on Improving the Training of Auxiliary Personnel to make more functional the regional system. See the section on human resources.

6. Improvement of the Equipment of Health Posts Through:

a. UNICEF donation to provide \$250,000 worth of the basic equipment for 265 health centers and 851 health posts. (It has arrived in Colombia and is ready for distribution.)

b. British Government loan (approximately \$10 million) to provide basic equipment for 70 hospitals, i. e.,

university	6
regional	42
local	13
specialized	9

It is expected that this equipment, which will meet all of the pressing needs identified at this time, will be delivered during 1973, and installation will be accomplished during 1973 and early 1974.

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7. Improvement in Transportation Available

The Ministry has developed a detailed 5-year plan of vehicular needs to make the regional system more functional, particularly as related to patient referral, supervision, and the coordination of "preventive" activities with those of "medical attention."

The projection is for the purchase of vehicles according to the following schedule:

1972-1973	-	530
1973-1974	-	178
1974-1975	-	216
1975-1976	-	248
1976-1977	-	298

The investment program contemplated in the sector loan request makes provision for much of this transport, although at a somewhat slower schedule. Studies are being made of the actual need in relation to the projected progress in "installing" the regional system and in ways to speed the purchasing process to keep up with effective demand. Consideration is also being given to developing ways of using these vehicle purchases as part of the system of incentives to encourage more vigorous implementation of the system.

8. Improvements in the Organization of the National Hospital Fund to make it not only more technically competent to supervise architectural, contractual, and construction work; but also more capable in applying the policies of the regional system to project selection and design. The Ministry of Health requested a consultant group from PAHO to study the National Hospital Fund and recommend necessary improvements. The report is not as yet officially available. However, it is understood that several of their alternative solutions are considered feasible for early implementation without the need for legislative changes and that the Ministry intends to follow the recommendations.

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CHAPTER III - ORGANIZATIONAL STRUCTURE

A. General Description of Organizational Structure

During the Lleras administration, 1966-1970, the Government's institutional structure was reorganized to facilitate formulation of broad policies and coordination of development programs. Prior to the reorganization, the Ministry of Health's authority was relatively weak. The number of autonomous institutes had been increasing and the Ministry exercised little effective control over them. Moreover, the Ministry of Health was also relatively isolated from other Ministries and the National Planning Department.

This situation changed with the Constitutional Reform of 1968 and Decree 2470 of the same year. The Ministry of Public Health acquired a new administrative structure which broadened and unified its various functions and consolidated its position as the capstone of the nation's public health system, within which were all the organizations which had roles in community health. Decree 2470 established the following Ministry functions:

1. Determine and carry out national health policies;
2. Prepare national health plans and investment programs, in agreement with the National Social and Economic Plan;
3. Develop laws and decrees which set forth the standards of health promotion, protection, and recuperation programs and ensure implementation by the proper public or private entity;
4. Orient, coordinate, and control, in the form contemplated by various laws, statutes and regulations, the public establishments, industrial corporations, state corporations, and mixed economic societies which are covered by the regulations.

The reorganization has produced other changes, such as the following:

1. The Ministry of Health serves on the Boards of Directors of the various institutes attached to the Ministry;
2. In 1967, the National Hospital Fund was established within the Ministry to receive and coordinate funds for hospital construction from the national budget, internal and external credit, and Colombian Institute of Social Security (ICSS) bonds;

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3. Two enterprises, CORPAL (a central procurement agency for medical and social assistance programs) and ICSS acquired MOH representatives on their boards;

4. Decree 1499 of 1966 established contractual relationships between the MOH and the sectional (departmental) health services. At the same time, the local charity groups (beneficencias) were absorbed into the health services.

The results of the reorganization as thus far effected are shown on Table 4. Additional measures remain to be taken, especially full incorporation of the functions of the social security organizations into the sector programs; however, the existing legal and organizational structure is already, at least on paper, sufficient for an expanded, more efficient program such as that planned for 1972-1975.

B. Analysis of Total Structure's Strengths and Deficiencies

Despite the major advances that have been made in recent years to amalgamate the various parts of the Colombian health system into a cohesive whole, the system still suffers from resource fragmentation, differences in program criteria at all levels, lack of solid data on which actions might be based, failure to plan properly for future contingencies -- particularly in the area of human resource needs -- and most important of all -- from very limited coverage of the health needs of the Colombian population.

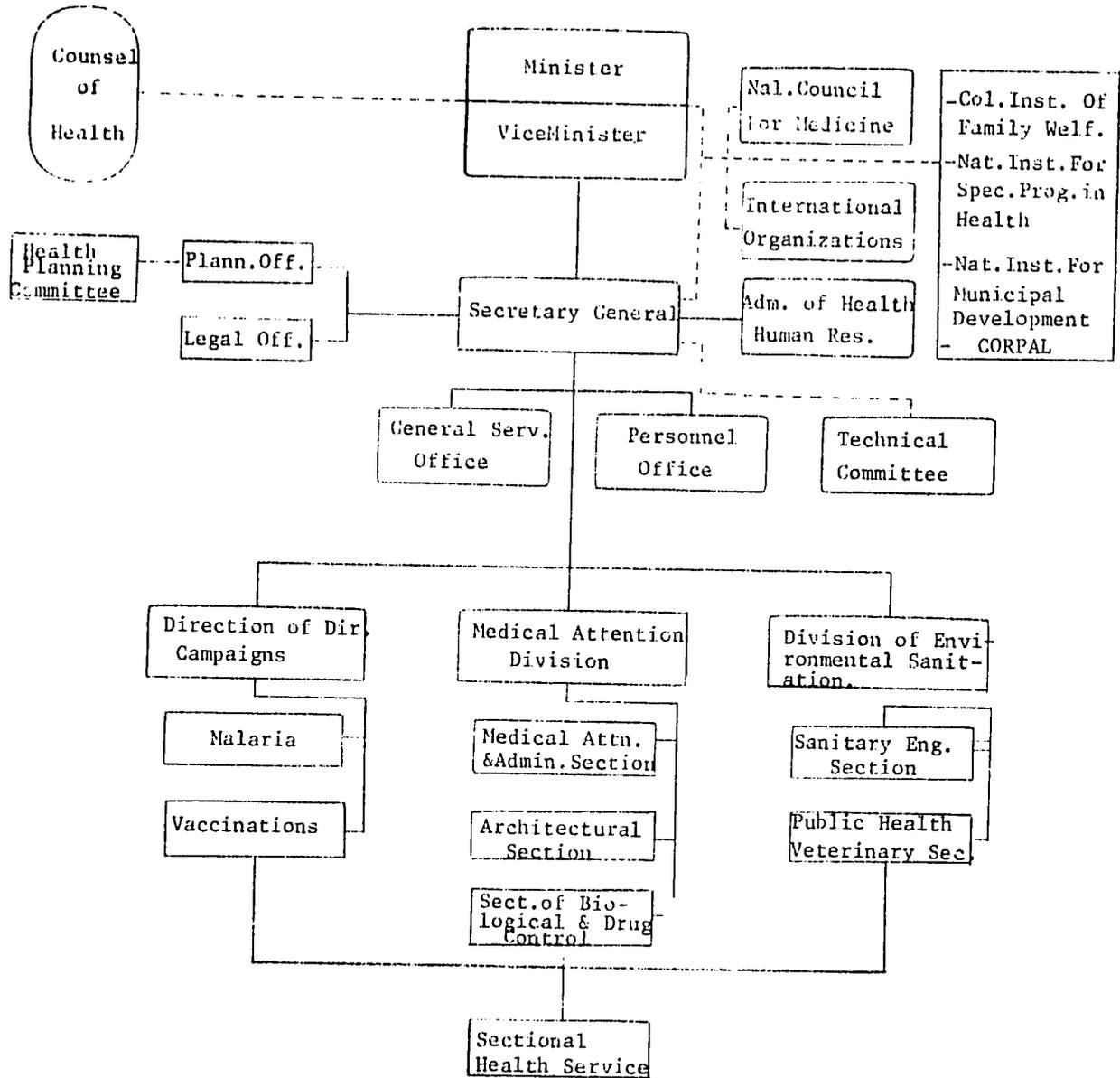
As a result of this uncoordinated approach, relations with other sectors have been weak, health budgetary requirements have probably been subordinated to other GOC priorities, and sizeable past investments have been partially wasted because of the propensity of disease to overwhelm control measures when such measures fall below certain "critical minimum levels of effort." Although implementation of legislation has created a more unified structure among agencies within the health sector and, as a result, more detailed and more potentially effective sector plans have been presented, there is room for significant further organizational strengthening. Given its exclusive political and financial base, the social security system is able to maintain autonomy from the rest of the sector except with respect to

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TABLE 4

MINISTRY OF PUBLIC HEALTH

Organizational Chart



facilities planning. The private sector is also isolated from sector plans. The GOC sector strategy document, analyzed in Part III of this document, presents a situation in which the Ministry of Health, by using the legal powers currently available to it and by larger financial inputs, will continue to attack some of the basic problems which have plagued the Colombian health scene over the years. Some of these programs are not new; they are simply extensions of existing programs which are functioning well and need more resources to accomplish their goals, e. g. the INPES Rural Basic Sanitation Program.

The most complex problem posed by the sector strategy is the decision to regionalize health services from the level of the university hospital to the rural public health post. This regionalization, given the current system of health services in Colombia, doubtless is a very difficult, though essential, goal to achieve. If, however, this innovative approach to providing health services to a larger segment of the population is successful, then Colombia's experience almost certainly will serve as a useful example to other developing countries facing the necessity of extending health services with very limited financial and professional human resources. There is good reason to believe that the regionalized system, which is already working reasonably well in the Department of Valle, when extended to the rest of the country, will provide health service delivery systems that economize on professional personnel by using more para-medical personnel, while also improving efficiency to a degree that broader coverage as envisaged in the new strategy can be achieved.

### C. Current Supply and Demand for Health Services

Since the current strategy to expand coverage will rely on techniques which are already successful and in use in several regions, a review of existing public health programs should be illuminating. As this review

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proceeds, it will become clear that part of the current health problem has been Colombia's inability to keep pace with rapid population growth, and to provide program continuity for successful efforts. (An example is the malaria campaign which had effectively controlled the disease by the 1960s. Control efforts were allowed to diminish during the mid-60s and now, once again, a massive effort is required to bring the disease back under control.)

In this review, sector activities will be categorized as those which provide health promotion and protection and those which provide health recuperation.

1. Health Promotion and Protection

a. Food and Nutrition

In seeking a solution to the problem of malnutrition, the GOC acts through the Direction of Nutrition of the Family Welfare Institute (ICBF), which is in charge of the coordination and development of nutrition programs in Colombia.

These programs have two sources of financing at the current time: ICBF has its own resources deriving from the salt tax, and it receives technical assistance and food donations (WFP, CARE, and Catholic Relief Services) from abroad. With these resources it has created a structure from local through national level based on direct action with communities, health units (hospitals, health centers and posts), and schools.

The Institute has developed two major programs: PINA (Integrated Program of Nutrition) and PRONENCA (National Program of Nutritional Education and Food Supplementation) to attack Colombia's nutritional problems. PINA has as its objective the coordination of the various health, agriculture, education, and community action agencies in order to improve the nutritional situation of the population.

PINA develops actions to increase agricultural production and to improve family life, provides food and nutrition education, and improves the health of the population through the prevention and treatment

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of malnutrition, and the coordination of nutritional and feeding programs in the country.

In 1972, PINA operated in 22 departments and undertook 34 projects integrating activities of various sectors. In each department a special fund for PINA operations was established using both national and departmental funds.

PRONENCA was established to attack malnutrition among the most vulnerable segments of the population: pregnant and lactant mothers, pre-school children and primary school children. The object of the program is to reduce sickness and death among these groups, largely through nutritional education for the mothers and school children and through supplementary feeding. Nutrition recuperation centers have been established for treatment and feeding children under five in advanced states of malnutrition and to give nutritional education to their families.

In addition to this direct action program, the Institute has established nutrition training for professional, technical, and auxiliary personnel and nutrition research in collaboration with other entities.

Food assistance in seven specific regions through the PRONENCA program has been provided by the WFP, while additional assistance to cover the rest of the country is provided by CARE and Catholic Relief Services under the Title II Food for Peace Program. Coordination for all the programs is provided by the PLANALDE (Plan Nacional de Desarrollo) Committee chaired by the National Planning Department.

Food donations have been provided to Colombia for many years (See Table 5); however, only in the last few has Colombia had sufficient administrative capacity in the Direction of Nutrition to use it as a broad scale means of attacking malnutrition among especially vulnerable population groups. Table 6 below indicates the coverage by these programs of the affected population 1971.

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TABLE 5TITLE II - FOOD SHIPMENTS TO COLOMBIA  
(000 Pounds)

	<u>CRS</u>	<u>CARE</u>	<u>WFP</u>
1954	-	1,015	-
1955	4,381	-	-
1956	-	13,982	-
1957	2,508	14,352	-
1958	16,321	23,492	-
1959	25,820	8,042	-
1960	13,592	12,183	-
1961	24,801	19,616	-
1962	31,765	58,645	-
1963	31,833	102,611	-
1964	37,015	48,635	-
1965	27,791	33,928	-
1966	30,852	15,484	-
1967	31,301	18,528	-
1968	30,023	40,819	-
1969	33,413	23,483	-
1970	25,774	50,225	7,221
1971	30,509	25,799	9,532
1972	<u>32,428</u>	<u>31,997</u>	<u>22,000</u>
TOTAL	<u>542,305</u>	<u>430,611</u>	<u>38,753</u>

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\* Does not include other country donations, only U.S.

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TABLE 6  
RECIPIENTS OF SUPPLEMENTARY FEEDING PROGRAM - 1971

	<u>CARE</u>	<u>CRS</u>	<u>PRONENCA</u> <u>WFP</u>	<u>TOTALS</u>
Mothers	50,455	20,706	90,000	161,161
Pre-school	100,855	41,412	295,000	503,252
Other Children	11,355	54,630		
Primary	548,782	395,268	758,900	1,702,950

A special committee on national food policy appointed by the President and assisted by UNICEF is considering the foods that can best be produced in Colombia; the future food needs based on population, nutritional requirements and diet habits; conditions needed to improve production and marketing; and finally, how to reach persons living outside of the market economy. The Instituto de Investigaciones Tecnológicas, in support of the national committee, has designed a mathematical model which tests minimum diets (varied by regional tastes), minimum costs, and population needs to show what foods will be needed and demanded over the next few years. The National Planning Department and USAID are crossing this model with the agricultural production model described in the Agriculture Sector Analysis document to determine necessary inputs of land, credit, manpower, and marketing facilities to produce the diet model needs. This study should awaken agriculture sector entities more fully to the needs of a nutritive diet for all Colombians.

Although the regional PINAs are set up to secure inter-sectoral coordination at departmental levels, it is clear that increased coordination is still needed between PINA and the MOH expanded maternal/child program carried out through sectional health services.

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b. Maternal/Child Care Program

In view of the magnitude of the health problem posed by mothers and children, the Ministry of Health decided, with Pan American Health Organization assistance, to start in 1969 an expanded program of maternal/child health. Its budget has grown from 19 million pesos in 1969 to 40.0 million pesos in 1972.

The basic purpose of the program is to reduce morbidity and mortality rates among mothers and children under 15 years -- the largest health risk group -- to provide early diagnosis of cervical-uterine cancer, and to provide family planning information and services so that couples may decide and control their parenthood. The policy which guides the last objective, often misinterpreted, is within the population policy of the development plan. That policy requires an integrated medical service which provides ample and objective information to permit conscious and rational decisions on family size.

The operative goals of the program are primarily to increase child care and improved attention during pregnancies and the partum and post-partum period, and secondly, to increase the efficiency of the resources of maternal/child care through better organization and programming. It will also augment material and human resources through training of medical, para-medical and voluntary personnel. Through delegation of functions to the para-medical and voluntary personnel, it will expand the coverage of mother/child care. During 1972, the program is carrying out activities in the 22 departments of the country, 2 intendencias (Caquetá, and San Andrés and Providencia), and with the Municipal Secretaries of Health in three principal cities, Bogota, Medellin and Cali. The total coverage is presently 495 municipalities out of 915.

Evaluation of this program by the PAHO advisor and the MOH maternal/child staff indicates some problem areas which are pertinent to the regionalization of services, i. e., slowness in training of local doctors and health promoters has held up expansion of the program in some areas; a significant positive difference was noted in numbers of persons utilizing

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the maternal/child service when there is a local health promoter; when medical consultation was available it was not utilized by the population unless the community received proper education; and the desertion rate of health promoters was highest in those departments with the lowest number of supervisory visits.\*

c. Basic Rural Sanitation

INPES (National Institute of Special Health Programs) is responsible for the development of the program of provision of potable water and sewerage disposal in the rural areas.

INPES and its predecessor agencies have provided potable water to 2,500,000 persons through these projects. Currently 30 % of the rural population of 8.9 million have access to potable water, and 34 % enjoy sewage disposal services. INPES activities and capabilities are analyzed more fully in Section D of this chapter.

d. Urban Sanitation

The development of sanitation projects for towns of over 2,500 people is in the charge of INSFOPAL (Instituto de Fomento Municipal), 21 city public corporations, and a certain corporation called Acuas. Although heavy investments have been made by these entities in the last few years, a large percentage of the urban population still lacks these services, particularly sewers. INSFOPAL activities are discussed in the Urban Sector Analysis document.

e. Vaccination

In 1967, a massive vaccination campaign was initiated against smallpox, tuberculosis, diphtheria, whooping cough, and tetanus. By 1970, 15,992,286 persons (78.2% of the population) had been vaccinated against smallpox. Vaccinations against diphtheria, whooping cough, and tetanus have

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\* PAHO Report: "Programa de Extensión de Servicios de Protección Maternal e Infantil," May, 1972.

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reached 43.3%, tuberculosis 69.2% of the children under 15, and tetanus 10.2% of the women between 15 and 44. As of 1971, the campaign was oriented to raise the level of the vaccinated population.

For 1972, the Ministry of Health has programmed a vaccination campaign against polio and measles to prevent these illnesses in young people, the most affected. See Table 7.

This program indicates well the degree of coordination possible among sector entities. The Ministry of Health plans and determines the areas, age groups, and needs of the particular population to be vaccinated. Vaccines are prepared at the Samper Martinez Laboratory of INPES. Actual vaccination and implementation are carried out by the sectional health services. This well-planned attack on specific diseases will be continued under the strategy until at least 80% of the children have been vaccinated, and then a maintenance effort will be instituted.

f. Control of Malaria, Yellow Fever, and Yaws

Actions against malaria are directed at those areas with the altitude and temperature conducive to the disease. This zone includes about 85% of the country with about 12.5 million inhabitants.

The yellow fever and yaws campaigns are also to be so concentrated.

Protection against malaria and other tropical diseases is particularly important in agricultural colonization areas and, as a result, a good part of the future GOC efforts will go to these zones. The teams which carry out this work also give vaccinations and other kinds of preventive care.

2. Health Recuperation

The demand and availability of health recuperation services are measured with information on hospital discharges and out-patient medical consultations of the public sector institutions. Also, the 1966 National

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TABLE 7  
VACCINATIONS AND LEVELS REACHED

<u>Type of Vaccination</u>	<u>Population of the intermediary year 1969</u>		<u>Total doses in the last 3 yrs.</u>	<u>Total No. of persons vaccinated during the last 3 yrs.</u>	<u>Vaccination Percentage Reached</u>	<u>Levels Desired</u>	
	<u>Group</u>	<u>Number</u>					
	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	
Anti-smallpox	Less than 5 years	Total Population	20,463,078	15,992,286	15,992,286	78.2	80
D. P. T. (Diphtheria, Whooping Cough, Tetanus) <sup>1/</sup>	Less than 1 year						
	Less than 3 years						
	Less than 5 years	3,611,733	5,706,470	2,642,152	46.3	80	
Tetanus <sup>2/</sup>	Women 15-44 yrs. rural zone	1,811,692	374,210	175,188	10.2	80	
Anti-Malaria		133,987	133,987				
Anti-Polio	Less than 1 year						
	Less than 3 years						
	Less than 5 years	3,611,733	804,416	804,416	22.3	80	
Measles	Less than 1 year		Was applied in minor scale.				
	Less than 3 years						
	Less than 5 years						
Tuberculosis	Less than 1 year						
	Less than 15 years	9,546,026	6,606,769	6,606,769	69.2	80	

<sup>1/</sup> Antioquia data excluded (1968), massive campaign and health services included.

<sup>2/</sup> 1968 Antioquia data excluded; the protection level reached is somewhat over-estimated, because there are vaccinated persons with different condition from the target population.

SOURCE: Sectional Health Plans: Vaccination Group, Ministry of Health, Report from the Sectional Health Services.

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Morbidity Census, dealing with the non-institutional population through home interviews, provides further information on the demand for medical services.

### a. Out-patient Services

In 1971 the hospitals, health centers, and the health units provided 7,375,686 medical consultations. The total number of consultations, including private practice, was 24,321,715. Therefore, the out-patient services of official institutions were at that time carrying about one-third of the load.

According to the 1966 National Morbidity Census, in the two weeks before the interviews, 387 per 1,000 persons felt ill, of these 88 had consultations but only 63 saw a physician. The rest went to non-medical personnel, including pharmacists, midwives, nurses, dentists, or their families. During 1965, only 38% of the population had medical consultations, yielding an average of 6.1 consultations per person seeking assistance, while 62% of the population did not receive attention. Out-patient services, because of accessibility, primarily affect the urban population.

### b. Hospital Services

During the period August, 1965, through July, 1966, 913,000 persons were hospitalized, which is a rate of 50.6 persons per 1,000 inhabitants. Eighty-nine percent of the hospitalized were hospitalized one time, 9% twice, and the rest more than twice, for an average of 1.1 hospitalizations per person utilizing the services that year.

For 1971, 1,164,241 persons were hospitalized, an average of 53.4 persons per 1,000 inhabitants, and an increase of 5.5% from 1965 to 1971. Hospital beds had a 64.4% occupancy rate; more than half the beds were in cities with one-fourth of the Colombian population, which illustrates the relative availability of services for the urban sector.

The sector strategy analyzed later in this document seeks to broaden the availability of out-patient and hospital services through a regionalized system. In Valle, where a prototype of this system is in

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operation, professional time is saved by delegating functions that previously impinged on doctors and hospitals to lower-level personnel and health posts. Estimates of resource savings of 40% through regionalization were made by health personnel. If this saved professional time can be brought to bear on that segment of the population not receiving medical attention, a great step will be taken toward expanding coverage.

Hospital occupancy rates are determined by a large variety of factors, not the least important of which, as stressed in the regionalization plan, is getting patients to the level of institutional care appropriate to the character of their illness. In Valle, higher occupancy rates almost certainly reflect the success of the referral system as well as that of health promoters who assist in moving people into the health system.

c. Pregnancy and Childbirth Attention

The human resource study collected data from the women of fertile age (15 to 54) and was retrospective for one year. During this period an estimated 867,000 pregnancies were culminated with 48% receiving a doctor's attention. Of the pregnancies mentioned, an estimated 745,000, or 86%, resulted in births. Of these, 34% were attended by doctors, 55% by midwives or nurses, and 11% by other personnel. Of the 117,000 abortions, 56% received doctor's attention.

In the recent report of the Minister of Health to Congress, it was estimated that for 1971 coverage of 80% of the nation's pregnancies would require 1,930,580 medical consultations during those pregnancies. The M.O.H., which assigns responsibility to itself for 77% of the population, was able to provide 332,473 consultations under its program of expanded maternal child care. This, of course, did not include consultations given by public institutions outside of the program.

This effort is beginning to bear fruit in reduced abortions, increases in family planning, better utilization of hospital beds, and reductions in maternal and child deaths. Increased effort in this area, and the availability of better service through the regionalized system should multiply the effectiveness of this program.

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d. Dental Attention

In 1965, 435 persons of each 1,000 over two years of age mentioned dental problems and of these only half visited dentists. It is projected that during 1965-1966 four million Colombians had ten million dental consultations. Despite this, the prevalence of dental problems is underestimated, because then persons interviewed did not know if they had problems. For this reason, the 0.6 consultation rate per person represents a low coverage of need. Most dental treatments in the period were extractions.

Regionalization should increase the use of limited dental personnel somewhat, but the major new dental program is fluoridation of water, at least in urban areas. Also, nutrition programs will have a positive effect on general dental health.

e. Welfare Plan Medical Attention

Only 6.8% of the country's population was protected in 1970 by any welfare insurance system, and these provided economic benefits as well as medical services. Whether the needs of the insured population are satisfied by the systems is difficult to establish because of differences in coverage by each system. It is important to note that during 1965 the coverage of the welfare systems included 13% of the 15-64 age group. The major coverage is among the urban male group.

D. Description and Critical Assessment of Health Agencies

1. Ministry of Health

The Ministry of Health is the GOC agency mainly responsible for initiating and directing change in the health sector. The Ministry of Health develops health policy, coordinates planning and budgeting of the semi-autonomous agencies in the sector and the sectional health services; and is increasingly involved in health program implementation and evaluation. The Ministry was reorganized in 1969 to carry out the functions given it in decrees and laws previously mentioned. See Organizational Chart, Table 4.

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The planning and budgetary procedures for health sector agencies have also been reformed. Those sector agencies that receive funds from the National Government now submit their proposed plans and budgets to the Planning Office of the Ministry for approval. The Planning Office reviews all projects and agency budget proposals prior to their approval. Those parts of the request which require national financing are assembled into a health sector budget proposal and forwarded to the National Planning Department. Under this system appropriations for the health sector are made only after different proposals and projects are evaluated on the basis of the program guidelines and regulations established by the Ministry of Health, and consideration of priorities and alternate use for sector funds. The new health strategy recognizes the need to improve the planning function in the Ministry, so that planning discipline may be further improved.

The restructuring of the health sector gave to the Ministry greatly increased responsibility for the development, coordination, and implementation of health policy in Colombia. (See Table 3 for present organization of the health system.)

a. Coordination with Agencies Outside the Sector

The Ministry of Health works with the Ministries of Labor, Education, Agriculture, and the National Planning Department with regard to social welfare insurance plans, health education at all levels, and the provision of health services in colonization and land reform areas. The new rural services concentrations and intermediate cities development plans have been considered in the health strategy. For instance, massive campaigns against malaria, yellow fever, and yaws give highest priority to coverage of colonization and an estimated 55% of hospital construction will be in intermediate cities.

b. Coordination of Agencies Within the Health Sector

The restructuring of the health sector simplified the administrative functions of the Ministry, leaving as an integral part of the Ministry

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only the operation of direct campaigns. These currently include: malaria, yaws, yellow fever, leprosy, and vaccinations for measles, diphtheria, tetanus, whooping cough, and tuberculosis.

Thus, the Ministry has been transformed into a planning, policy formulation and coordinating agency for the health sector. Its central organization consists of: the Office of the Minister, the Vice Minister, and the Secretary General; three divisions: Division of Direct Campaigns, the Medical Attention Division, and the Division of Environmental Sanitation; a legal office; a human resources office; and the planning office. The Medical Attention Division includes: data collection from all the health agencies, a dental group, the expanded maternal/child program, the architecture group for the National Hospital Fund, a drug control group, and a tuberculosis control group. All programs are implemented by the sectional health services. The Division of Environmental Sanitation develops sewer and water projects with the assistance of INPES and with INSFOPAL, and programs for occupational health, industrial hygiene, veterinary medicine and control of foods with the sectional health services. The Division of Direct Campaigns is primarily responsible for immunization/vaccination campaigns and other preventive health measures. Many activities previously carried out directly by the Ministry have been assigned to newly-created or existing decentralized agencies, with the Ministry retaining planning, budgeting, supervision, and coordination responsibilities. Each agency has been assigned clear responsibilities to prevent conflicts in the sector.

The Ministry's position is consolidated through three mechanisms:

(1) Establishment of a Superior Health Council, presided over by the Minister of Health and including: Vice Minister, Secretary General, Director of INPES, Director of ICBF, Director of CORPAL, Director of ICSS, and Manager of the Caja Nacional de Prevision Social.

The Council is responsible for reviewing all health sector programs; the Chief of the MOH Planning Office is Secretary for the group.

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(2) Review of Plans and Projects. As a result of recent legislation, agencies and sectional health services must submit their program and budget proposals to the MOH Planning Office for its approval. The Planning Office compiles the programs and budgets from the various agencies into an overall budget for the health sector and presents this to the Minister. The Minister then sends the budget to the National Planning Department.

(3) Composition of Governing Boards. The Minister of Health presides over all the Boards of Directors of the principal health agencies. In addition to the Minister, the managers or directors of the six main agencies (INPES, ICBF, INSFOPAL, CORPAL, Fondo Hospitalario, INC) often are members of the Boards of Directors of the other agencies. Since these managers are also often members of the Superior Health Council, the general health policy and plan will be understood and accepted by each of the agencies.

c. Coordination with Other Health Programs not Currently Under the Ministry of Health

The two main sources of health care not currently under the MOH are the social security insurance plans and private medicine. Although coordination with these sources of health care is still tenuous, various mechanisms have come into being:

(1) The Colombian Institute for Social Security (ICSS) for private industrial workers and the National Welfare Plan for government workers must coordinate hospital needs with the National Hospital Fund. At the departmental level coordination between ICSS and Ministry programs is increasingly frequent and effective, though still incomplete.

(2) The Colombian Association of Medical Faculties (ASCOFAME) a private grouping formed by the nine medical schools in Colombia, works with the Ministries of Health and Education in establishing training and certification standards for health personnel. Working closely with the MOH Human Resources Office, they conduct studies of the availability of such personnel and identify those areas which need improvement. The Ministry serves on the Advisory Committee to the ASCOFAME Board of Directors to assure a channel of coordination with this private sector entity.

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d. Coordination with the Sectional Health Services

Decree 1499 of 1966 established contractual relationships between the MOH and each of the sectional health services (found in each department and covering the territories and intendencias). These contracts brought various local sources of funding and health service together under a local board and chief of service. They require that an annual plan and program be submitted for MOH approval before the local board adopts and places it into action. This program plan also provides the basis for MOH budget support for the sectional health service. The contracts establish the functions and obligations of the sectional service and define its role in technical and administrative integration and regionalization of local health services.

The current health strategy then is the result of several years efforts at streamlining the organizations in the sector, detailing responsibilities, determining the institutional and operational needs on a priority basis, and implementation of major efforts based on previous experience. Real progress is being made in coordinating the efforts of different agencies and organizations toward the priority objectives of a sector program. The Minister of Health and other key GOC officials have recognized the need for more clear-cut policy guidance and legal measures in general areas and are taking action to provide this direction. Institutional and organizational problems are being corrected. Priorities are being more clearly defined. Whether these new initiatives will be fully successful in furthering the goal of a national health service based on regionalization of services will have to await later review.

TABLE 8KEY PERSONNEL - COLOMBIAN HEALTH SECTORMinistry of Health (MOH)

Minister	Jose Maria Salazar Bucheli
Vice Minister	Guillermo Restrepo Chavarriaga
Secretary General	Sofonias Yacup Revels

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National Institute of Special Health Program (INPES)

Director Pablo Morillo Cajiao

Division of Rural Sanitation

Director Jaime Mora

Colombian Institute of Family Welfare (ICBF)

Director Rafael de Zubiria

Nutrition Division:

Chief Leonardo Sinistera

National Institute of Municipal Development (INSFOPAL)

Director Rafael Paredes Infante

Corporacion Proveedora de Institutos de Salud (CORPAL)

Manager Carlos de Fex

Fondo Nacional Hospitalario (FNH)

Chairman Alberto Rocha Alvira

Instituto Nacional de Cancerologia (INC)

Director Mario Gaitan Ynaguas

Instituto Colombiano de Seguros Sociales (ICSS)

Director Jose Raimundo Sojo Zambrano

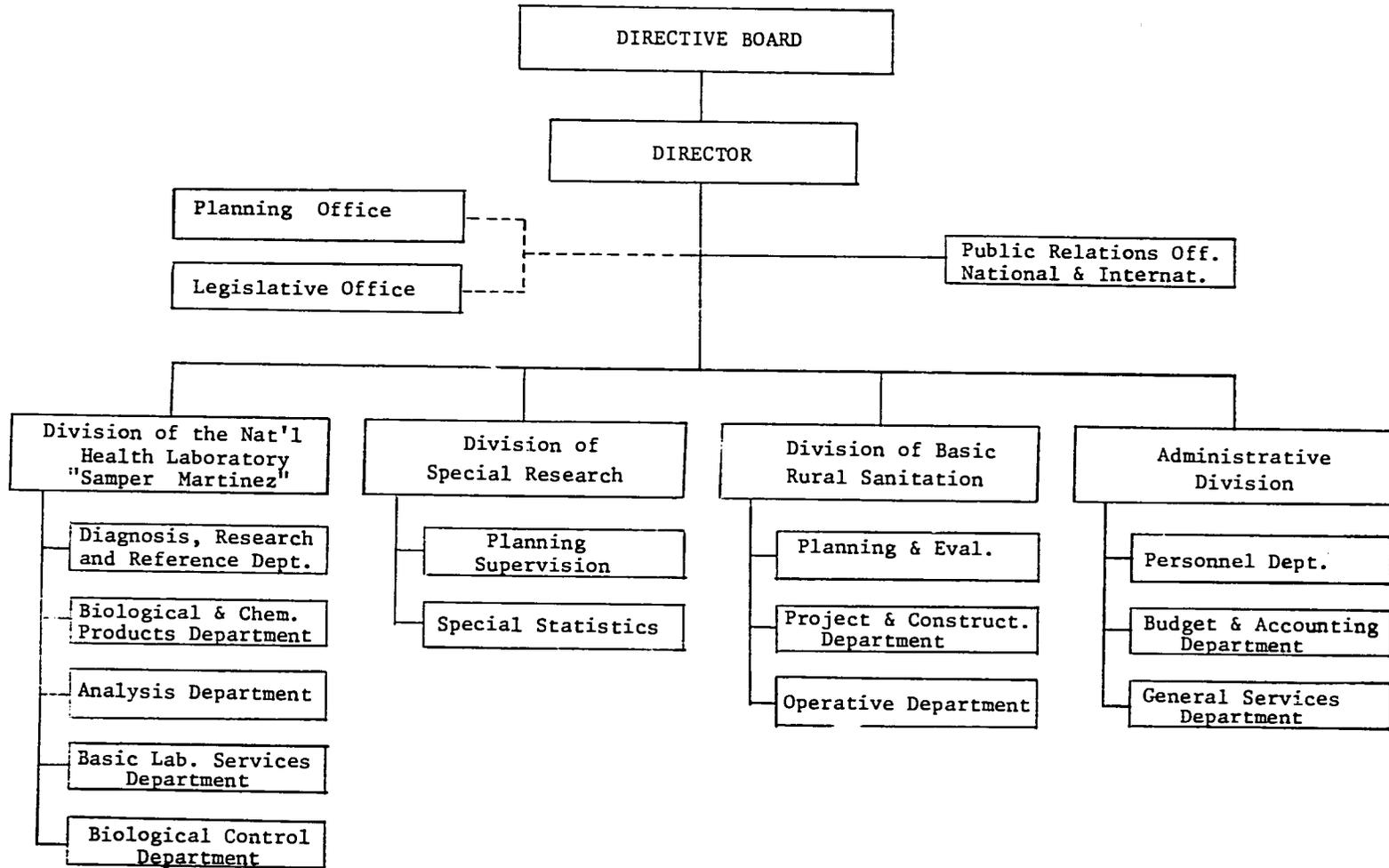
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TABLE 9



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(1) Division of Basic Rural Sanitation

Problems and Objectives

Poor sanitation conditions in Colombia, especially the absence or deficiency of potable water supply and the disposal of waste, have contributed to a health situation characterized by high sickness and death rates. According to a study of Colombian health conditions, 50% of transmittable diseases are transmitted by water, and 14% of deaths are caused by water-borne diseases.

The objective of the Division of Basic Rural Sanitation is to provide water and waste disposal services to dispersed rural populations and towns of less than 2,500 inhabitants. In 1971, of the population to be served by INPES (8.9 million, or 41% of Colombia's total population), 70% (6.3 million) were without service of potable water, and 66% (5.9 million) were without adequate services for elimination of wastes.

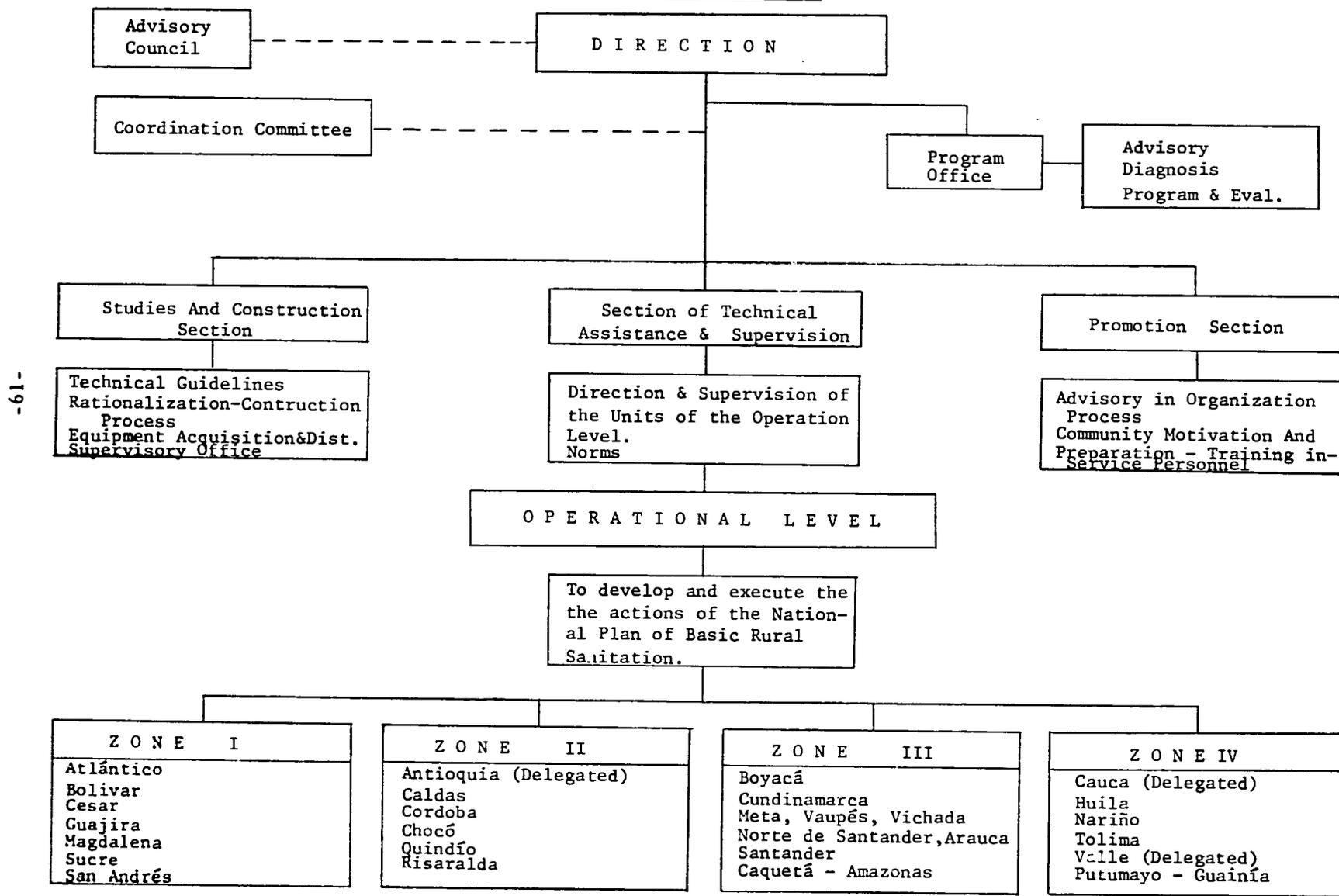
Structure, Functions and Staffing

The Division of Basic Rural Sanitation is structured and has functions as shown in Table 10. The staffing is shown in Table 11. At the national level, the Division has the function of controlling, programming, elaborating and evaluating the program of the National Plan of basic rural sanitation. Of the ten engineers at the national level, eight are specialized in sanitary engineering, and several have taken courses in business administration.

At the operational level, there are 24 departmental sections in charge of the execution of the program and the development of the activities the program necessitates, such as the programming, control, construction, inspection, and maintenance of projects. The structure and staffing of a typical INPES section is shown in Table 12. Of the 32 engineers assigned to the INPES sections, ten are specialized in sanitary engineering and, as at the national level, several have taken courses in business administration. The personnel at the national operational level are well qualified and highly motivated to perform their technical and administrative functions.

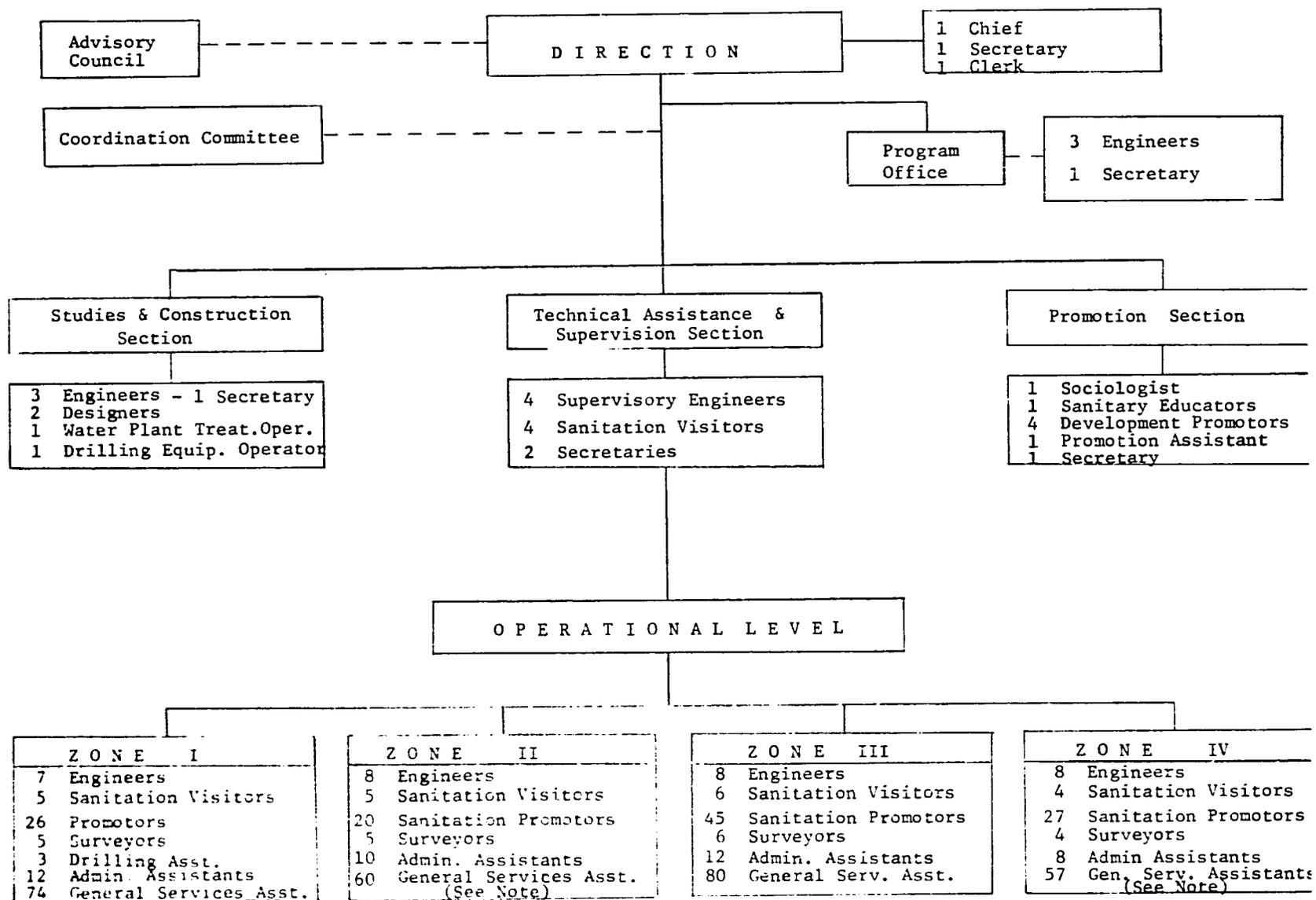
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TABLE 10  
DIVISION OF BASIC RURAL SANITATION  
STRUCTURE AND FUNCTIONS



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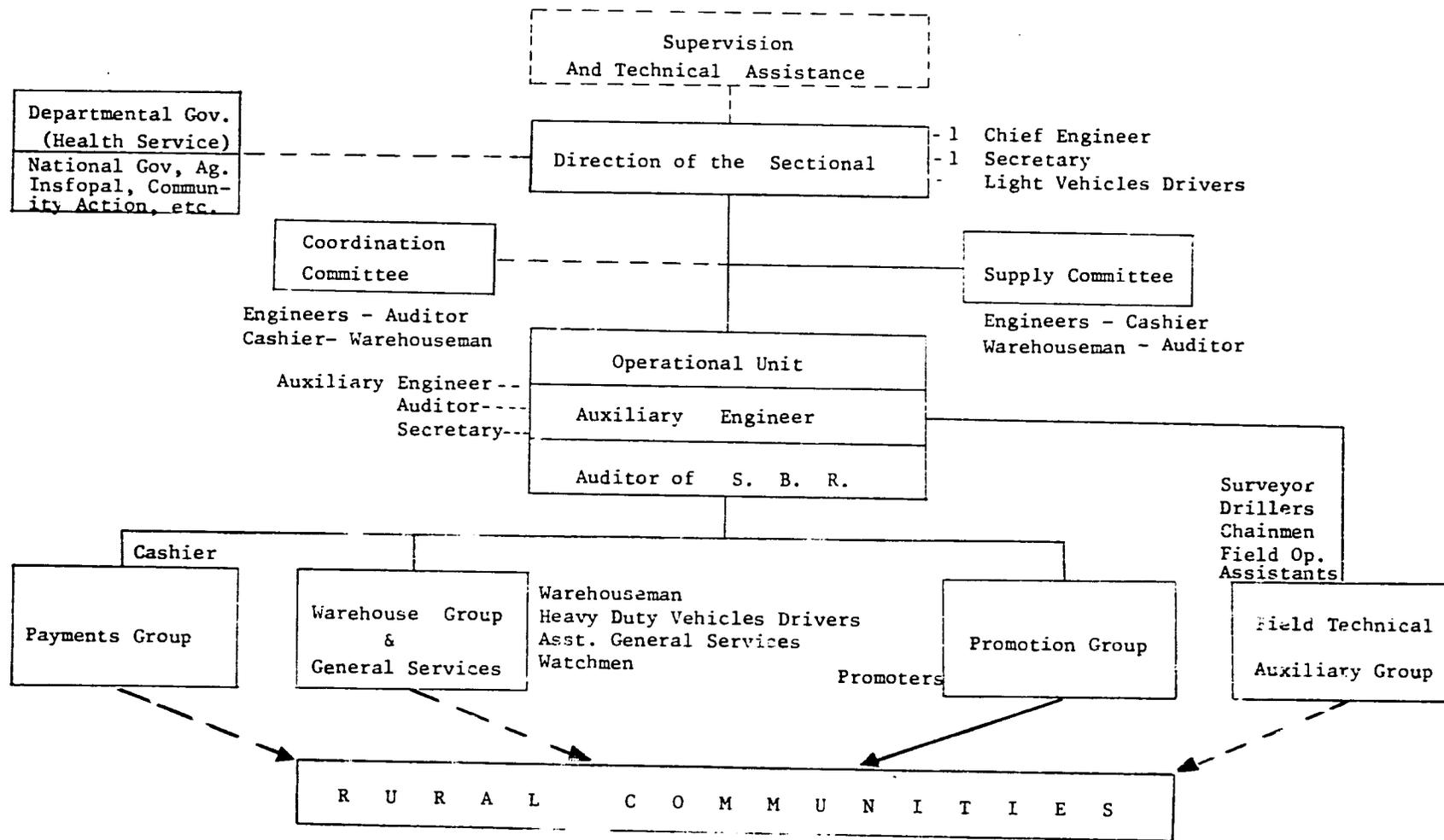
**TABLE 11**  
**STRUCTURE AND HUMAN RESOURCES**



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NOTE: Personnel of Antioquia, Cauca and Valle are not included since the program is carried out by delegation of the respective Health Service.

TABLE 12  
DIVISION OF BASIC RURAL SANITATION  
STRUCTURE AND HUMAN RESOURCES OF INPES SECTIONALS



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At the local level, Administrative Boards of Water and Sewerage Service are established for each project. The Boards are in charge of the operation, administration, maintenance and improvement of the services constructed with the aid of the INPES.

Each Board is composed of three members, one representative of the Community Action Group of the local community, one representative from the users of the services, and one representative from the INPES section. The local representatives are elected president and treasurer by the users, and an INPES appointee acts as secretary of the Board. These Boards have generally been remarkably effective in assuring the successful maintenance of projects and the amortization of investment costs.

Program Description

Philosophy - A key principle under which the program operates is maximum participation of the community in the realization of the investment projects. The communities participate through their approval, contribution of labor, material and economic resources, and their participation in the operation, maintenance and administration of the service. The community's initial contribution to the investment has averaged 20% of the costs. Motivation of community self-development efforts is an important payoff of the rural sanitation program. (See Table 13.)

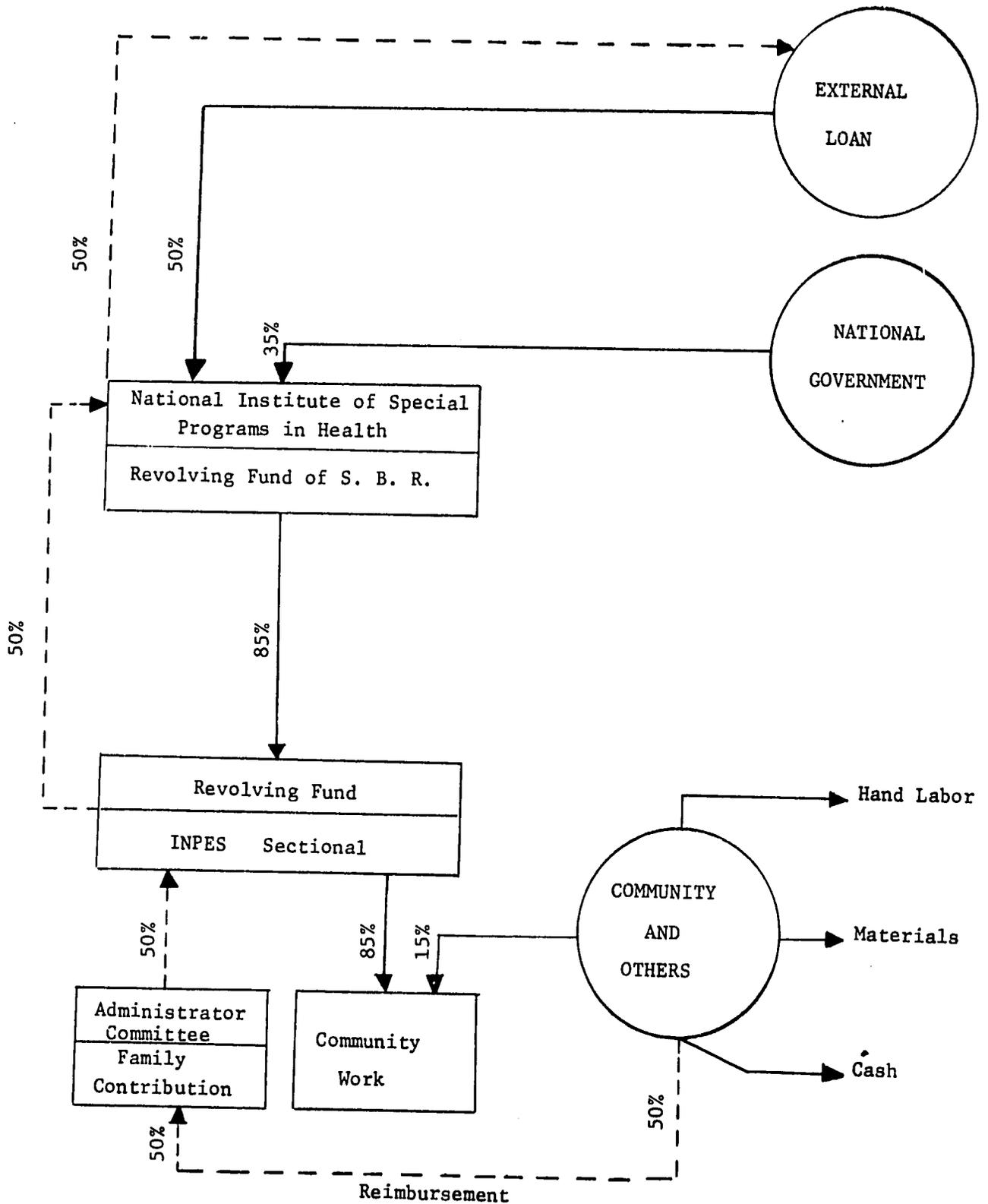
Selection Criteria - INPES has established priorities for the selection of the locations for water and sewerage projects. The selection criteria are the following:

- Availability of adequate sources of water;
- Interest of the community;
- Concentration and growth of the population;
- Possible coordination with other development programs;
- Capability of community to contribute to the project;
- Characteristics of the water supply and the receptors

of wastes.

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TABLE 13  
FINANCIAL STRUCTURE



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Project Execution - A project is executed in the following phases:

Study of the Community - Presently, an inventory is made by a promoter from an INPES departmental section of the sanitary, economic, social and cultural characteristics of the community that might influence the development of the project and which measure the project relation to the selection criteria. To better coordinate and standardize the inventory phase, a manual has been prepared by INPES Division of Special Research for an inventory of all communities of populations between 50 and 2,500. The study is being carried out with a loan from FONADE, the National Development Fund. The results of the study will enable INPES to improve its method for selecting communities for development of projects.

Project Preparation - Topographic plans and construction designs are prepared by the technical groups of the INPES sections according to the norms of design established by INPES.

Motivation, Promotion and Organization of the Community - A promoter in the INPES section has the responsibility to make contacts with local authorities, interview organized groups, visit leaders, meet with general assemblies and, if necessary, help from a Community Action Group. Once the community is sufficiently motivated and prepared, a contract is signed between INPES and the Community Action Group for the construction, financing, and administration of the project.

Construction of the Project - The project is constructed usually under the direction of an experienced supervisor of construction, who is contracted by INPES. Work progress, use of materials and labor, and community contribution are controlled and monitored by the INPES section through inspection and reporting procedures.

Administration and Supervision - Once the project is completed, the service is delivered to the Board of Administration for operation and maintenance. INPES continues its assistance through its representative on the Board and with technical advice on administration, maintenance and financial matters.

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Information and Control of the Program - In order to control the program at the national level, INPES has formed visiting teams from the central office to visit the INPES sections. The teams are composed of a sanitary engineer and an administrator to advise and assist the sections in technical and administrative matters.

The INPES sections are required to forward to the national office the following reports:

- Monthly report of accomplishments, including information on funds received and used, materials used, and inventories, works in progress, etc.
- Monthly summary of investment and advance of work in construction.

The reporting system is well designed and is providing sufficient feedback to the INPES national level.

Program Accomplishments - The predecessors of INPES, during 1962-1968, completed 4,023 water projects providing service to 570,137 persons with a total value of 63.3 million pesos, of which the community and other agencies contributed 24.1 million pesos. They completed 35 sewerage projects and 201,190 latrines, providing service to 881,579 persons with a total value of 13 million pesos of which the communities and other agencies contributed 4.5 million pesos. INPES, during 1969-1971, completed 546 water systems, 1,837 small water projects, 148 sewerage projects, and 51,307 latrines benefiting over 900,000 persons with an investment of 177.9 million pesos of which the community and others contributed 39.5 million pesos.

Tables Nos. 14, 15, 16 and 17 give figures on the numbers of projects completed by INPES, persons served, and investment costs and sources of funds for the years of 1969-1971. Charts Nos. 18, 19 and 20 present comparisons of investment from 1962-1971.

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TABLE 14  
I N V E S T M E N T S  
I N 1 9 6 9

Sub-Program	TYPE OF WORK	No. of Works	Coverage Inhabitants	I N V E S T M E N T				
				"INPES"	COMMUNITY	OTHER	TOTAL	
COMPLETED WORKS	Water Supply	Aqueducts	156	76.899	21,363,624.41	3,631,609.05	2,159,239.81	27,154,473.27
		Small Water Reservoirs	612	27.666	4,278,904.32	2,121,645.20	958,117.07	7,358,666.59
		Sub-Total		104.565	25,642,528.73	5,753,254.25	3,117,356.88	34,513,139.86
		Sewers	20	7.396	1,094,692.52	221,931.60	338,941.87	1,655,565.99
	Rural Sanitation Units	19.166	114.996	2,404,009.70	-	-	2,404,009.70	
	Sub-Total		122.292	3,498,702.22	221,931.60	338,941.87	4,059,575.69	
	T O T A L	-	-	29,141,230.95	5,975,185.85	3,456,298.75	38,572,715.55	

TABLE 15

I N V E S T M E N T S

I N 1 9 7 0

Sub-Program		TYPE OF WORK	No. of Works	Coverage Inhabitants	I N V E S T M E N T			
					"INPES"	COMMUNITY	OTHER	T O T A L
C O M P L E T E D W O R K S	Water Supply	Aqueducts	163	99,442	17,494,678.78	4,712,036.95	3,725,327.34	25,932,043.07
		Small Water Reservoirs	514	23,713	2,877,597.99	2,794,167.12	1,228,386.28	6,900,151.39
		Sub-Total	-	123,155	20,372,276.77	7,506,204.07	4,953,713.62	32,832,194.46
	Waste Elimination	Sewers	71	25,225	2,829,900.72	1,130,600.27	564,511.33	4,525,012.32
		School Sanitation Units	53	6,225	638,905.67	177,800.10	64,734.31	881,440.08
		Rural Sanitation Units	13.891	83,346	1,039,202.64	-	-	1,039,202.64
		Sub-Total		114,796	4,508,009.03	1,308,400.37	629,245.64	6,445,655.04
		T O T A L	-	-	24,880,285.80	8,814,604.44	5,582,959.26	39,277,849.50

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TABLE 16NATIONAL PLAN OF BASIC RURAL SANITATIONTOTAL EXPENDITURES AND INVESTMENTS 1971

	Million Pesos	%
I N P E S .....	84.4	
NET WORK INVESTMENT .....	59.2	59.2
GENERAL EXPENSES .....	11.7	11.7
PERSONAL SERVICES .....	13.5	13.5
COMMUNITY AND OTHER .....	15.7	15.6
T O T A L .....	100.1	100.0

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TABLE 17

PROGRAM AND ACCOMPLISHMENTS IN 1971

NUMBER OF WORKS

TYPE OF WORK	PROGRAMMED	COMPLETED	UNDER CONSTRUCTION	COVERAGE WITH COMPLETED WORKS
Aqueducts	445	227	153	274,082
Small Water Reservoirs	711	556	93	
Sewers	105	57	44	39,769
Latrines	20,000	18,250	-	109,500
School Sanitation Units	164	137	27	12,499

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TABLE 18  
MINISTRY OF PUBLIC HEALTH

INPES  
NATIONAL PLAN OF BASIC RURAL SANITATION  
INVESTMENTS IN WATER SUPPLY WORKS  
1962 - 1971

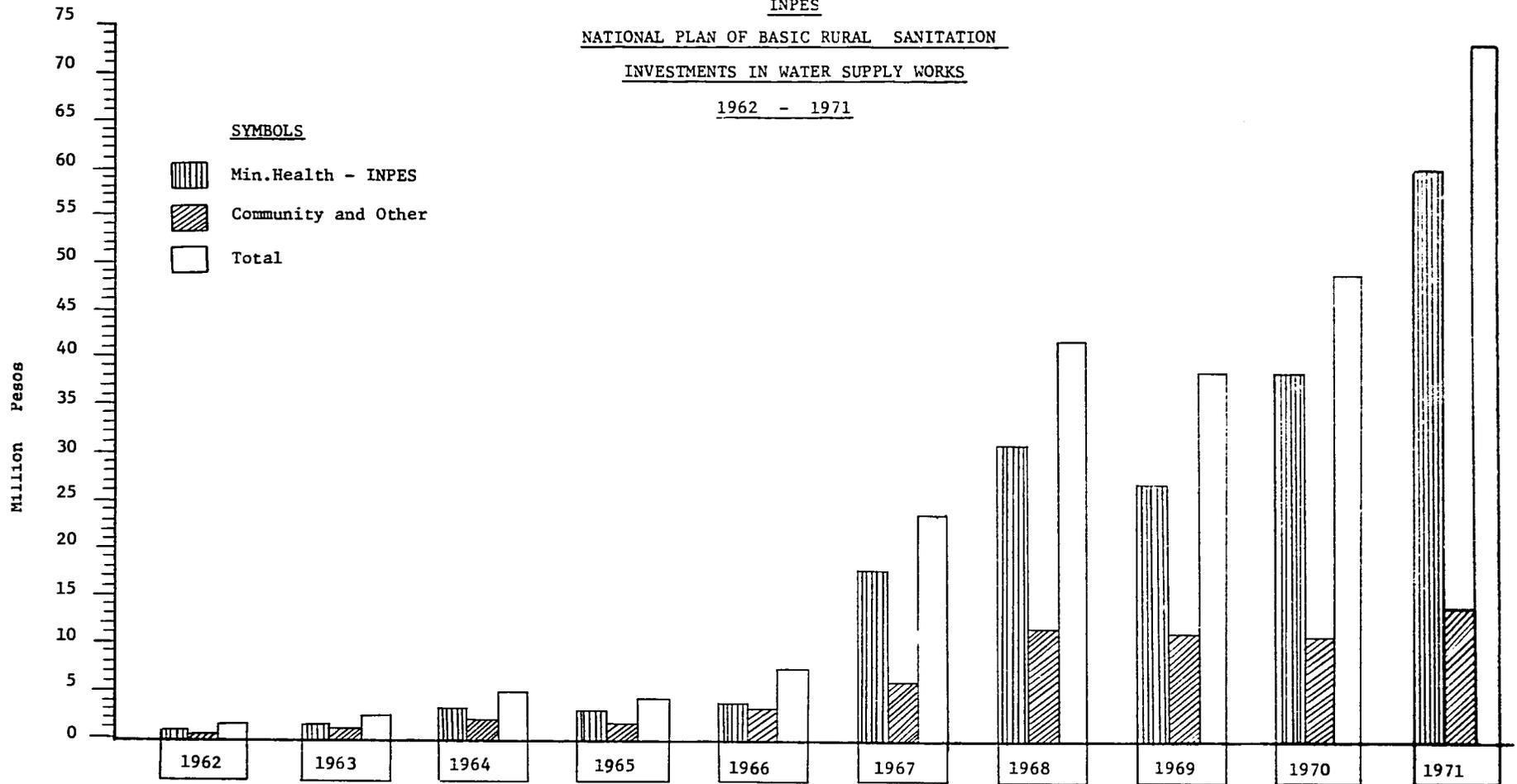


TABLE 19  
MINISTRY OF PUBLIC HEALTH

INPES

NATIONAL PLAN OF BASIC RURAL SANITATION

INVESTMENT IN WASTE ELIMINATION SYSTEMS

1962 - 1971

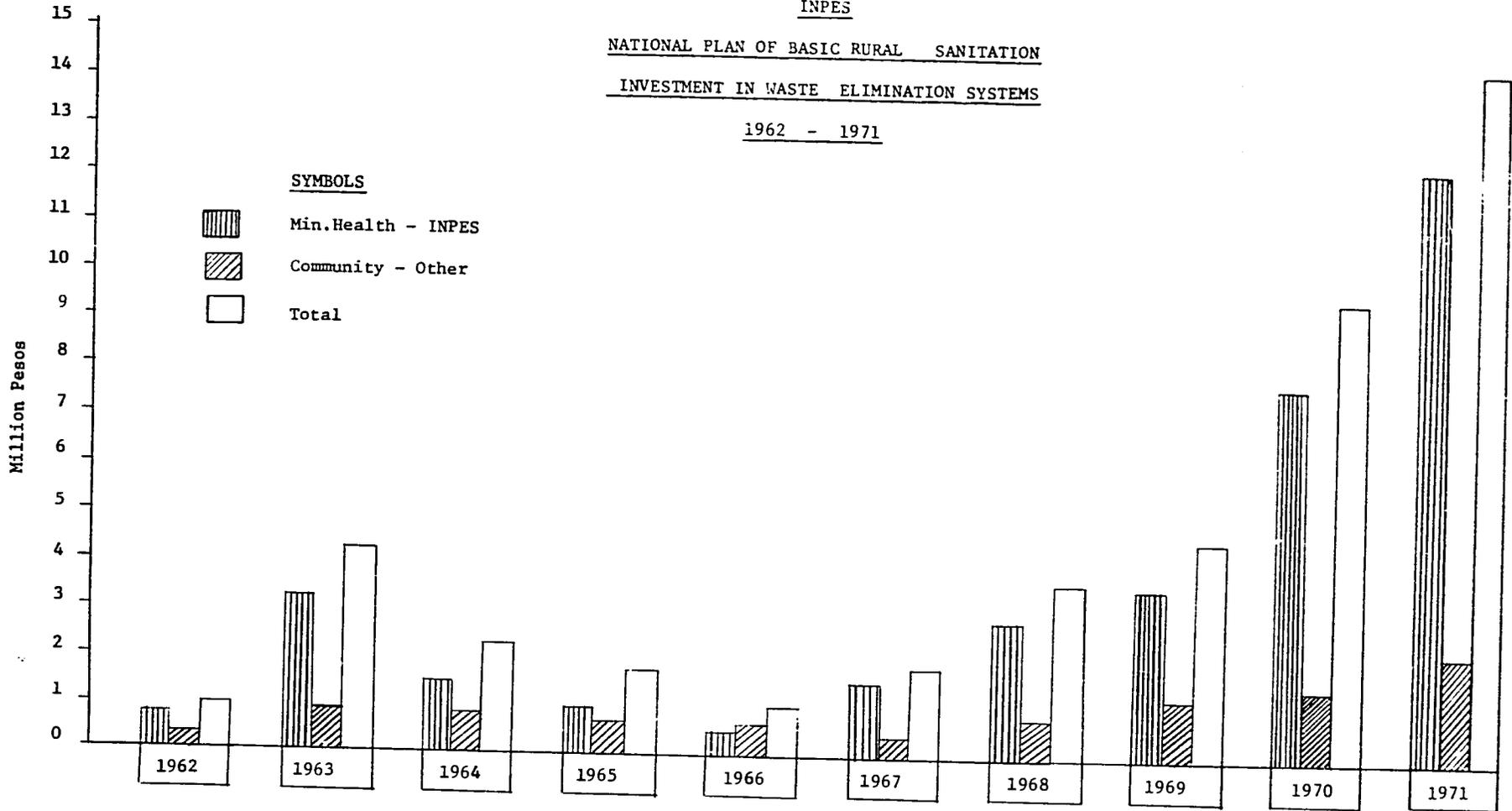


TABLE 20

MINISTRY OF PUBLIC HEALTH

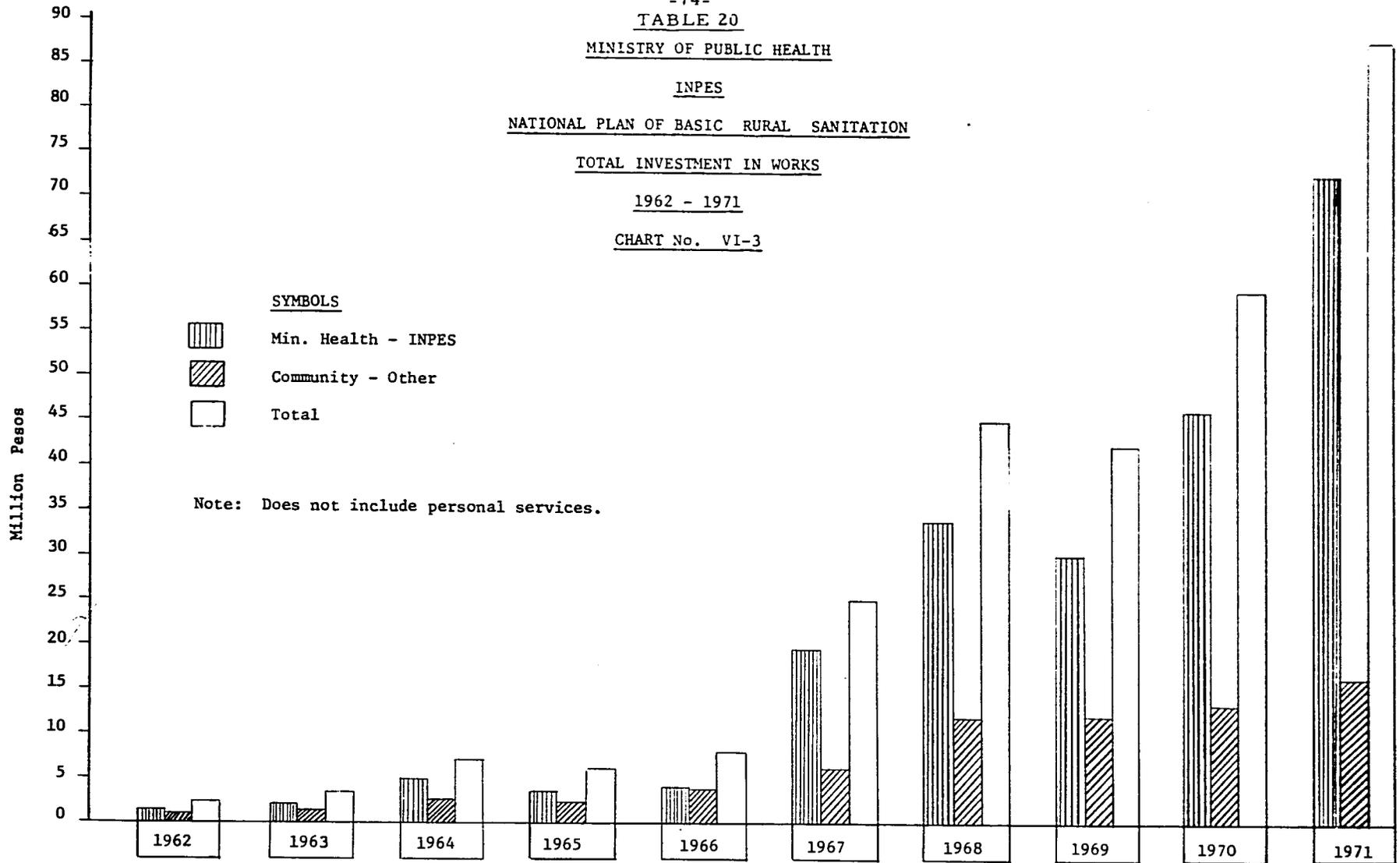
INPES

NATIONAL PLAN OF BASIC RURAL SANITATION

TOTAL INVESTMENT IN WORKS

1962 - 1971

CHART No. VI-3



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INPES provides part of the financing of its projects by means of a loan to the communities. These loans are made on terms of up to ten years repayment at 6% annual interest. On December 31, 1971, INPES had an outstanding balance of 25.4 million pesos in loans to communities. During 1971, communities repaid 2.27 million pesos, indicating that about one-ninth of outstanding loan balances was returned during 1971. Table No. 21 gives the financial status of loans for projects completed by INPES and administered by the communities.

In addition to the physical accomplishments of projects completed, accomplishments were made in the social infrastructure of the communities served, such as promoting small industry particular to the construction of sewerage and water facilities, training of workers and plumbers, improving property values, eliminating time lost in transporting water, providing basic services for development of small industry, and creating Community Action Groups for promoting further development.

The growth of the annual output of the rural sanitation program has been substantial, from providing water services to 45,000 persons in 1962 to 162,000 in 1971, and from providing waste disposal services to 89,000 persons in 1962 to 130,000 in 1971. Visits to various terminated projects and projects in construction give evidence that the programs are well conceived, constructed and administered.

(2) Division of Special Research

The Division of Special Research is an outgrowth of the "Study of Human Resources for Health and Medical Education in Colombia," initiated in August, 1964. It was realized that a permanent investigative organization was needed in the health field, and the Division of Special Research was formed as part of INPES.

Some of the studies and programs being carried out by the Division are:

- Study of odontological resources;
- Census of social protection and rehabilitation institutions;

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**TABLE 21**  
**NATIONAL INSTITUTE FOR SPECIAL PROGRAMS IN HEALTH**  
**DIVISION OF BASIC RURAL SANITATION**  
**FINANCIAL STATUS OF WORKS CARRIED OUT BY INPES AND**  
**AND ADMINSTRATED BY THE COMMUNITY**

DEPARTMENT AND INTENDENCIA	No. of Admin. Boards			TOTAL	REPAYMENT OF LOANS DURING 1971	BALANCE OF LOANS AS OF DEC. 31, 1971
	Aqueducts	Sewers	Aqueducts and Sewers			
ANTIOQUIA	42	1	-	43	141,178.01	1,083,649.59
ATLANTICO	16	-	-	16	61,344.30	1,000,696.14
BOLIVAR	10	-	-	10	49,971.13	802,194.93
BOYACA	47	-	-	47	420,876.10	1,950,675.16
CALDAS	56	13	-	69	128,216.23	950,293.88
CAUCA	42	1	7	50	161,717.15	1,930,843.17
CESAR	12	-	-	12	25,098.12	493,191.00
CORDOBA	8	-	-	8	14,275.00	909,032.00
CUNDINAMARCA	40	2	1	43	32,748.78	1,113,894.26
CHOCO	31	-	-	31	-	-
HUILA	35	2	-	37	121,470.07	989,523.01
GUAJIRA	12	-	-	12	16,559.35	890,059.93
MAGDALENA	12	-	-	12	27,256.28	931,826.55
META	11	-	-	11	23,360.59	620,748.58
NARIÑO	75	2	6	83	149,453.54	1,840,824.53
N. SANTANDER	38	-	-	38	60,562.90	1,104,514.14
QUINDIO	6	1	-	7	28,499.88	89,020.28
RISARALDA	23	5	-	28	41,945.69	522,205.56
SANTANDER	29	4	1	34	114,683.49	1,338,960.10
SUCRE	6	-	-	6	58,405.30	1,010,363.59
TOLIMA	44	-	-	44	187,805.98	1,570,903.00
VALLE	79	-	-	79	380,130.83	3,286,108.60
CAQUETA	5	-	-	5	21,685.43	680,581.82
PUTUMAYO	3	-	-	3	-	259,601.55
TOTALS	682	31	15	728	2,267,244.15	25,319,711.37

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- Experimental study of state health services;
- Inventory of institutional human resources;
- Study of sanitary conditions in rural areas;
- Study of levels of medical attention necessary for a regional system of health care.
- Study for the increase of maternal and child care services.

(3) Division of the National Laboratory "Samper Martinez"

The Division of the National Health Laboratory "Samper Martinez" serves as the national public health laboratory carrying out research, teaching, analytical activities. The Division also produces biological products necessary for the national health program.

The Laboratory has done research on:

- Chagas disease;
- Equine encephalitis;
- Epidemiological studies on yellow fever;
- Wild transmitters of rabies;
- Viral diseases;
- Air pollution in large cities;
- Pollution in urban atmosphere;
- Environmental conditions in factories and the effect on workers;

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- Epidemiological studies on leprosy;
- Disease transmitted by insects and other arthropods.

The Laboratory produces biological products such as: vaccines, serums, oral and intradermic BCG, antitoxins, tetanus toxoid and tuberculine.

The Samper Martinez Laboratory has an excellent record in producing the biological materials used in massive vaccination campaigns and has successfully marketed its products in other Latin American republics

b. Instituto Colombiano de Bienestar Familiar - ICBF (Colombian Family Welfare Institute)

ICBF was created by Law 75 of 1968, incorporating among other welfare agencies, the National Nutrition Institute. The Institute's primary responsibilities are: set standards to orient activities to improve the welfare, physical and mental development, and family structure for Colombian children; distribute funds, and evaluate social welfare programs for children; create, direct and administer family welfare pilot centers and homes for minor children; train child care and rehabilitation personnel for the program; and teach nutrition, and operate nutrition feeding programs for target populations.

The Board of Directors includes the wife of the President, a symbol of the importance the GOC places on the Family Welfare Institute. The Director of the Institute has four divisions (Legal Assistance, Nutrition, Social Promotion, and Administration and Finance), a legal office, and a human resources office under his management. Regional directors operate in most of Colombia. The Division of Nutrition receives operational funds directly from the salt tax, and the Institute is authorized to issue bonds for investment purposes at a level of approximately 150 million pesos per year.

The Division of Nutrition will be described in more detail on page 227.

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The other divisions concern themselves with giving protection to children through legal actions against parents or guardians, providing care in orphans' homes or children's homes, seeking, through training or direct action, to improve the family structure.

ICBF BUDGET 1973  
(Investment and Operational)

(Thousands of Pesos)

1. <u>Orientation Treatment of Minors</u>	
Center of Observation and Pyscosocial rehabilitation of 16-18 year olds	3,000
Center of Special Education and Physical Rehabilitation, San Juan de Dios	2,000
Remodeling and equipping institutions for protection and rehabilitation of minors	8,000
Remodeling and equipping ICBF-run institutions for protection and rehabilitation of minors	1,785
Training	5,200
Research	2,750
Related operational costs	166,265
2. <u>Protection of Children and the Family*</u>	
Community services for children	20,000
Community services for families	1,000
<u>Integrated family service centers</u>	
Cali	4,507
Medellin	4,507
Bogota	5,000

\* The budget for nutrition is included in this section. There is an additional 39 million pesos from the salt tax which will be available to the division of nutrition but is not included in the budget as presented above.

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ICBF BUDGET 1973 (cont'd.)

School restaurants	3,500
Training	5,490
Research	2,750
Operational costs	112,246
3. <u>Administration</u>	
Central administration	76,000
Bogota training center administration	5,000
Employees housing and transportation fund	<u>4,000</u>
Total	433,000

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Although this Institute, except for the Nutrition Division, is rather new, it has grown rapidly and assumed large responsibilities in assisting the Colombian family. The Nutrition Division, formerly an institute assisted by AID, has a long history of work in the nutrition field and has recently taken over operation of the World Food Program in Colombia. It has consistently been the main governmental voice for the improved feeding for the nation's people and has developed programs and policies in that direction.

c. Instituto de Fomento Municipal (INSFOPAL)

INSFOPAL was created by Law 3178 of 1968 and was affiliated to the Ministry of Health. (See Table 22) Main functions are: develop annual investment plans for local aqueduct and sewer projects for localities of over 2,500 inhabitants; create regional and local entities to administer these systems; draw up standards for the systems and, with its National Rate Committee, approve rates; carry out and audit construction of projects by contract or directly; and give community education programs.

INSFOPAL's Board of Directors includes members from M.OH, National Planning, INPES, and representatives from organizations of cities, engineers, and the construction industry. Its director is assisted by legal, audit, planning, organization, and education offices, and three sub-director offices: Technical -- project studies, contracts, construction; Operations -- maintenance, business administration; and Administration -- supplies, personnel, finances.

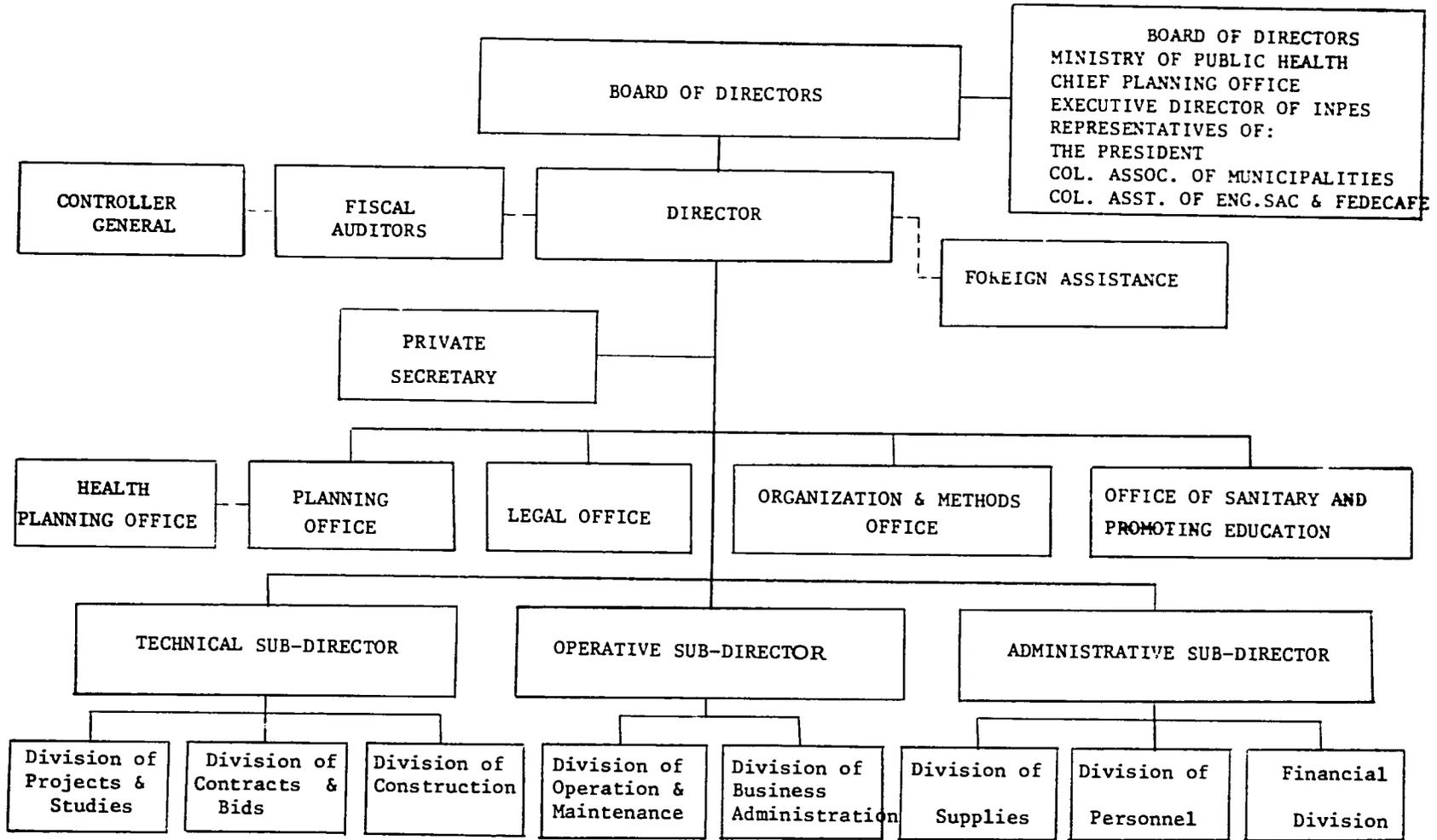
The population coverage assigned to INSFOPAL and the public service companies for 1971 was 12.6 million persons or about 59% of the Colombian population; however, in the same year the population served by aqueducts was 9.4 million persons, and by sewer systems 7.4 million persons. A large portion of the rapidly growing urban population is without service. INSFOPAL and its role in urban development is the subject of further discussion in the Urban Sector Analysis Document.

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TABLE 22

NATIONAL INSTITUTE FOR MUNICIPAL DEVELOPMENT

ORGANIZATION



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d. Fondo Nacional Hospitalario - FNH (National Hospital Fund)

FNH was created by Law 67 of 1967. The Fund constitutes the financing mechanism for the construction and equipping of hospitals and was given a key role in the National Hospital Plan. (See Table 23.) As a financing organization, the Fund obtains its resources from the Colombian Institute of Social Security through bonds which become part of the national debt, and from all other public sources of hospital construction money (the national budget, loans and external credit). Ten percent of the sales of ICSS bonds are contributed to the FNH.

The objectives of the Fund are: develop a construction program in accordance with national health and hospital plans; sponsor the integration of social security services and other hospital services; coordinate its activities in collaboration with the Ministry of Health, the Colombian Institute of Social Security, the universities, the sectional health services, and other beneficiary agencies; give technical and economic assistance to establishments that have complementary resources (government, social welfare, or their own), and to communities with lack of medical attention. The creation of the Fund has favored the development of integrated programs in which both the social security programs and the Ministry of Health participate

FNH is directed by an Administrative Board consisting of the Minister of Health, the Director of ICSS, and a personal delegate of the President of Colombia. Also organized are a Technical Advisory Board and an Adjudication and Control Board whose membership is divided equally among representatives from the Ministry of Health and ICSS. An Executive Secretary is appointed to carry out the directives of the Administrative Board within the National Health Plan and the National Hospital Plan. The organization is designed to guarantee the rational and correct assignment of funds to hospital investment. FNH presently has a staffing of 24 professionals; 11 of whom are architects.

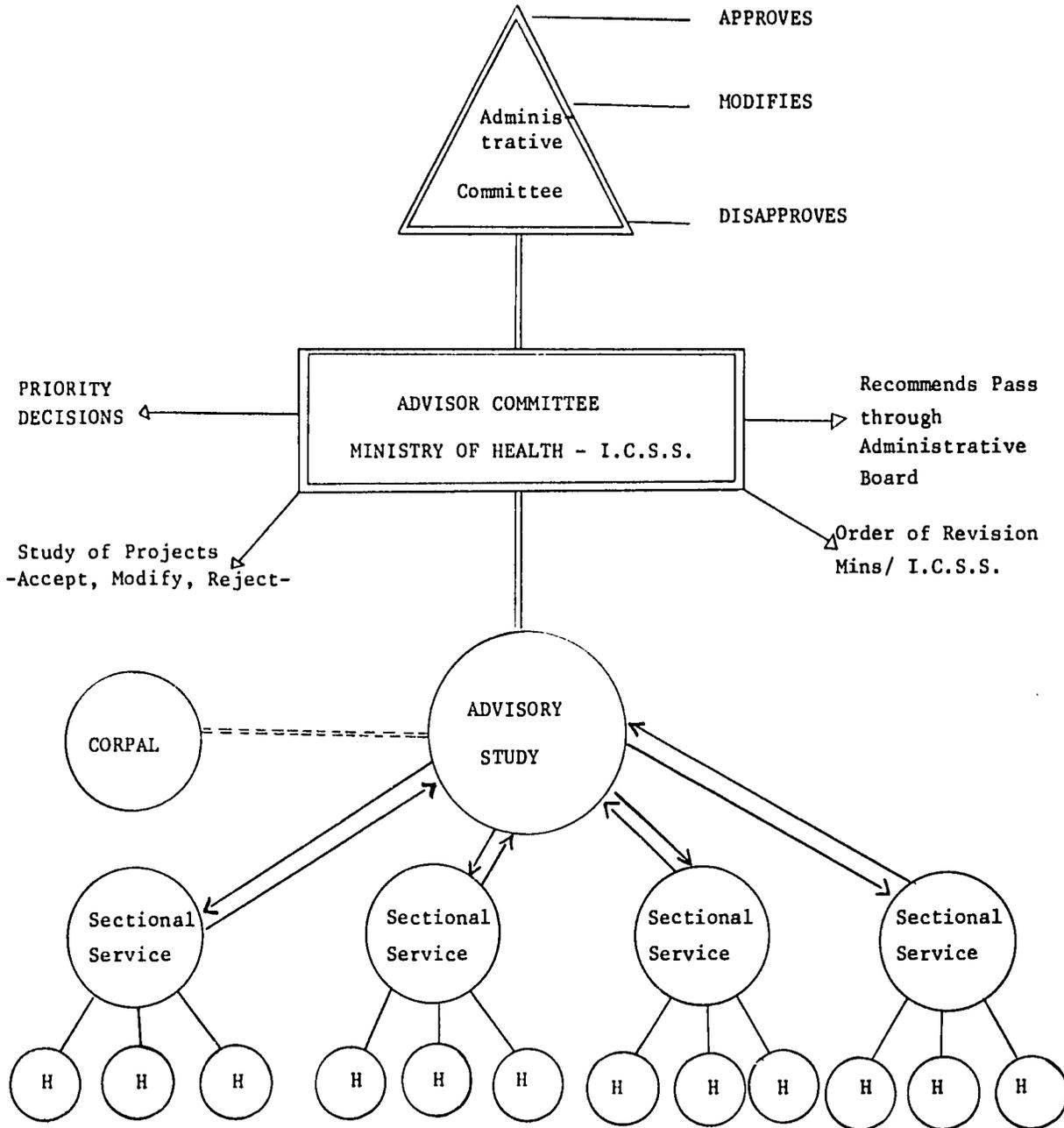
To finance and construct hospitals, FNH uses three procedures, each varying with the circumstances. The first procedure is to effect the investment through the Servicios Seccionales de Salud - SSS (Sectional Health

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TABLE 23

NATIONAL HOSPITAL FUND

Organization



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Services) - with the technical and financial supervision and advice of FNH. The second is to effect the investment directly by the FNH using the technical advice of a specialized consultant, architect or engineer.

The third procedure, and most practiced, is to effect investment and construction of hospitals in conjunction with the ICSS, the benefited communities, the Ministry of Health, the SSS, the loterías, and the departmental governments. A non-profit organization is formed for each project by the respective parties. A Board of Directors is constituted and has the function of specifying the control of the construction, equipment, training of personnel, start-up and administration of the hospital. With the hospital's inauguration, a director of the hospital is named by the Board.

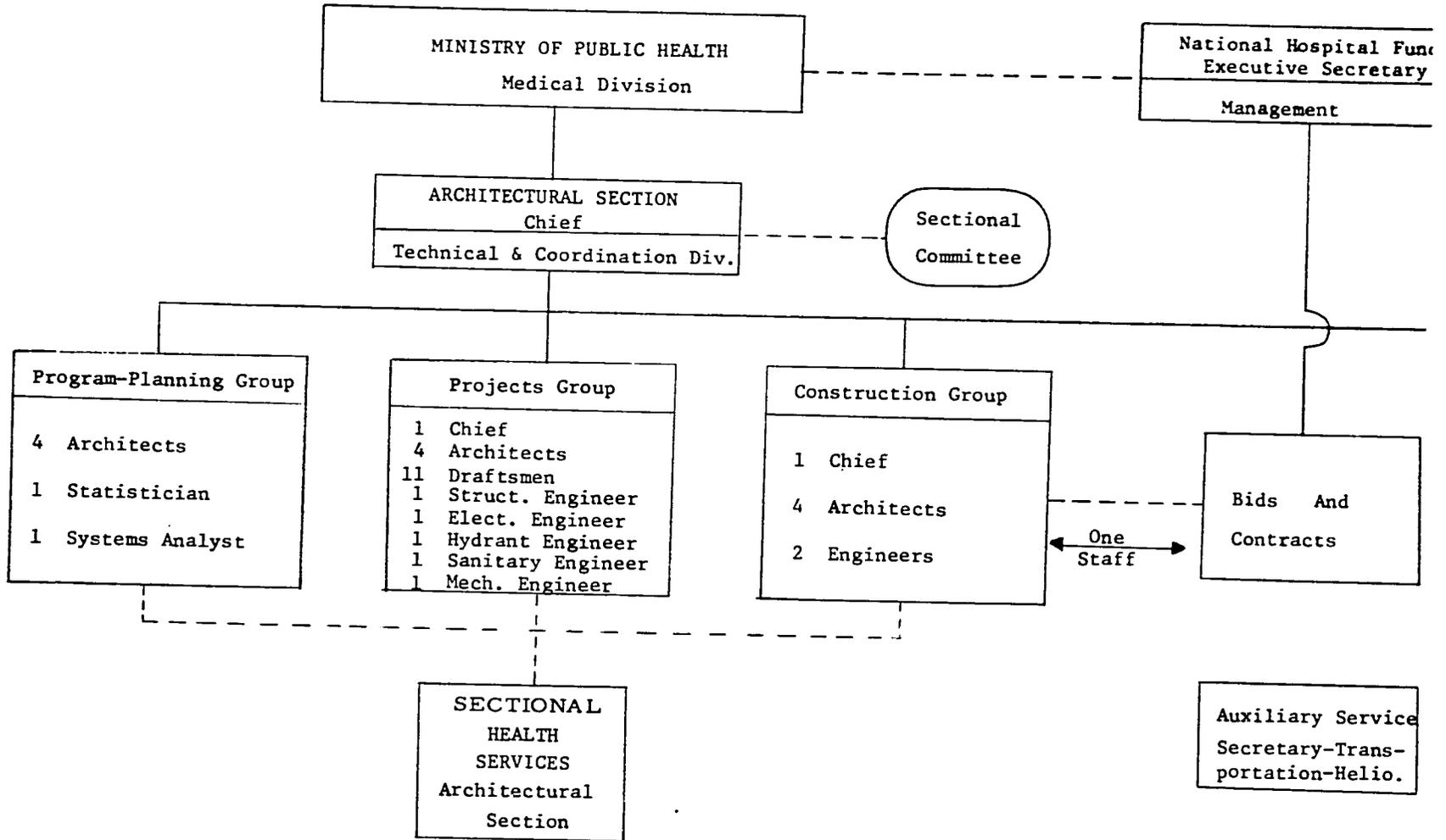
In order to provide for medical supplies, FNH transfers funds to the Corporación Proveedora de Instituciones de Asistencia Social - CORPAL (the Supply Corporation for Social Assistance Institutes) - which then provides the medical supplies to the hospital. Throughout the planning, design, construction and equipping phases, FNH is assisted by the Ministry of Health, especially the Architectural Section of the Ministry. The Architectural Section has a staff of 11 architects.

In addition to the technical assistance received from the Ministry of Health, FNH receives funds from FONADE (Fund for Development Projects) to finance feasibility studies for construction of large hospital projects. The Ministry of Health, the National Planning Department, and FONADE have established a guide for the realization of feasibility studies for hospital projects. This guide will permit the standardized and coordinated development of hospital projects.

In the years 1970-1971, FNH has invested 258.8 million pesos in the execution of the 1969 National Hospital Plan. FNH plans to invest 152 million pesos in 1972. The creation of the FNH has led both to greater National Government financial support for hospital construction and to more efficient allocation of hospital investment funds via the National Hospital Plan. FNH has recently taken steps to increase the internal efficiency of its operations through the reorganization and reformed staffing pattern shown on Table 24. The reorganization is expected to be further strengthened by close collaboration between the FNH and the Ministry's Architecture Section.

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TABLE 24



MINISTRY OF PUBLIC H  
Medical Divisi  
Architectural Sec

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e. Corporación Provedora de Institutos de Salud - CORPAL  
(Corporation for Provision to Health Institutes)

CORPAL was established by a group of laws and decrees extending from 1956 to 1968. The principal goal of this institution is to serve as a central supply agency providing pharmaceutical products, dental and medical supplies and equipment to official, semi-official, and private non-profit health institutions. CORPAL is expected to standardize supply schedules, reduce prices, and improve control of maintenance of equipment.

Of the 1,480 public social assistance institutions in 1969, CORPAL assisted 1,268 as follows: 551 hospitals, 74 health centers, 180 health posts, 16 clinics, 417 orphan homes, and 31 sectional health services.

CORPAL's Board of Directors includes members from all major health entities.

The Executive Officer of this organization is a manager who has the following divisions to assist him: the Financial Division, the Administrative Division, and the Commercial Section. ( See Table 25. )

In 1970, CORPAL purchased materials and equipment for a value of 59.5 million pesos; its total sales were valued at 41 million pesos. In 1971 its purchases were about 49 million pesos and sales reached 83 million pesos. Basically a public corporation, CORPAL's support from the GOC investment budget has been decreasing over the years as its own income from sales to institutions has increased.

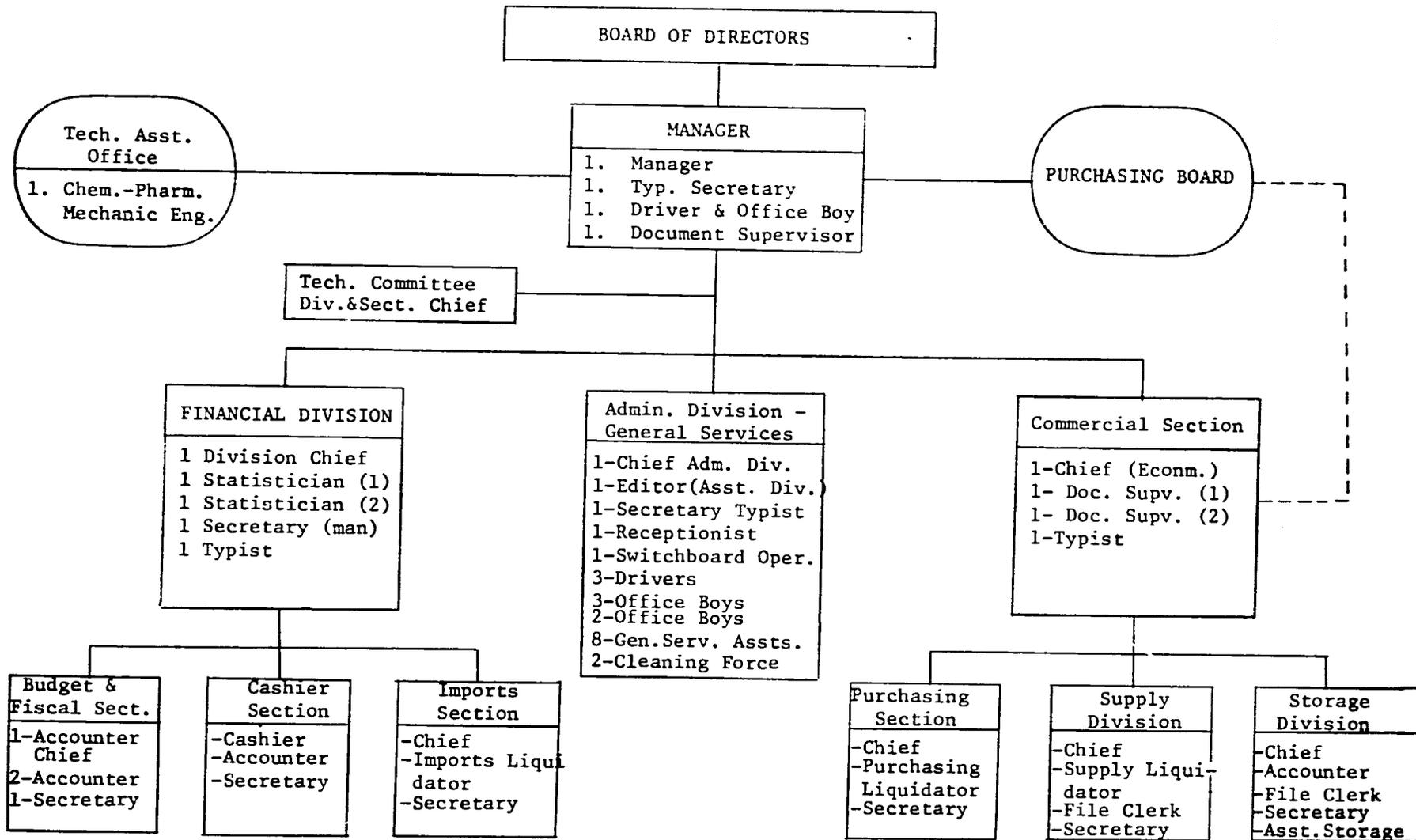
f. Instituto Nacional de Cancerologia - INC (National Cancer Institute)

INC was created to fight against cancer and related diseases in Colombia. Its principal functions are to assist in the diagnosis of cancer and related diseases; to prevent cancer through epidemiological studies,

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TABLE 25

C O R P A L - Organization



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education campaigns, early diagnosis and community motivation; to train persons in this field, and to research causes and circumstances favorable to cancer and new systems of diagnosis and treatment.

g. The Sectional (Departmental) Health Services

The sectional health services are intermediate organizations attached to the Ministry of Health. These have been organized through integration contracts between the Ministry and the departments, territories, and intendencias, and include services formerly depending on charity funds. There is a sectional service for each of the political divisions of the country but the actual degree of service integration is variable depending on local conditions. The sectional services are allied in varied degrees with local and regional hospitals. Health posts and health centers depend on the sectional services and are gradually being attached to the hospitals in the planned regionalization of the system.

The general organization of the sectional health services includes a chief of service appointed by the Departmental Governor and an executive board. Each sectional service is required to prepare an annual plan of investment and operational expenditures which is submitted first to the Planning Office of the Ministry of Health for approval. Once the Ministry has given the approval to the sectional plan, the Chief of service then submits the plan to his local executive board for approval. All expenditures by the service are submitted monthly to the Ministry of Health Auditing Department to determine that they are within the planned program for that service. The sectional service also collects statistics on morbidity and mortality within its political division. These are submitted to the Ministry of Health for a national compilation. Most of the Ministry's programs, including massive campaigns, medical attention, construction under the hospital fund, and many of the semi-autonomous agency programs are carried out by the sectional health services.

3. Other Entities

a. Instituto Colombiano de Seguros Sociales - ICSS (Colombian Social Security Institute)

ICSS was created by Law 90 of 1946. This agency has judicial independence, is attached to the Ministry of Labor, and covers private workers

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against the following risks: work and non-work sicknesses and accidents; maternity; invalidism; old age; and death; and family pensions. Its main functions are: to organize, administer, direct and audit all parts of the social security system; to determine the regions, activities, companies, owners, and groups of the population which can join the system; to organize and execute health programs in coordination with the Ministry of Health and with the nation's cities, departments, territories, intendencias, public establishments, industrial and public corporations; and to establish its system of medical attention within the standards established by the Ministry of Health.

During 1971, ICSS gave hospitalization services to 204,501 cases, had 6,008,661 medical consultations, covered an insured population of approximately 1,150,000 persons and a retired population of 16,600. The ICSS investment budget in 1970 was 649 million pesos, and the operational budget was 1,033 billion pesos; in 1971 the investment budget was 943 million pesos, and the operational budget was 1,357 billion pesos.

ICSS and similar welfare insurance organizations for public employees account for a disproportionately large share of public sector health expenditures. The implication of this distribution of resources is discussed on page 149 of Chapter IV below.

b. The National Welfare Plan

This is a public entity attached to the Ministry of Labor with judicial independence, independent administration and funds, which serves public sector workers from the National Government who are required to affiliate with the plan for pension and workmen's compensation. Department, city, and various Ministries have started similar plans. The various social security plans which provide medical attention to public employees cover 124,029 beneficiaries.

c. Asociación Colombiana de Facultades de Medicina - ASCOFAME  
(Colombian Association of Faculties of Medicine)

ASCOFAME is a private association of the nine medical schools currently operating in Colombia. Its main purposes include: certification of personnel; developing research studies to determine the necessities

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for human resources in the various health fields and studies which deal with the medical problems of the country; and acting as a liaison between the Ministry of Health and the Ministry of Education in those matters which are of interest to both Ministries.

The principal organization of the ASCOFAME is the general assembly which includes the deans of all the faculties of medicine in the country and representatives from the Ministry of Education, the Colombian Association of Universities, and the Director of the Colombian Institute for the Development of Higher Education. The Board which runs the day-to-day operations of the Institute is called the Directive Council and includes the deans of the faculties of medicine. The Director has four principal divisions. the Division of Education and Planning, the Division of Evaluation, the Division of Social Medicine, and the Division of Population Studies; as well as offices including a documentation center, regional medical education office, administration offices, audit office and legal office.

ASCOFAME carries out studies as well as training programs on contract from the Ministry of Health. In many of these, the medical faculties or their students become the principal agents in getting information for the studies as well as doing the specific tests required by the study programs. This relationship has required Colombian medical faculties to become much more closely involved in the health system of the country than is the case in many other countries.

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CHAPTER IV - RESOURCES CURRENTLY EMPLOYED IN THE SECTORPERSONNELA. Resume of the Situation

The primary constraint on rapid expansion of the Colombian public health system is the scarcity of qualified personnel in all categories. As will be seen, the situation is currently one of extreme deficiency. Yet, it can also be said that the problem is painful, but not necessarily grave, for it is susceptible to a clearly defined remedy, i. e., a reasonable increase in resources for training and employment of health personnel within a more rational system which provides satisfying opportunities and incentives for efficient service. The principal (though not the only) cause of the present scarcity is the historic neglect of such prerequisites. The essence of the Government's new health strategy is precisely to emphasize them. However, human resource development, by its very nature, generally takes longer and is more complex than the procurement of other inputs. Therefore, this is the element of the Colombian health program which will demand the most determined effort and which will deserve the closest scrutiny as the program unfolds. One cannot be sanguine about it.

Another major defect in the Colombian man-and-woman power situation in health is maldistribution, especially at the professional level. Just as scarcity has its deeper causes, so maldistribution is largely a function of scarcity. At current rates of output, the larger urban areas apparently can absorb virtually all the supply of medical professionals, thus obviating the necessity for them to seek employment where need is greater but the rewards tend to be of the missionary's variety. The eventual solution to maldistribution is twofold: a substantial increase in the ratio of health professionals to total population coupled with better incentives to service in those vast areas of Colombia where virtually the only "effective demand" is that generated by the availability of public health facilities. Meanwhile, Colombia will continue to rely on a fairly successful expedient: the requirement that medical graduates put in one year of compulsory "social service" wherever assigned, usually in the deprived areas.

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Given scarcity and maldistribution, and in the light of the Government's objective of maximizing coverage of services, it is obviously essential to augment the productivity of all available health personnel, but especially the most costly factor -- the professionals. While there are a few regional exceptions, productivity is generally low for various reasons discussed elsewhere, but principally because of an irrational mix of available skills. Although by international standards Colombia has a real shortage of physicians, exasperated (some say) by an excessive tendency to specialize, the system is nonetheless relatively top-heavy with medical doctors. For example, in 1971 for each Colombian physician there was one-ninth of a graduate nurse, one auxiliary nurse, and one-fourth of a promotora.

This strange relationship between "officers and soldiers" is clearly a formidable barrier to efficient utilization of physicians. In the first place, as is commonly known, it compels them to devote an inordinate amount of time to tasks which could well be done by auxiliary personnel who can be produced in larger quantities at a fraction of the unit costs of training physicians. Secondly (and this is harder to "prove") the massive dysfunction in the system caused by this anomaly probably helps perpetuate what might be termed "institutional ennui," e. g. the system as constituted cannot fulfill its mission, thus actors in the system fatalistically accept low productivity as inevitable. <sup>1/</sup>

Only in the larger cities and environs, where relatively sophisticated public health structures exist, does the intensity of personnel utilization and the volume and quality of output approach respectable standards of cost-effectiveness. Anomalously, where health manpower is scarcest, it is often least efficiently employed.

The Colombian Government is unusually well informed and thus deeply concerned about the deficiencies in health personnel. It has taken important actions to measure existing human resources, identify future requirements in terms of policy goals, and design new systems to improve the efficacy of human resource use. The more significant of these actions are summarized later in this chapter.

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<sup>1/</sup> Colombian health planners theorize that a major reason for underutilization of health facilities in many disease-ridden areas is that the populace has come to believe (with good reason) that it will not receive useful service in such facilities and, accordingly, despairs of even seeking it.

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B. Studies, Assessments, and Experimentation

The "Human Resources Study of 1965-66" was one of the first measures taken to come to grips with the health personnel problem in a systematic fashion. The Study was made under the joint auspices of the Ministry of Health, the Colombian Association of Medical Faculties, PAHO, and the Milbank Memorial Fund of New York. It has been said that the Study provides "an extensive overview of Colombia's health problems and health services such as has never before been available." <sup>1/</sup>

Subsequently, the Association of Medical Faculties (ASCOFAME) has developed an increasingly productive program for improving medical faculty curricula and evaluating the effectiveness of medical education. It has also participated with the Ministry of Health in an ongoing study of manpower needs, largely related to the medical profession.

A standing Medical Human Resource Committee has been established, with representation of the Ministry of Health, ASCOFAME, the Ministry of Education, and the National Planning Office, to formalize the study of human resource requirements and recommend and stimulate the necessary actions to fill these needs.

A study is presently under way (financed by the Ministry and carried out by INPES) to identify more precisely numbers, training, and current occupation of all the health manpower in Colombia -- professional, technical, auxiliary, and administrative personnel. The intention is to form a central computerized file to use in analysis of regional manpower needs and availability, and as the basis for improving distribution and designing additional training programs. The methodology of the study has been completed and the investigative phase has begun.

More attention is being given to the role of para-medical personnel in the delivery of health services. Jointly with the Ministry of Health, ASCOFAME

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<sup>1/</sup> Dr. Dieter K. Zschock, Department of Economics, State University of New York, "Health Planning in Latin America," "Development Digest," Vol. IX, No. 3, July, 1971.

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carried out an experiment in training para-medical personnel for performing specific delegated medical tasks in three areas of Colombia. Although the results have not yet been fully evaluated and published, it has provided a basis for confidence in the feasibility of efficiently utilizing auxiliary personnel as members of health teams.

The Ministry and ASCOFAME also have surveyed the availability of doctors and graduate nurses, their geographic distribution, and the problems of providing adequate incentives to attract them closer to the rural areas. Obviously, efforts cannot be abandoned to improve medical and nursing faculties, increase the number of professional graduates, and improve working conditions in program and geographic areas where the full range of specialized medical care is in demand. Nevertheless, the GOC, at least tentatively, has concluded, as a result of its studies, that the major emphasis in improving the health manpower situation must be given to augmenting the number, quality, and effective use of auxiliary personnel, particularly the auxiliary nurse (the mainstay of health care at the "health post" level) and the "health promotora" (the primary agent for "outreach" to the community).

The quality of medical care in Colombian rural areas has been evaluated in a Harvard Dr. P. H. thesis published in 1971.<sup>1/</sup> Among its significant findings are that a very large proportion of Colombian physicians place high value, in terms of professional formation and personal satisfaction, on their year of compulsory social service.

The studies cited above, of course, represent only a selection from a much greater bibliography. They are, however, the most reliable, significant, and are the source of much of the material found herein.

C. Training

1. Physicians

Colombia has nine medical schools located in the following universities: Antioquia, Caldas, Cartagena, Cauca, Javeriana, Nacional, Rosario, U. I. S. (Industrial University of Santander), and Valle. Together they produced

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<sup>1/</sup> "Evaluation of the Quality of Medical Care in the Rural Areas of Colombia," Vicente Borrero, M. D., M. S., in Hygiene, Boston, Mass., July, 1971.

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407 graduates in 1970. About 3,900 medical students are currently matriculated in the seven-year program of medical education. The educational program approximates the curriculum in U.S. and Canadian medical schools with increasing emphasis on basic sciences, carefully supervised clinical experience, and the physician's role in community medicine or public health. Progress in improving these schools or expanding their programs was fortuitously inhibited in 1970 and 1971 by student problems at the universities (political disturbances in which medical students were also involved). It does appear, however, that certain reforms in university administration, astute government control of unrest, and changes in public and student attitude may have contained the problem, at least for the present.

The previously mentioned study<sup>1/</sup> of recently graduated physicians made some interesting, and hopefully valid, observations about the quality of medical attention being provided by these physicians. Obviously, the type of care provided reflects the attitude of individuals and the conditions under which they work, but it also permits inferences about the quality of their training. This study compared the quality of care dispensed by recent Colombian graduates of Colombian medical faculties with that being provided under similar conditions by Colombian graduates of medical faculties in seven other countries.<sup>2/</sup> The products of Colombian medical faculties were observed to provide a significantly better quality of care in almost all the practices used as measures, e.g.:

" . . . those physicians graduated in Colombia scored significantly higher than those graduated abroad. It can be concluded, therefore, that the overall quality of medical care given by Colombian graduates is better."<sup>3/</sup>

Nonetheless, neither the Colombian nor the foreign-trained group appeared to be delivering a quality of care that could be termed "excellent" or even "very good." The author helps put this in some perspective, however, by the following comparison:

"In taking the clinical history, 56.6% of the Colombian graduates and 76.7% of those graduated abroad took poor

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<sup>1/</sup> op cit, Borrero

<sup>2/</sup> Largely other Latin medical faculties

<sup>3/</sup> op cit, page 70

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histories. It is interesting to note that Peterson et al (1956) reported the same shortcoming in 68.4% of the general practitioners in North Carolina." 1/

Most relevant to the analysis of Colombia's commitment to public health and preventive medicine is the study's comparison of practices in this field: i. e.,

"The Colombian medical schools have been increasing the intensity of training in the area of preventive medicine and public health for the past several years. For this reason, prime importance was given to this field as of the time the study was designed." 2/

"In the area of preventive medicine and public health, significant differences were found. Colombian graduates scored higher in the prevention and control of diseases, particularly in the categories of epidemiology, immunization, sanitary education, and maternal and child care." 3/

"The importance of the physician in the control and handling of communicable diseases, even at the office-visit level, was highly rated in this category. Aspects such as warning the patient with regard to contagion, search for contacts, family studies, etc., were taken into consideration. Again, a better performance was observed from the group graduated in Colombia." 4/

". . . the group graduated in Colombia showed a greater interest in the subject (sanitary education) than the group graduated abroad. Almost 90% of the graduates from Colombian medical schools were active in the field of sanitary education. . . ." 5/

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1/ op cit, page 79

2/ op cit, page 62

3/ op cit, page 82

4/ op cit, page 64

5/ op cit, page 65

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A more subjective measure of the quality of graduates of Colombian institutions, but one that we believe has validity, is the academic accomplishment of those who have been sent to the United States for graduate training. There is often difficulty in gaining acceptance due to language problems. However, once accepted, and often in spite of some continuing language problems, Colombian trainees have done extremely well. None has failed in his course work and most have consistently performed at the A and B grade level with high commendations from their faculty advisors.

Central to the achievement of the objectives of the sector strategy is the capacity to make operational the concepts which underlie the "regionalized system of integrated health care." Where we have seen this system functioning it appears that the major determining factor for success is the degree of commitment to the approach held by the professionals in positions of leadership. Probably it is in the area around Cali that most progress has been achieved. Obviously, policy statements and guidance from the Ministry have had some effect, but we attribute the progress largely to the strong emphasis placed on this philosophy in the del Valle medical faculty and the high level of enthusiasm engendered at all professional levels for this type medical and health care delivery system.

Another generator of enlightened innovators is the School of Public Health at Medellin, which is constructing major new facilities and vigorously expanding its training and research activities. It is well financed and has assured continuity under contractual relationships with the Ministry of Health. The School presently has 53 faculty members, 18 with Colombian post graduate degrees, and 6 with foreign graduate training. USAID assistance (counterpart funds) in the building construction, in graduate training for selected faculty members,<sup>1/</sup> and in support of teaching and research programs through Population Council grants has helped to make this one of the better institutions of its kind in the hemisphere.

In 1971, the following types and numbers of persons graduated from the School of Public Health:

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<sup>1/</sup> From FY-1971 through 1973, 126 AID participants in health and related disciplines have been sent, 35 for academic training, and 91 for short course or observation training. \$655,000 was obligated for this purpose. Most of

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Professional

Medical Resident in Public Health	2
Master of Public Health (medical)	26
Master of Public Health (dentists)	19
Master of Public Health (veterinary)	9
Graduate of course of Administration of Nursing Services	18
Post graduate work in epidemiology and T. B. control	20
Hospital Administration	14
Public Health Planning	14
Nutritional Dietitians	15

Para-Professional

Health Service Administrative Assistants	25
Intermediate-level health statisticians	27
Environmental Sanitation Supervisors	22
Environmental Sanitation Promoters	74
Hospital and medical records	1

There have been several important actions taken to inculcate a modern philosophy of "community medicine" in all the medical faculties and to improve the overall quality of medical education. Various studies have been carried out of ways of improving medical faculty curricula, and many Colombian leaders have travelled to other Latin American countries or the United States for academic study; or observation of efforts in this field. For example, in 1972 Dr. Eduardo Vallejo, Chief of the Division of Medical Education, ASCOFAME, travelled as an AID participant for 13 weeks in the United States. He attended a four-week workshop in Educational Program Planning at the Center for Educational Development, College of Medicine, University of Illinois, stayed on for independent study and later visited the Physicians Associates Programs in Stony Brook, and also visited the Down State Medical

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these participants are in positions of national leadership in health related activities or university faculties. Planning, supervising, and implementing training activities is a major part of their responsibility as they return to Colombia.

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Center. Dr. Guillermo Llanos, Director of the Department of Community Health of the National University of Bogota, attended under AID auspices the graduate summer session in epidemiology for three weeks at the University of Minnesota School of Public Health followed by two weeks at the Physicians Associates Program in Stony Brook, and one week at the Program of Community Medicine, Mount Sinai Medical School, New York. Others have been trained with the assistance of Ford Foundation, PAHO, Rockefeller Foundation, Millbank Foundation, and ASCOFAME.

More specifically, the Ministry of Health cites the following evidences of action taken to improve medical education with particular emphasis on preparing medical personnel for full appreciation of and participation in the regionalized system:

(a) Recent Changes in Curriculum

In 1970, the general objectives for medical education were defined for and accepted by all nine medical faculties. These objectives were based on the study of "Levels of Medical Care for a Regionalized System in Colombia."

In accordance with these general objectives, the medical faculties are working on the first phase of redesigning the curriculum.

Since 1970, in almost all the faculties, integration has been established between the clinical programs and those of basic sciences.

Courses of human behavior, social sciences, and demography have been introduced.

Horizontal integration has been initiated with the curriculum of preventive medicine.

Smaller classes have been instigated.

Increased emphasis has been placed on laboratory work, seminars, group discussion, and work with patients.

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Rotation is required of students in clinical studies into medical care institutions outside the university such as health posts and regional and local hospitals.

(b). Short Courses, Seminars, and Workshops on Curriculum

For the purpose of illustrating the preparatory work accomplished thus far in enhancing medical education, the following chronology of events is of interest:

July, 1970 - The National Seminar on Objectives of Medical Education was held.

August and September, 1970 - Regional Workshops on Curriculum design were conducted in Popayan, Medellin, and Sogamoso.

November and December, 1971 - Local Workshops on Curriculum design were given at National, Valle, and Caldas Universities.

March, 1971 - A meeting of the National Curriculum Council took place to study the proposals of the June and September, 1971 meeting. National Workshops occurred to define general objectives based on "Levels of Medical Care for a Regionalized System in Colombia."

June, 1971 - Seminar on General Surgery Curricula

July, 1971 - Seminar on Preventive and Social Medicine Curricula

July, 1971 - Seminar on Internal Medicine Curricula

August, 1971 - Seminar on Obstetrics, Gynecology and Pediatrics

September, 1971 - Seminar on Radiology, Pathology, and Laboratory clinic.

September, 1971 - Seminar on Revision of Curricula of the Three Faculties of Bogota.

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October and November, 1971 - Technical assistance of ASCOFAME personnel to several work groups of various faculties in the definition of specific objectives.

May, June, July, August, September, 1972 - Visits of the chief of medical education of ASCOFAME to the medical faculties of Cauca, Santander, and Javeriana to work with them in developing new programs and teaching methodology.

August, 1972 - Meeting of all the medical faculty curricula directors to evaluate progress in curricula revision.

In sum, the situation of medical doctors remains highly deficient, of course, in terms of numbers, distribution, and productivity. Nevertheless, there are grounds for reasonable expectations. Medical faculties are fairly well staffed and their financing is relatively adequate. Improvements are being made in the curricula in a direction fully consistent with the objectives of the national health policy and plan. It is not likely that large increments will be available to the corps of public health medical personnel during the first phase of this sector program. Some selected graduate training will be provided for faculty of the medical schools and the School of Public Health. However, the greatest emphasis will be placed on improving the quality of medical education, particularly as related to preparing doctors to function effectively in community medicine and the regional systems.

2. Dentists

There are four major schools of dentistry in Colombia that produce about 200 graduates per year. According to Colombian-set standards, the country will still have a deficit of some 4,000 dentists in 1975. Increased emphasis is being placed on the training of auxiliary personnel to improve the efficiency of the limited number of dentists. Plans for a large-scale program of fluoridation should reduce somewhat the demand for dental attention.

3. Professional Nurses

Nursing education has changed little in recent years. There were seven nursing schools in 1956 and the number has only increased by one since

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then. The eight schools had entrance classes of 221 students in 1968, 302 in 1969, and 265 in 1970. They graduated 89 students in 1968, 103 in 1969, and 81 in 1970.

Nursing obviously lacks appeal as a profession in Colombia. Its high academic requirements for admission discourage many students in a nation where advanced education is limited, especially for women. More recently, with the introduction of general studies in the nursing school curriculum, the required course has been lengthened to four years and on graduation the term "general nurse" has progressively replaced "licentiate in nursing." The cost of nursing education is high, although much of it is borne by university budgets. Yet, it is reported that the annual cost a student must pay averages 6,740 pesos.<sup>1/</sup> Pay scales and working conditions for trained nurses are not sufficient to attract large numbers to the profession, and young women able to meet the academic requisites and pay the cost generally are not "career oriented."

Reconsideration is being given to the nursing curriculum to shorten the time and perhaps produce a "second level" professional. Efforts are also being directed toward improving the curriculum, the wage scale, and the incentives to young women to enter the field.

#### 4. Auxiliary Nurses

Until recently, no formal educational requirements were necessary for auxiliary nurses. However, there are now 30 auxiliary nurse education programs in operation throughout the country. This number pertains only to "accredited" programs, but apparently there are also a large number of courses which do not qualify for accreditation. The accredited programs generally require 18 months to two years training following all or a significant part of the secondary school education. The accredited schools graduate about 700 trained auxiliaries annually. It is estimated that twice or three times that number enter the field annually as girls of lesser secondary education receive a "practical education" at the hospital or health post.

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<sup>1/</sup> Approximately equal to Colombian per capita GNP. Thus only the small middle class or above could afford such training.

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#### 5. Promotoras

The curriculum for training health promotoras has been developed and various methodologies have been tested. UNICEF financing has been secured for training an additional 7,000 promotoras over the next three years. Elaborate training facilities are not needed since these workers are trained under the supervision of the sectional health service through relatively unsophisticated methods close to home. Nonetheless, it is a major undertaking to organize the series of 10-week courses required, plan the supervision of the promotoras, and make adequate provision within the system for rapid assimilation and effective use of this large number of new personnel.

#### 6. Other Auxiliary Personnel

There are a variety of other auxiliary personnel, such as hospital administrators, maintenance technicians, dental assistants, administrative assistants, sanitary promoters, etc., for whom means are being studied to provide additional, improved, or continuing training. Several institutions, such as INPES, SENA, the School of Public Health and the sectional health services are involved in planning and implementing this training. Table 26 indicates the number of these persons presently available and the estimate of their needs and availability in 1975.

Plans are being made for additional regional training centers for these personnel. Centers are planned in conjunction with existing institutions for practical training in hospital administration and auxiliary services. This project is based on the training and operational experience of the large Hospital San Juan de Dios, which is associated with the National University in Bogota. It is expected that these regional centers will make training and supervisory facilities more available to regional hospitals.

Another new venture is the proposed hospital maintenance training center. This is particularly relevant to the efforts to reinforce hospital services as the central element in the regionalized system of health care. In

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1972, leadership personnel are being trained through PAHO scholarships. In 1973, the center will begin to function. The plans are to train 38 in 1973, and 60 each year thereafter for a five-year period in the expectation that by that time all the university and regional hospitals will be adequately supplied with trained maintenance personnel.

The ground work is being laid for more effective training of auxiliary personnel; the vigor with which this is pursued will be a key concern in assuring the viability of the Government's new health strategy. Although significant progress is being made, it is particularly in the training of auxiliary personnel where we think more aggressive action should and can be taken. The National Planning Office and the Ministry of Health have been asked to study ways to accelerate this training and to give particular attention to the formation of supervisory personnel and to providing the means so that effective supervision can and will be carried out.

7. Financing the Training of Health Personnel

Although the financial allocation for training of human resources in the national health budget is a small percentage of the total, it is significant that this item has risen from 0.7% in 1966 to 2.3% in 1971, and will be 4.6% and 4.7% in 1973 and 1975, respectively. In absolute amounts of resources invested, this represents an increase from 27 million pesos (US\$1.2 million) in 1971 to a projected level of 123 million pesos (US\$45 million)\* in 1975.

D. Current Situation of Colombian Health Personnel

1. Physicians

It is estimated that as of 1972 there are approximately 10,000 physicians in Colombia, over 90% of whom practice in centers of 20,000 or more inhabitants (where 36% of the population lives).

It is no overstatement to say that the majority of Colombians rarely or never see a physician or a professional nurse; what little health care they receive is provided by an auxiliary nurse, a health promoter, a druggist, or an untrained empirical practitioner of folk medicine.

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\* Assuming 8% devaluation annually.

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Objective observers have said that few nations have as much or as precise information as Colombia on the number, qualifications, location, and other characteristics of its medical profession. Much of the information that it used in analyzing the physician manpower situation originates from the replies of 6,323 out of 8,100 physicians who responded to inquiries of the 1965-66 "National Human Resources Study."

Colombia had an average of 4.5 physicians per 10,000 population in 1966; this ratio has not changed since then, considering the present estimated 10,000 physicians to serve its estimated 22,000,000 population. It is considerably above the recommended 1/10,000 international minimum health manpower standard of WHO, but less than the South American average of 7.4/10,000. At present rates of output, it would take about 100 years for Colombia to produce the number of MDs to approach the current United States ratio of approximately 15 physicians/10,000 population.

The practice of medicine remains essentially a male occupation, with less than 2% being women, although 12% of the present medical school students are women. All but 3% are native Colombians, although some 9% received their medical education abroad. A recent development of much concern to Colombian officials is the increasing trend of Colombian physicians to migrate to other countries, particularly to the United States. This professional drain averages about 70 physicians annually, an excessive number considering that the nation's medical schools produced about 400 graduates in 1970 and even less in previous years.

Only 27% of physicians devote their efforts to the general practice of medicine. Most of them (53%) specialize in surgery, internal medicine, pediatrics, and obstetrics. Only a small proportion specialize in public health (4.3%) or in psychiatry (2.5%).

More than half (53%) of the nation's physicians indicated that all or a major share of their practice was devoted to non-private care. However, as they become older, physicians tend to turn more frequently to the private practice of medicine.

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The majority of the nation's physicians were under 45 years of age, with about a third of all physicians under 35 years of age at the time of the 1965 study. It was also found that slightly more than half of the physicians who practiced in cities of less than 20,000 inhabitants were under 35 years of age; the percentage diminishes as the size of the city increases. In short, as physicians become older, they move to the large cities. As noted above, all Colombian physicians upon graduation from medical school are required to serve one year in rural areas -- a practice quite common in developing nations but one which has had not always proven successful in encouraging young physicians to remain in such areas. Nevertheless, a study<sup>1/</sup> of 80 physicians in their rural year indicated that a large majority had a favorable concept of the rural internship -- 80% mentioned the excellent experience gained, 60% noted satisfaction in performing a public service, only 6% considered it a waste of time, and 4% thought it to be of no value to the community.

The previously mentioned 1965-1966 Human Resources Study also revealed that almost half of the professional time and skills of physicians was consumed in non-medical or administrative duties or tasks which could have been as equally well done by other personnel with less training.

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<sup>1/</sup> op cit, Borrero.

## 2. Dentists

Dentists number about 3,020, or a ratio of 2.1 per 10,000 population, a figure slightly below the 2.8 average for South America and considerably below the 4.9 North American 1969 average.

## 3. Professional Nurses

The supply of professional nurses is deficient in the extreme. The ratio of nurses is about 1/11,000 - 12,000 population, drastically less than the WHO-recommended minimum international standard of 1/5,000 or 2 nurses per physician.

Here, too, there are problems of distribution. About two-thirds of the nation's active graduate nurses are concentrated in the three principal cities -- Bogota, Medellin, Cali.

This combination of low ratio of nurses to physicians, and in relation to population, aggravates the scarcity of qualified personnel to provide minimal medical care services.

Nevertheless, it appears a foregone conclusion that for some time to come professional nurses cannot be counted on to provide much of the medical care to the population. It is generally conceded that the scarce professional nurses will continue to handle administrative work in hospitals, will be absorbed into specialized health programs such as the social security system, workers' compensation programs, etc., or will supervise the work of auxiliary personnel who will be responsible for the major part of the personal nursing service provided patients.

The expansion and modernization of public secondary education now taking place, <sup>1/</sup> however, will soon produce substantial increases in female graduates who need and seek a career. This will doubtless enlarge the supply of young women qualified for nurse training and more likely to work in the profession, since most will be from lower-income families. This has not been the case in the past.

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<sup>1/</sup> See the Education Sectoral Analysis.

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4. Auxiliary Nurses - Nurse Aides and Promotoras

Auxiliary nurses or nurse aides provide the bulk of nursing services; indeed, in many rural areas they offer the only medical care available to the population. Only estimates are available as to their number: they probably total from 9,500 to 15,000, including both "certified" and "untrained" persons.

The "Experimental Study of Health Services" has indicated the viability of delegating significant medical care functions to auxiliary nurses who have had appropriate training and who receive adequate supervision.

In the short-to-medium term, Colombia must face the realities that there aren't enough doctors and professional nurses "to go around;" incentives will not be sufficient to induce substantially larger numbers into the system or to move them to the rural areas; and budgetary limitations will preclude highly paid, full-time professionals in the health posts. Therefore, the bulk of personal nursing services in the years immediately ahead will continue to be supplied by auxiliary nurses.

The value of promotoras has been demonstrated with respect to simple health care (first-aid, injections, etc.) and health education at the community level. Where they have been attached to the health post "team," community use of these facilities has increased. These are young women with primary education who are trained near home in short courses organized by the sectional health authorities. They are selected by their local community and return to that community to work following their training. Until recently their minimal remuneration placed them in virtually a "volunteer" category. However, steps are being taken to increase their wage to half-time minimum salary.

Efforts are also being made to significantly increase the number of promotoras and auxiliary nurses, i. e., from the present level of 2,600 promotoras to a projected 7,600 by 1975, and from a current level of 9,700 auxiliary nurses officially in the system to a level of 15,712 by 1975. Although the pay scale is not high (US\$50 a month) and working conditions frequently are

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not good, there appears to be sufficient incentive to attract candidates to the field under the existing prerequisites for entry. However, greater numbers of these personnel is a necessary, but not a sufficient, condition for more effective health services. Attention must also be given to preparing professional medical and nursing personnel to make the most efficient use of them as part of the health team; provision must be made for adequate supervision; and budgetary resources must be increased to supply them with minimum essential equipment, facilities, transportation, etc.

Another important requirement (and one that cannot be met immediately) is to upgrade the quality of the auxiliary nurses training institutions. Several measures have been taken recently in this direction. The PAHO maternal/child health advisor has been active in promoting this concern and has helped with the organization of two short courses for 32 auxiliary nurse school faculty members to improve the instruction in maternal/child care and family planning.

The Human Resources Division of the Ministry has constituted a committee to make a "macro diagnosis" of the nursing situation in Colombia, to study functions of various types of nurses, and to advise the schools as to relevant curriculum changes.

Five workshops were organized for the directors of the schools of auxiliary nurses to identify more clearly the objectives of this training and to further elaborate the recommended curriculum reforms.

Actions have been taken to formalize the relations of the schools of auxiliary nurses and the sectional health service with the expectation that the sectional will provide more assistance and supervision.

A committee of nursing was formed to coordinate with the training of auxiliary personnel being carried out by SENA (Colombia's nation-wide vocational training service).

Recently the Ministry and ASCOFAME have requested USAID assistance in making overseas training opportunities available for those in

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leadership positions in training programs. Four directors of auxiliary nurse schools and a public health nurse supervisor of the Ministry were provided a three-week observation trip to the Downstate Medical Center in New York, the Rural Health Center in Kentucky, and the New Orleans Health Department. A group of eight nurses and nurse auxiliary trainers are scheduled to attend the 12-week training course in Downstate Medical Center. Training has also been provided for home economics and nutrition faculty members and directors of social welfare work, knowledge which will be brought to bear on other "health auxiliary" professions as well as that of nursing, per se.

E. "Typical" Staffing Phenomena at Various Levels of the Regionalized System

To better understand how "typical" medical institutions in Colombia are organized and what numbers and types of personnel are actually there, three institutions in the Department of Cundinamarca were visited: a Regional "A" hospital in Facatativa, a Local Level "B" hospital in Villeta, and a rural health center in Mosquera. Each institution was presumed to be representative of a typical facility pertaining to the same level of regionalization; norms have been established in the National Plan ("Levels of Medical Attention for a Regionalized System") for the necessary personnel in each institution within a specific level.

Because these health institutions are all located within 1 - 2 hours of Bogota, it is probable that they are not fully "typical" of the personnel situation in all institutions throughout the country. For example, both the dentist and the doctor working in the health center in Mosquera live in Bogota and commute 45 minutes daily to work in a rural institution. Because they are able to live in a large city with its many advantages (opportunity for scientific advancement, schools for the family, cultural attractions, etc.), they are willing to work in a rural area. If it were necessary to live in a smaller community to do the same work, as is true in many areas of the country, they probably would not serve at the rural level.

Another example is the local hospital in Villeta, a small community in a warm climate about 1 1/2 hours from Bogota. The director of this hospital appeared to be an exceptionally dynamic person with the ability to attract

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personnel to his hospital; it was a well-organized and modern institution. By contrast, the hospital in Facatativa was old, in poor condition, inadequately equipped and, comparatively speaking, not as well staffed professionally as the other two institutions visited. Probably, location, availability of resources, competent hospital directors, good hospital organization, and climate account for the fact that the rural and local level institutions visited are better staffed as compared to the average of others in the same level of the regionalization plan in the rest of the country. (See Section G , page 117 , "Deficit in Human Resources" tables.)

Nonetheless, these examples which show progress in achieving some of the goals of the regional system give confidence that similar progress can be achieved in other areas over time.

PERSONNEL IN THREE "TYPICAL" INSTITUTIONS

HUMAN RESOURCES - RURAL LEVEL

<u>Personnel Classification</u>	<u>Personnel Required (as indicated by National Plan)</u>	<u>Mosquera, Cundinamarca Health Center</u>	
		<u>Actual Personnel</u>	<u>Deficit</u>
<u>Permanent:</u> Nursing auxiliary	1	1	0
<u>promotora</u>	1	-	1
<u>Periodic:</u> Physician	1	1	0
		(4 hrs. a day, 5 days a week)	
Dentist	1	1	0
		(4 hrs. a day, 5 days a week)	
Dental Hygiene Auxiliary	1	-	1
Dental Auxiliary	1	-	1
Sanitation Officer	1	1	0
		(permanent)	

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HUMAN RESOURCES - LOCAL LEVEL

<u>Personnel Classification</u>	Personnel Required (as indicated by <u>National Plan)</u>	Villeta, Cundinamarca, Local Level "B" Hospital 64 Beds	
		<u>Actual Personnel</u>	<u>Deficit</u>
<u>Permanent</u>			
Physician	2	2	0
General nurs.	1	1	0
Nursing auxiliary	8	7	1
Nursing aide	10	15	(5 extra)
Laboratory auxiliary	1	1	0
Dental auxiliary	1	1	0
Oral hygiene auxiliary	1	-	1
X-ray auxiliary	1	1	0
Pharmacy auxiliary	1	1	0
Cook-nutritionist	1	1	0
Maintenance auxiliary	1	1	0
Sanitation officer	1	-	1
Director	-	1	-
Out-patient physician	-	1	-
Bacteriologist	-	1	-
Social work auxiliary	-	1	-
Statistician	-	1	-

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HUMAN RESOURCES - REGIONAL LEVEL

<u>Personnel Classification</u>	Personnel Required (as indicated by National Plan)	Facatativa, Cundinamarca Regional "A" Hospital 127 Beds	
		<u>Actual Personnel</u>	<u>Deficit</u>
Nursing aide	21	20	1
Nursing auxiliary	16	25	9(extra)
General nurse	4	1	3
Licensed nurse	2	-	2
Laboratory auxiliary	4	2	2
Laboratory aide	4	2	2
Laboratory technician	2	3	(1 extra)
Pathology auxiliary	1	-	1
Cytology technician	1	-	1
Radiologist	1	1	0
Radiology auxiliary	1	1	0
Film development auxiliary	1	-	1
Physical therapist	1	1(half-time)	0
Physical therapist auxiliary	2	-	2
Oral hygiene auxiliary	1	1	0
Dental auxiliary	1	-	1
Dentist	1	2(each half-time)	0
Public health physician	1	1	0
General practitioner	6	5	1
Internist	1	-	1
Surgeon	2	1	1
Obstetrician-Gynecologist	1	-	1
Pediatrician	1	-	1
Anesthesiologist	2	1	1
Traumatologist	1	1	0
Pathologist	1	-	1
Dietician	1	-	1
Statistician	1	1	0
Statistics auxiliary	1	1	0
Library auxiliary	1	-	1
Pharmacy regent	1	1	0
Cook	1	1	0
Home Economist	1	-	1
Maintenance technician	3	1(half-time)	2
Administrative Assistant	1	1	0
Social Worker	1	-	1
Periodic: Plastic Surgeon	-	1	-
Ear, Nose, Throat Specialist	-	1	-
Out-patient physician	-	2(each half-time)	-

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F. Current Personnel Deficiencies and Prospects

Adequate staffing of the public health system in Colombia is constrained by shortages of personnel, budget limitations, insufficient quantity and quality of training, and geographic concentration of personnel in the large cities. Current shortages of personnel are particularly acute among auxiliary technical personnel, such as maintenance technicians, professional nurses, and promotoras.

There is an estimated 10% shortage in the number of doctors available to the public health system in Colombia. Some small expansion of medical training is expected, and there should be an additional 1,500 doctors available by 1975. Nevertheless, with growing needs, retirement, and some migration it is not expected that the relative shortage will be significantly ameliorated. It is expected that the changes in curricula and plans for in-service training will have a salutary effect on the quality of health professionals. More emphasis on community medicine to prepare doctors to work within the integrated regional system is expected to improve the efficiency of their use.

There are, however, several other problems more significant than the actual numbers; these problems will not be easily solved. Although consideration is being given to salary and other incentives, it is not clear that these will be sufficient to make significant shifts in the geographical distribution of doctors. The present higher salary scales in the social security (urban service) and contractual relationships that usually hire doctors for part-time public health service (leaving time for private practice, well-paid if in urban areas) both serve to exacerbate the geographic imbalance.

With a variety of actions taken to improve general living conditions in intermediate cities and specific actions to improve working conditions, staffing patterns, equipment, incentives, etc., in the regional hospitals it is expected that improvements will be made to spread the supply of doctors at least among intermediate cities. Legislation presently in the Congress, if passed, will provide the basis for a uniform pay scale within the government-supported health services, thus tending to redress some of the imbalances.

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Nevertheless, it does not seem realistic that there will be more than slight improvement of the medical staffing of "local" hospitals nor that there will be any increase of professional medical care to the rural areas. The GOC has taken a practical approach through its emphasis on improving the efficiency of the regional system to provide more and better supervised para-medical care to the outreach posts. The additional emphasis on "non-medical" action -- preventive care for rural areas such as improved environmental sanitation and nutrition -- makes the GOC approach to the distribution of personnel the most effective that can be taken under the circumstances. These actions may well demonstrate that the idealistic concept of a doctor in every hamlet may not be necessary to provide at least a reasonable level of health service to the rural populace.

Expected improvements in pay scale, training time/quality and facilities available will improve numbers and distribution of professional nurses somewhat. It is not expected, however, in the short run that this will significantly modify the pattern of locational concentration in the large cities and of functional concentration in administration and supervision. The immediate hope for improvement is in training professional nurses to be better supervisors to make the most effective use of auxiliary personnel.

Over time the expansion of secondary education for lower income groups, particularly through the INEM system, will substantially increase the pool of employable women qualified for nurse's training. Some modifications of the nurse's training presently under consideration will pave the way for more acceptance of this group and will likely make nurse's training more attractive to them. Although this is a medium to longer-term prospect, it does give some expectation that the future holds prospect of significant modification of the present 7:1 ratio of medical professionals to professional nurses.

Considerable improvement in the availability and quality of auxiliary personnel is expected in the short run. Budgetary availabilities, at the local level, the major source of financial support for auxiliary personnel, will increase substantially as a result of the Situado Fiscal, the allocation of specific national revenues (excise taxes) to departmental governments for primary education and health programs. Employment of auxiliary personnel is expected to increase; higher salaries are expected to cut down the current high turnover rate of promotoras. Two weaknesses which have not received sufficient attention in the planning are the quality of training programs for auxiliary personnel and the adequacy of the supervision the personnel receive.

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G. Statistical Information on the Colombian Health Personnel Situation

TABLE 26  
AVAILABILITY 1971 AND PROJECTED AVAILABILITY 1975  
FOR MEDICAL AND PARA-MEDICAL PERSONNEL IN COLOMBIA<sup>1/ 2/</sup>

	Number Avail. 1971	Number Needed 1975	Estimated Avail. 1975	Education			Short Courses
				Deficit 1975	Colomb. Progrms. Acadm.	Foreign Progrms. Acadm.	
Health Planners (Administrators and Research Specialists for National & Departmental Programs)	87	152	152	0	50	15	Yes
Faculty Members in Health Fields **	1,285	-	-	-	-	-	-
Medical Doctors	9,531	12,357	11,080	1,277	1,549	-	-
Public Health Doctors	250	310	310	0	60	-	-
Public Health Nurses	207	304	364	+60	60	-	-
Professional Nurses	1,050	1,973	1,680	293	630	-	-
Auxiliary Nurses	9,700	19,730	15,712	4,018	6,012	-	-
Health Promotoras	2,600	20,124 <sup>3/</sup>	7,600	12,524	5,000	-	Yes
Sanitary Engineers	180	500	255	245	75	-	-
Sanitary Promotoras	1,800	5,000	3,000	2,000	1,200	-	Yes
Dentists	3,020	7,520	3,844	3,676	824	-	-
Dental Assistants	878	12,883	1,485	11,398	607	-	-
Hospital Administrators	104	339	194	145	80	10	-
Equipment Maintenance	39	670	189	481	120	30	Yes
Public Health Dentists	69	194	159	35	90	-	-

\*\* Includes professionals (physicians, public health nurses, veterinaries, dentists)

1/ "Algunos Aspectos del Sector Salud" - Departamento Nacional de Planeacion, page 43

2/ Represents total needs for all health activities -- not limited to activities of Ministry of Public Health

3/ A theoretical projection based on population and numbers of community; not the practical goal toward which they are striving of about 5,000 - 7,000 which could be trained and assimilated.

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TABLE 27I. RURAL LEVEL

<u>Personnel Classification</u>	<u>Personnel Necessary</u>	<u>Number of Institutions: 844 Health Posts</u>	
		<u>1970</u> <u>Actual Personnel</u>	<u>1970</u> <u>Positions not Filled</u>
Nursing aide or auxiliary	4,067	844	3,223
Promotora	18,333 <sup>1/</sup>	2,000	16,333

II. LOCAL LEVEL

Number of Institutions: 310 Hospitals,  
51 health centers with beds

Number of Beds: 9,438 hospitals  
381 health centers

<u>Personnel Classification</u>	<u>Personnel Necessary</u>	<u>Actual Personnel</u>	<u>Positions not Filled</u>
General physicians	671	451	220
Nursing aide or auxiliaries	3,681	2,006	1,675
"Polivalente" <sup>2/</sup>	310	-	310
Oral hygiene aides	361	-	361
Sanitation officers	311	215	96
Administrative assistants	310	297	13

<sup>1/</sup> See Note 3, page 117

<sup>2/</sup> Polivalente - multi-purpose assistant - "Recursos Humanos Para un Servicio Nacional de Salud" - IV Congreso Colombiano de Salud Publica.

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TABLE 27 (cont'd.)III. REGIONAL LEVEL

<u>Personnel Classification</u>	<u>Personnel Necessary</u>	<u>Number of Institutions:</u>	
		<u>Regional A-</u>	<u>Regional B-</u>
		74	22
		<u>96</u>	
		<u>Number of Beds:</u>	
		Regional A-6,351	Regional B-3,446
		<u>9,797</u>	
<u>Personnel Classification</u>	<u>Personnel Necessary</u>	<u>Actual Personnel</u>	<u>Positions Not Filled</u>
<u>Professional</u>			
General physician	490	354	136
Public health physician	96	7	89
Radiologist	49	23	26
Anesthesiologist	192	64	128
Surgeon	196	100	96
Internist	98	27	71
Pediatrician	98	71	27
Obstetrician-gynecologist	98	52	46
Traumatologist	96	19	77
Pathologist	96	20	76
Odontologist	122	56	66
General nurse	327	134	193
Clinical laboratory technician	96	127	-
Dietician	96	13	83
Physical therapist	96	10	86
Social worker	96	5	91
<u>Technical-Auxiliary</u>			
Nursing auxiliary	3,672	3,379	293
X-ray technician	178	86	92
Laboratory auxiliary	384	105	279
Statistics auxiliary	96	101	-
Pharmacy auxiliary	96	113	-
Dental auxiliary	122	-	122
Oral hygiene auxiliary	122	-	122
Maintenance auxiliary	288	-	288
Citology technician	96	5	91
Sanitation official	468	138	330
<u>Administration</u>			
Hospital administrator	-	-	-
Assistant administrator	96	95	1

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TABLE 27 (cont. d)

IV. UNIVERSITY LEVEL

Number of Institutions: 11

Number of Beds: 5,432

<u>Personnel Classification</u>	<u>Personnel Necessary</u>	<u>Actual Personnel</u>	<u>Positions Not Filled</u>
<u>Professional</u>			
General physician	272	346	-
Public health physician	11	5	6
Radiologist	27	42	-
Questhesiologist	162	108	54
Surgeon	108	133	-
Internist	54	119	-
Pediatrician	54	97	-
Obstetrician-gynecologist	54	77	-
Traumatologist	27	65	-
Pathologist	27	71	-
Odontologist	68	11	57
Nurse (3 years studies)	181	205	-
Nurse (4 years studies)	27	-	27
Laboratory technician	27	128	-
Nutritionist-dietician	54	20	34
Physical therapist	27	43	-
Pharmacists	11	5	6
Social worker	27	20	7
Statistician	11	4	7
<u>Technician-Auxiliary</u>			
Nursing auxiliary	2,037	2,967	-
X-ray technician	87	99	-
Laboratory auxiliary	108	146	-
Statistics auxiliary	27	73	-
Pharmacy auxiliary	277	68	-
Odontology auxiliary	68	10	58
Oral hygiene auxiliary	22	-	22
Maintenance auxiliary	109	-	109
Citology technician	27	2	25
<u>Administrative</u>			
Hospital administrator	11	-	11

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TABLE 28

MANPOWER SITUATION BY INSTITUTION AND TYPE PERSONNELBy InstitutionMinistry, National Planning Department, and Decentralized  
Institutions, Professional and Auxiliary Personnel

Although information is incomplete and not fully comparable, the following table gives an indication of the numbers and level of training of some of the decentralized and related institutions.

<u>Institution</u>	<u>Year</u>	<u>Professional Personnel</u>			<u>Level of Training</u>		
		<u>Planning and Adminis- tration</u>	<u>Program Implementation</u>	<u>Other</u>	<u>Post Grad. Post Grad.</u>		
					<u>Univ.</u>	<u>Colombia</u>	<u>Foreign</u>
CORPAL	1972	6	-	173	-	Not Available	
National Hospital Fund	1972	16	8	Not Available		Not Available	
INPES (Division of Basic Environ- mental Sanitation)	1972	12	32	366	25	4	15
ICBF	1972	500	745	1,115	1,245	52	38
ASCOFAME	1972	20	69	31	40	15	25

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TABLE 29  
MINISTRY AND HEALTH SERVICES PERSONNEL BY TYPE AND TRAINING - 1972

	<u>Doctors</u>	<u>Nurses</u>	<u>Sanitary</u>		<u>Others</u>	<u>Training</u>	
			<u>Eng.</u>	<u>Archit.</u>		<u>Univ.</u>	<u>Post Graduate Colombia</u>
<u>Ministry of Health</u>							
<u>Central Office</u>	31	7	3	11	177	72	39
<u>Sectional Health Services</u>							
Antioquia	266	30	3	5	843	401	39
Atlantico	106	16	1	1	643	145	5
Bolivar	70	2	-	1	327	109	5
Boyaca	3	2	-	-	49	12	2
Caldas	31	1	1	4	206	58	7
Cauca	40	4	1	1	272	62	9
Cesar	30	1	-	1	264	38	2
Cordoba	12	4	-	-	87	29	3
Cundinamarca	112	6	1	3	495	189	20
Choco	18	1	-	1	166	31	1
Huila	48	2	-	2	190	72	5
La Guajira	22	1	-	-	-	36	1
Magdalena	39	2	-	1	200	52	4
Nariño	48	5	-	-	261	76	10
N. Santander	57	2	-	-	306	84	5
Quindio	35	1	-	-	146	76	4
Risaralda	55	4	-	1	262	89	5
Sucre	36	4	-	1	206	55	4
Tolima	80	5	1	1	567	132	7
Valle	77	3	2	2	150	21	11
Arauca	10	1	-	-	61	13	-
Caqueta	9	1	-	-	72	12	3
Putumayo	7	1	1	1	74	16	1
San Andres	11	1	1	-	25	15	-
Amazonas	4	1	-	-	53	6	1
Vaupés	6	-	-	-	37	9	-
Guainia	3	-	-	-	15	5	-
Vichada	3	1	-	-	35	6	-

NOTE: Ministry has 17 trained in Post Graduate Overseas; numbers not available for sectional services.

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TABLE 30  
TEACHING PERSONNEL IN MEDICAL FACULTIES  
COLOMBIA - 1970

<u>M. Medical Faculties</u>	<u>Time Given</u>			<u>Total</u>
	<u>Full Time</u>	<u>Half Time</u>	<u>Part Time</u>	
Antioquia	107	105	54	266
Caldas	40	38	4	82
Cartagena	48	1	88	137
Cauca	29	17	4	50
Javeriana *	49	32	17	98
Nacional	235	45	19	299
Rosario	56	52	27	135
U. I. Santander	33	3	-	36
Valle	<u>113</u>	<u>8</u>	<u>61</u>	<u>182</u>
TOTAL	<u>710</u>	<u>301</u>	<u>274</u>	<u>1,285</u>
School Public Health **	NOT	A	V	53
			A	
			I	
			L	
			A	
			B	
			L	
			E	

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\* Information for 1969

\*\* Information for 1972

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TABLE 31  
PROFESSIONAL SCHOOLS OF NURSING

<u>Name</u>	<u>Location</u>	<u>University</u>	<u>Number Faculty 1971</u>
Nacional	Bogota	Nacional	36
Cartagena	Cartagena	Cartagena	9
Antioquia	Medellin	Antioquia	18
Javeriana	Bogota	Javeriana	11
Valle	Cali	Valle	19
U. I. S.	Bucaramanga	U. I. S.	6
Cruz Roja	Bogota	Rosario	11
Inst. Mariano	Pasto		3
Cauca	Popayan	Cauca	3
Caldas	Manizales	Caldas	2
F. P. Santander	Cucuta	F. P. Santander	<u>1</u>
		TOTAL	<u><u>119</u></u>

Schools of Auxiliary Nursing

There are 32 recognized schools of auxiliary nursing in 19 cities of Colombia. There are approximately 200 faculty members in these schools.

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TABLE 32  
EXPENSES OF THE GOVERNMENT IN MEDICAL EDUCATION  
FOR SCHOOLS OF MEDICINE - 1971

<u>Medical School</u>	<u>Budget</u> (pesos)	<u>Number of</u> <u>Students *</u>	<u>Annual Cost</u> <u>Per Student</u> (pesos)	<u>Average Total</u> <u>Cost for Medical</u> <u>Education Per</u> <u>Student ***</u> (pesos)
Rosario	3,457,878	378	9,148	45,740
Javeriana	24,942,589	617	40,426	242,556
Antioquia	16,540,585	543	30,461	167,535
Caldas	4,637,151	400	11,593	69,558
Cartagena	6,511,772	435	14,970	89,820
Cauca	6,128,522	395	15,515	93,090
Valle	32,696,162 **	416	78,597	471,582
Industrial de Santander	<u>7,511,045</u>	<u>325</u>	<u>23,111</u>	<u>138,666</u>
TOTAL	<u>102,425,704</u>	<u>3,509</u>	<u>29,189</u>	<u>175,134 ***</u>
	<u>(US\$4.5 million)</u>		<u>(US\$1,200)</u>	<u>(US\$7,700)</u>

\* Does not include rotating interns (455)

\*\* Includes budget for research

\*\*\* General average

SOURCE: Asociacion Colombiana de Facultades de Medicina

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TABLE 33  
AVERAGE COSTS TO THE GOVERNMENT  
IN TRAINING OF PERSONNEL  
1971

<u>Type of Personnel</u>	<u>Average Total Cost</u>	<u>Index of Cost*</u>
General practitioner	175, 134 (US\$7, 700)	100
Specialist	261, 000 (US\$11, 500)	149
Nurse	52, 682 (US\$2, 310)	30
Auxiliary nurse	18, 662 (US\$730)	11
Rural "promotora"	3, 000 (US\$140)	2

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\* Base 100: General practitioner (Index not weighted)

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TABLE 34AVERAGE COSTS IN UTILIZATION OF PERSONNEL (SALARY)  
1972

<u>Type of Personnel</u>	<u>Monthly Salary</u>	<u>Annual Cost*</u>	<u>Cost Index**</u>
General practitioner	11,200 (US\$490)	156,800 (US\$7,000)	100
Specialist	13,600 (US\$600)	190,400 (US\$8,400)	122
Nurse	3,500 (US\$155)	49,000 (US\$2,170)	32
Auxiliary nurse	1,100 (US\$48)	15,400 (US\$684)	10
Rural Promotora	450 (US\$20)***	6,300 (US\$280)	4

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\* Includes fringes

\*\* Base 100: Doctor (Index not weighted)

\*\*\* New Salary Scale

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TABLE 35

NECESSARY COST TO ACCOMPLISH THE TOTAL UTILIZATION  
OF THE ADDITIONAL PERSONNEL NEEDS IN 1975

Type Personnel	Personnel Needs According to Beds Projected *			Total	Deficit of Utiliza- tion	Total Require- ment to 1975	Average Annual Cost of Utilization	Cost of Utilization 1975***
	Local	Reg.	Univ.					
General								
Practitioner	9.7	88.45	18.45	116.6	356	472.60	156,800	74,166,400
Nurses								
Auxiliary nurse	-	55.28	14.76	70.4	193	263.40	49,000	12,936,000
	48.5	589.66	129.00	767.16	5,191	5,958.16	15,400	91,753,200
Rural Promotora**				<u>1,857.34</u>	<u>16,333</u>	<u>18,190.34</u> <sup>****</sup>	<u>6,300</u>	<u>11,459,914</u>
				<u>2,811.50</u>	<u>22,073</u>	<u>24,884.50</u>		<u>190,315,514</u> (US\$7 million)

COSTS TO THE GOVERNMENT OF TRAINING THE NEEDED PERSONNEL

Type of Personnel	Requirements 1975	Average Cost of Training***	Total Cost
General practitioner	472.60	175,134	82,838,382
Nurses	263.40	52,682	13,903,048
Auxiliary nurse	5,958.16	18,662	111,188,196
Rural "Promotora"	18,190.34	3,000	<u>54,573,000</u>
			<u>262,507,626</u> (US\$10 million)

- \* Bed projected 1975: Local 194, Regional 1,769 and University 3.69  
 \*\* Estimated need for 1975, according to population growth  
 \*\*\* Cost at 1972 level of prices  
 \*\*\*\* Based on theoretical need related to population, not practical expectation

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PHYSICAL FACILITIES AND THEIR UTILIZATIONA. Resumé of the Situation

As previously noted, some 15% of the Colombian population can afford private medical services, and an additional 10% have access to one of the social security plans. The remaining 75% (16 million people) constitute the "potential clientele" of the public health system, i. e., "official and mixed" institutions financed wholly or in part from Government resources. Of this latter group, a substantial number (the Health Ministry estimates as many as 4 - 5 million) live in areas without practicable access to bona fide medical care. Moreover, the system presently is incapable of effectively serving the "potential clientele," as is illustrated by the facts that 50% of Colombians die without the care of a physician -- over 60% of the population do not consult a doctor even once a year. <sup>1/</sup>

As concerns hospitals, one of the most significant data is the index of occupancy. This index is relatively high in areas with university or large regional hospital, but it declines to surprisingly low levels in the smaller clinics of the hinterland.

As noted in the preceding chapter, this is paradoxical, since the rural half of the population suffers the highest incidences of morbidity and mortality. We have been unable to find any comprehensive study of this phenomenon -- it would make an interesting thesis -- but Colombian health experts surmise that its main causes are the following:

1. Cultural attitudes and practices among a large proportion of the population, such as the use of folk remedies and quacks, and innate distrust of government hospitals and clinics.
2. Poverty: Inability to pay even the small fees which public health services usually attempt to charge.
3. Poor quality and quantity of services provided by the institutions, causing "non-cultural," i. e., empirically based, antipathy toward public health facilities.
4. Inaccessibility of institutions.

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<sup>1/</sup> op cit, Human Resources Study

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Colombia, of course, possesses a few "showcase" hospitals and specialized clinics. (A large ophthalmological hospital in Bogota is said to be one of the finest in the world.) However, it is obvious that these opulent facilities can be utilized by only a minute fraction of the population; that being the case, they are virtually irrelevant to the general Colombian health situation. As for the physical endowment of that system whose mission is to serve three-fourths of the people, the following statements unfortunately are valid as generalizations:

1. Buildings frequently are either decrepit or unfinished, poorly maintained, irrationally situated, overcrowded, or underutilized.
2. Equipment usually is scarce, inappropriate, deteriorated, and ill-used.
3. Vehicles are insufficient, maldistributed, carelessly maintained, and ancient.

The bricks and mortar and hardware of a public health program seem to "turn off" some pundits -- those who envision itinerant healers equipped only with burros and black satchels. And, in their defense, it must be said that far too much investment in public health has been wasted on architectural extravagance or absurdity and dysfunctional equipment purchases. Moreover, given the heavy emphasis on "outreach," preventive medicine, and health "promotion" in the Colombian Government's strategy, it is not unreasonable to question the essentiality or magnitude of the construction and hardware component of the program. We have questioned it and find a clear answer: the existing physical plant and equipment of the Colombian public health system are seriously inadequate in terms of the mission set forth for that system in the Government's new health policy. The construction program is moderate compared with needs; indeed, upon its completion, the number of hospital beds per capita will have declined slightly. However, they will be used more rationally, due to the locational criteria which will be applied, the complementary inputs becoming available, and the operation of the regional integrated system.

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As it has done with regard to health personnel, the Colombian Government also has embarked on a serious research and planning effort concerning physical facilities. Some of the more important elements of the effort include:

1. The INPES study of medical institutions which resulted in the "Listado Nacional," a complete inventory of institutions, and their locations, facilities, equipment, etc. This study provides the raw material for assessing the institutional capabilities of the entire country.
2. The recent study of medical equipment requirements which already has laid the basis for a major donation by UNICEF, and the negotiation of an equipment loan from the United Kingdom on concessional terms.
3. A comprehensive survey of vehicle needs in the public health system.
4. The Government's initiative in requesting PAHO's advice on measures to strengthen the planning capacity of the National Hospital Funds.
5. Substantially increased emphasis on training of hospital and equipment maintenance technicians.

Much of the following material is derived from the studies cited above.

B. Types of Medical Facilities

Medical facilities in Colombia are classified as either hospitals or ambulatory clinics. Hospitals and ambulatory clinics are then sub-divided into groups according to source of financing, services offered to a community, and/or their classification in the regionalized system as defined by the National Hospital Plan.

1. Hospitals are institutions offering in-patient medical attention, including observation, diagnosis, or treatment 24 hours a day. A general hospital renders services in general medicine and one or more of the basic specializations (pediatrics, surgery, obstetrics-gynecology). A specialized hospital is one concerned primarily with a specific disease or a specific medical specialty. <sup>3/</sup>

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<sup>3/</sup> Such as leprasoriums, rehabilitative institutes, orthopedics.

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2. Ambulatory Clinics are institutions dedicated exclusively to general medical attention on an out-patient basis.

3. Health Centers are ambulatory clinics which generally offer out-patient services five days or more a week. There are some health centers with beds. These are differentiated from hospitals as they are not self-administered or self-funded, have no board of directors, and offer predominantly out-patient services.

4. Health Posts are small out-patient clinics offering professional medical services only one or two days a week, generally in rural areas.

This section is concerned primarily with the system of medical attention provided by hospitals, centers, and posts. Increasingly, however, under the influence of the regionalization scheme, hospitals, centers, and posts are becoming directly involved in programming, supervision, and implementation of outreach services and preventive campaigns. In other sections the prospects of the regionalized, integrated system will be discussed in more detail.

C. Source of Financing of Facilities

The four classifications according to source of financing are: official, mixed, decentralized, and private institutions.

1. An official institution is financed entirely by national, departmental, or municipal government funds.

2. A mixed institution is one that receives financial support from other sources (sale of services to community, donations), as well as the government.

3. A decentralized hospital is connected with an employee benefit organization such as a social security; these institutions are self-administered and receive funds from the Government and other sources.

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TABLE 36

INSTITUTIONS AND HOSPITAL BEDS ACCORDING TO FINANCIAL SOURCE  
COLOMBIA 1969

<u>Financial Source</u>	<u>Institutions</u>		<u>Beds</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Official and Mixed	478	69.9	35,932	76.8
Decentralized:				
Social Security	22	3.2	3,375	7.2
Other	23	3.4	1,771	3.8
Private	161	23.5	5,716	12.2
	<hr/>	<hr/>	<hr/>	<hr/>
SUB-TOTAL	684	100.0	46,794	100.0 <u>2/</u>
Official Health				
Centers with Beds <u>1/</u>	51		381	0.8 <u>3/</u>
	<hr/>		<hr/>	
TOTAL	735		47,175	
	<hr/> <hr/>		<hr/> <hr/>	

1/ Health centers are financed by official sources.

2/ The total number of hospital beds in the country, excluding beds in the health centers.

3/ Beds in official health centers as a percentage of the total number of hospital beds in the country.

SOURCE: "Estudio de Instituciones de Atención Médica - Informe General, Noviembre de 1971," page 15.

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4. A private hospital is completely financed by private individuals or organizations.

The chart "Institutions and Hospital Beds According to Financial Sources" (Table 36) indicates that in 1969 there were 478 hospitals supported by the Government or mixed sources as compared to 45 decentralized hospitals and 161 private hospitals; the number of beds in official institutions accounted for 76.8% of the total number. In addition, 51 of the 1,348 official health centers in the country have a total of 381 beds which accounts for 0.8% of the total number of beds; this illustrates the role of health centers as out-patient clinics.

D. "Levels" of Medical Services

The National Hospital Plan, as developed in 1969 by the National Planning Department and the Ministry of Health, classifies hospitals in Colombia at various levels in a regionalized system. The purpose of this system is to increase the coverage of health service in the country; better utilize the human and institutional resources available; and improve the quality of medical and other health care attention, especially in the rural areas.

Colombia is divided politically and administratively into departments, which correspond approximately to states in the United States, and municipalities, which are similar to U.S. counties. Both departments and municipalities have their own government, i. e., they levy and collect certain taxes, help maintain law and order, and either resolve or refer legal disputes to a higher level of government. Municipalities are further sub-divided into veredas (similar to townships) or corregimientos and caserios (small villages) where the highest form of government may be a police station.

Each department in the country has been divided into areas of health service; for example, the Department of Cundinamarca has four areas or regions of health service. Different levels of medical services are assigned to the various localities depending on the population in the locality.

1. The most rudimentary level of the regionalization plan is the rural level health center; these are out-patient clinics located in small

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villages (corregimientos or caserios) where the capital city of the municipality (equivalent to a county seat in the United States) has less than 1,500 inhabitants. In the country there are 283 capitals of municipalities with less than 1,500 inhabitants, and 3,784 small villages, a total of 4,067 localities in Colombia which could be served by health centers, covering a population of 9.3 million, about 45% of the total. Villages located in municipalities with between 1,500 and 3,000 inhabitants in the capital are assigned to either a rural or local level depending on the location of the municipality.

2. Local level pertains to institutions located in municipalities with more than 3,000 inhabitants in the capital. The local level may have either Local Level "A" or Local Level "B" facilities. Local Level "A" refers to a health center with beds (although service is primarily out-patient) or a small hospital with no surgery facilities. Local Level "B" institutions are small hospitals with surgical facilities where emergency and elective surgery can be performed with collaboration of physicians from the regional health center.

3. The regional level of hospitals is also divided into "A" and "B" levels. These are general hospitals which provide services in the basic medical specialties (such as OB-GYN, pediatrics, surgery), and any other specialties of which they may be capable (such as orthopedics, dermatology, physical therapy). Regional "A" hospitals are located in the principal cities of the departments; Regional "B" hospitals are located in the capital cities of departments if the capital city has no university with a medical faculty.

4. The university level of the regionalization plan is located in the capital of a department which has a medical school; it is therefore able to provide services of all medical specialties.

The table "Hospitals and Beds Included in Regionalization Plan 1970" (Table 37) describes the regionalization plan: a large percentage (77.1) of small Local Level "A" and "B" institutions with limited facilities and resources will be able to refer more seriously-ill patients to the smaller number (20.5%) of larger and better equipped regional hospitals. Patients from rural areas needing hospitalization are referred to Local Level "A" or "B" facilities from the rural level out-patient clinics.

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TABLE 37EXISTING HOSPITALS AND BEDS INCLUDED IN 1970 REGIONALIZATION PLAN

(Beds in Health Centers and Specialized Hospitals not Included)

	<u>Facilities</u>	<u>% Total Institutions</u>	<u>Beds</u>	<u>% Total Beds</u>
Rural <u>1/</u>	844			
Local A & B	361	77.1%	9,819	39.2%
Regional A	74	15.8%	6,351	24.5%
Regional B	22	4.7%	3,446	13.7%
Universities	11	2.4%	5,432	21.7%
TOTAL HOSPITALS	468	100%	25,048	100%
TOTAL FACILITIES	1322			

1/ Out-patient facilities only and excluded from all percentage columns.

SOURCE: "Acciones en el Campo de la Salud, Recursos Humanos," Ministerio de Salud Pública, Septiembre 1972.

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E. Distribution and Utilization of Facilities

Table 38 "Public Hospitals and Beds by Rural and Urban Areas," indicates the population growth and changes from 1964 to 1970; urban areas have grown from 8,366,500 inhabitants in 1964 to 11,858,000 in 1970 (an increase of 41.7%) while rural population has increased from 8,939,000 to only 9,335,000 (an increase of 3.9%). The number of beds per 1,000 inhabitants in public institutions has decreased from 2.0 in 1964 to 1.8 in 1970, with the greatest drop shown in the areas where the population is concentrated (3.2 beds/1,000 inhabitants in 1964 to 2.3 beds/1,000 inhabitants in 1970). This is a result of rural to urban migration and rapid population growth, and the concurrent inability on the part of the Government to meet the increased demand for medical services in large and fast-growing urban areas. At the same time, there has been a greater increase in the number of hospitals in rural areas than in urban areas; the rural hospitals, however, have a much lower index of occupancy. (See Table 39, "Hospital Indices According to Size of Institutions.") The lower indices of occupancy for rural hospitals (13.9% for hospitals having less than 10 beds compared with 57% for those with less than 100 beds, and 82.1% for those with more than 500 beds) is chiefly due to inadequate staffing, lack of sufficient financial support, insufficient equipment and drugs, and cultural values of the population. There are also many examples of small hospitals which were built by local initiative without adequate concern for location, accessibility, need, and present demand.

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TABLE 38

PUBLIC HOSPITALS AND BEDS, BY RURAL AND URBAN AREAS,  
ACCORDING TO POPULATION SCALES

Population Scales	1964								1970					
	No. of Municipal Capitals	Total Pop. (000)	Total Pop. of Capitals (000)	Rural Pop. (000)	Hos- pitals	No. of Beds	Beds/ 1000 Inhab.	Total Pop. (000)	Total Pop. of Capitals (000)	Rural Pop. (000)	Hos- pitals	No. of Beds	Beds/ 1000 Inhab.	
0-	1,499	245	1,517	173	1,343	29	726	0.4	1,665	209	1,455	42	1,026	0.6
1,500-	4,999	250	2,519	424	2,095	112	4,080	1.6	2,793	521	2,272	124	3,894	1.3
5,000-	9,999	151	2,104	574	1,529	105	4,327	2.0	2,301	718	1,582	130	4,164	1.8
10,000-	19,999	82	1,588	591	966	67	3,378	2.1	1,828	731	1,097	75	4,391	2.4
20,000-	39,999	40	1,179	79	1,099	41	2,566	2.1	1,362	708	654	48	2,269	1.6
40,000-	79,999	19	752	432	319	23	1,820	2.4	949	577	372	24	1,874	1.9
80,000-	159,999	16	1,119	799	320	37	3,006	2.6	1,444	1,137	307	45	3,351	2.3
160,000-	319,999	9	1,146	855	291	31	2,799	2.4	1,532	1,287	245	36	3,120	2.0
320,000-	639,999	4	1,807	947	860	19	2,196	1.2	2,156	1,249	907	24	2,951	1.3
640,000-	1,279,999	1	498	493	5	20	842	1.6	640	630	10	25	942	1.4
1,280,000-		3	3,106	2,997	109	75	10,145	3.2	4,523	4,090	433	86	10,539	2.3
TOTAL	820	17,305	8,366	8,939	484	35,882	2.0	21,193	11,858	9,335	659	38,672	1.8	

Source: "Boletín Mensual de Estadística, 1971" DANE, Pg. 127

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TABLE 39HOSPITAL UTILIZATION INDICES ACCORDING TO SIZE OF INSTITUTIONS 1969

<u>Size of Institution</u> <u>(In term of Beds)</u>	<u>Occupation</u> <u>Percentage</u> <u>1/</u>
Less than 10	13.9
10-29	40.2
30-49	51.1
50-99	57.0
100-199	64.5
200-499	69.0
500 and more	82.1
	<hr/>
TOTAL	64.4
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1/ No. of available beds/No. of beds occupied.

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F. Description of "Typical" Institutions

In the previous chapter, we described the situations of three "typical" health facilities with regard to health personnel. Here, the status of physical plant and equipment of those same institutions will be briefly summarized.

1. Health Center

Necessary equipment for a health post and health center include simple diagnostic equipment (e. g. stethoscope, scales, speculum), simple laboratory equipment (needles, reactive solutions), and equipment for first-aid and treatments (cotton, bandages, antiseptics, anesthetics). Common medication such as antibiotics, analgesics, antidiarrheals, and tranquilizers form a small pharmacy with drugs for sale to the community. Simple dental equipment is also provided.

The health center in the town of Mosquera, Cundinamarca, was housed in a small building which had a waiting room, physician's office, dental office, nursing and pharmacy section, and a small room for a sanitation officer who works there permanently.

The majority of the equipment was in poor condition, e. g. rusted hemostats, and broken bandage scissors. The dental office had recently installed new dental equipment (chair, lamp, sterilizer), but the dentist was still trying to obtain the small items necessary for service (drills, anesthetics, etc.).

2. "Local Level" Hospital

The local hospital in Villeta, Cundinamarca, has 64 beds and, though built in 1943, was found to be in very good condition. It possessed virtually all the prescribed equipment and the latter also appeared to be well utilized and maintained. The only visible exception was a new X-ray machine which was infrequently used due to a shortage of electric power in the community.

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3. Regional Level Hospital

Services offered to the community at the regional level include:

- (a) General medical services, including X-ray, pharmacy, dental, laboratory, and physical therapy departments;
- (b) Emergency services;
- (c) Out-patient clinics, including medical attention and educational programs;
- (d) Hospitalization for the rural and urban population of the region, referred by physicians from the rural, local or regional level;
- (e) Public health services for the region, including a public health physician, public health nurse, and sanitation office comprised of several sanitation officers.

The regional hospital we visited in Facatativa had 127 beds, was built in 1922, and found to be in poor condition. There were wooden floors, cracked plaster in walls and ceilings (even in a new addition built in 1968-9), and cold wards with one bathroom for 20-25 people. The emergency room was located just inside the main entrance of the hospital; this area was very congested not only because it was the main entrance, but because it also serves as waiting area for families using out-patient services. This same hallway is the only entrance to the emergency room. There was no elevator and patients must be carried on stretchers up a narrow stairway to the second floor.

Equipment was scarce and in bad condition: baby beds had side rails held in place by twine; centrifuges used in the laboratory were barely functioning; surgery was frequently cancelled because the sterilizer functioned sporadically. The physical therapy department had no equipment except a heat lamp and harness traction; the majority of the work done by the therapist was massage using warm water. There was, however, a new X-ray machine provided a year ago by the Hospital Fund of Cundinamarca.

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Despite its physical deficiencies, this hospital was performing creditably, and providing leadership as envisaged in the regionalized and integrated system. (See Chapter VI , page 181.)

G. Hospital and Transportation Equipment

A survey of available hospital equipment was made by the MOH, ASCOFAME and INPES in July, 1970, for better understanding of equipment availability and condition. The study was divided into three main categories of equipment according to (a) classification of hospitals, (b) condition of equipment, and (c) utilization rate. Forty-seven different types of equipment were included in the study, but information has so far been compiled for only twelve types of equipment. These twelve types were grouped into six classifications: transportation; and five areas of medical service (radiology, surgery, clinical laboratory, pathology laboratory, and dental clinics).

Table 40 demonstrates the condition of equipment in hospitals classified according to financial sources. Official and mixed institutions have the lowest percentage of equipment in good condition in 7 of the 12 categories; private hospitals and ICSS hospitals have the highest percentage of equipment in good condition.

Table 41 shows the percentage of equipment in good condition according to levels of institutions in the regionalization plan. Only 53.4% of the X-ray machines in the Local Level "A" hospitals, and 84.5% of the machines in university hospitals are in good condition. Surgical equipment in university hospitals is in better condition than the regional level hospitals, and Regional "B" and Local Level "A" hospitals have the highest percentage of equipment in poor condition. Autoclaves are in worse state than anesthesia equipment or operating tables; only 521 of the available 762 autoclaves are in good condition. Clinical equipment in university hospitals is in good condition, as is dental equipment except for dental X-ray machines. Only 25 of the 39 dental X-ray machines are in good condition.

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Eighty-one percent of the ambulances for government hospitals are in good condition.

Table 42 depicts the utilization rate of the equipment. To obtain this rate, a hypothetical number of potential working hours per day for each machine was established, using different parameters according to the type of machine studied. Although the fixed rates may be questioned, it was felt necessary to have some point of reference to facilitate comparison. All of the equipment was calculated on an eight-hour work day, except ambulances and autoclaves, which were calculated on a 24-hour day. Once the potential capacity of a machine was determined, the actual working time was decided and the utilization rate was calculated. The equipment was then divided into three categories according to the utilization rate:

1. Equipment used to two-thirds of the potential capacity (anesthesia equipment, centrifuges, dental units, and high-speed drills).
2. Equipment used at 50% the potential capacity (X-ray machines, laboratory warming ovens, photocolormeters, microtones, and ambulances).

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TABLE 40

PERCENTAGE OF INSTALLED EQUIPMENT IN GOOD CONDITION  
ACCORDING TO HOSPITAL CLASSIFICATION - COLOMBIA 1970

<u>Type of Equipment</u>	<u>Classification of Hospital &amp; Number of Institutions</u>											
	<u>Official &amp; Mixed(478)</u>			<u>I. C. S. S. (22)</u>			<u>Decentralized<sup>1/</sup>(22)</u>			<u>Private (161)</u>		
	<u>Tot. No.<sup>2/</sup> Equip.</u>	<u>No. Good Condition</u>	<u>%</u>	<u>Tot. No. Equip.</u>	<u>No. Good Condition</u>	<u>%</u>	<u>Tot. No. Equip.</u>	<u>No. Good Condition</u>	<u>%</u>	<u>Tot. No. Equip.</u>	<u>No. Good Condition</u>	<u>%</u>
<u>Radiology</u>												
X-Ray	624	491	78.7	51	50	98.0	63	45	71.4	196	184	93.9
<u>Surgery</u>												
Anesthesia	538	455	84.6	39	38	97.4	37	35	94.2	215	208	96.7
Autoclave	712	559	78.5	85	81	95.3	64	52	81.3	217	206	94.9
Operating table	573	549	95.9	51	49	96.0	41	41	100.0	197	194	98.4
<u>Clinical Laboratory</u>												
Centrifuge	574	506	88.2	56	53	94.6	70	49	70.0	97	82	94.9
Photocolorimeter	234	204	87.2	34	28	82.3	17	16	94.1	65	62	95.4
Warming Oven	419	362	86.2	46	43	93.5	41	36	87.8	91	87	95.6
<u>Pathology Laboratory</u>												
Microtome	81	70	86.4	11	10	90.9	10	9	90.0	5	4	80.0
<u>Dental</u>												
Dental Unit												
(chair machine)	309	270	87.4	46	43	93.5	36	30	83.3	21	19	90.5
Highspeed Air Drill	209	179	85.7	40	38	95.0	31	28	90.3	12	11	91.7
X-Ray	50	33	66.0	14	13	92.2	16	15	93.8	11	11	100.0
<u>Vehicles</u>												
Ambulances	137	111	81.0	66	56	84.8	36	36	100.0	22	22	100.0

1/ Excluding ICSS.

2/ Total equipment installed, not installed or requested but not yet available.

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TABLE 41

PERCENTAGE OF INSTALLED EQUIPMENT IN GOOD CONDITION  
IN OFFICIAL INSTITUTIONS ACCORDING TO LEVEL OF REGIONALIZATION--COLOMBIA 1970

Type of Equipment	University (11)			Regional B (22)			Regional A (74)			Local B (105)			Local A (205)			Health Centers(51)		
	Tot. <sup>1/</sup>	GC <sup>2/</sup>	%	Tot.	GC	%	Tot.	GC	%	Tot.	GC	%	Tot.	GC	%	Tot.	GC	%
<u>Radiology - X-Ray</u>	103	87	84.5	69	49	71.0	151	129	85.4	114	87	76.3	58	31	53.4	1	-	-
<u>Surgery</u>																		
Anesthesia	98	94	95.9	69	55	79.8	114	99	86.8	113	93	82.3	83	66	79.5	14	13	92.8
Autoclave	81	76	93.8	66	49	74.2	143	103	72.0	141	116	82.3	196	147	75.0	37	30	81.1
Operating Table	104	103	99.0	67	61	91.0	117	115	98.2	114	110	96.4	113	106	93.9	14	14	100.0
<u>Clinical Laboratory</u>																		
Centrifuge	129	118	91.5	72	60	83.3	130	111	85.4	98	90	91.8	58	50	86.2	2	1	50.0
Photocolorimeter	33	31	93.9	32	27	84.4	62	54	87.0	54	48	88.9	15	12	80.0	-	-	-
Warming Oven	90	86	95.6	61	52	85.2	93	77	82.8	76	67	88.2	23	16	69.6	2	2	100.0
<u>Pathology Laboratory</u>																		
Microtome	35	32	91.4	25	19	76.0	12	11	91.7									
<u>Dental</u>																		
Dental Unit	9	8	88.9	18	14	77.8	54	47	87.0	83	77	92.8	112	95	84.8	22	18	81.8
Air Drill	3	3	100.0	12	9	75.0	47	38	80.9	60	52	86.7	77	68	88.3	18	17	94.4
X-Ray	5	2	40.0	4	3	75.0	14	8	57.2	10	7	70.0	6	5	83.3	1	-	-
<u>Vehicles</u>																		
Ambulances	18	16	89.9	34	25	62.5	38	31	81.6	30	25	83.3	13	11	84.6	1	1	100.0

1/ Total equipment installed, not installed, or requested but not yet available.

2/ Total in good condition.

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TABLE 42

UTILIZATION OF EQUIPMENT ACCORDING TO HOSPITAL CLASSIFICATIONCOLOMBIA 1970

<u>Type of Equipment</u>	<u>Percentage of Utilization</u>			
	<u>Official and Mixed</u>	<u>ICSS</u>	<u>Decentralized</u>	<u>1/Private</u>
<u>Radiology</u>				
X-Ray	52.5	94.9	76.5	33.6
<u>Surgery</u>				
Anesthesia	68.1	102.0	68.5	54.7
Autoclave	27.1	63.7	37.3	25.0
<u>Clinical Laboratory</u>				
Centrifuge	67.6	103.8	85.2	50.0
Photocolorimeter	54.9	91.7	70.0	38.3
Warming Oven	49.7	52.7	36.0	43.3
<u>Pathology Laboratory</u>				
Microtome	46.8	35.0	145.8	12.5
<u>Dental</u>				
Dental Unit	58.6	111.3	85.6	43.8
High-speed drill	62.6	95.4	83.3	50.0
X-ray	16.3	47.1	54.8	33.3
<u>Vehicles</u>				
Ambulances	40.1	54.5	48.5	35.0

1/ Excluding ICSS

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3. Equipment used at one-third the potential capacity (autoclaves and dental X -ray equipment).

The utilization of equipment varies considerably between the hospitals as classified by financial dependence; ICSS institutions best utilize the equipment available.

A survey of vehicles, tools and equipment, and maintenance employees was made in 1971 in each department of Colombia to enable better understanding of the transportation resources available and those needed for implementation of health programs in each area. The recommendations of the survey included not only the acquisition of vehicles, but also the development of maintenance centers (including tools and additional personnel) for various areas of the country.

Information requested about vehicles included the types of vehicles (trucks, station wagons, boats, jeeps, etc.), numbers of vehicles to be sold, numbers of vehicles which can remain in service, and the organizations to which they belonged. The following is the nation-wide result of this survey:

Vehicles in good condition	557
Vehicles in poor condition (to be sold)	272
Substitution of new vehicles for those to be sold	191
Additional new vehicles needed	277
Total number of land vehicles after the sale of old vehicles and the purchase of new ones	927
Total number of aquatic vehicles after the sale of old vehicles and the purchase of new ones	98

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Criteria for the replacement and purchase of new vehicles for a five-year period have also been established. The first year after the survey, 14 additional vehicles for the Ministry of Health in Bogota and new vehicles to replace 10% of the old vehicles would be requested since it was not economically possible for many sectional health departments to request new vehicles at the time of the survey. Criteria for replacements for the second through fifth years include vehicles to replace those new ones either ruined or involved in accidents (estimated replacement of 2% of the vehicles), those which at the time of the survey were in good condition but are worn out after several years (estimated at 5% annually), extra vehicles necessary for the increase in population and the resultant need for increased services (estimated at 3% annually), and budget increases (estimated at 10% annually by the National Planning Office).

The budget for the new maintenance centers, and new equipment has also been planned, including the following:

	<u>Pesos</u>
Office equipment and material for entire country	2, 500, 000
New tools	5, 198, 858
Total annual cost of the administrative operation	7, 751, 600
Unforeseen expenses	<u>1, 550, 320</u>
TOTAL	17, 000, 778 (US\$745, 000)

These two projects, i. e., the acquisition of vehicles and the development of maintenance centers, have two important purposes: the expanded coverage of medical attention made possible by better means of transportation and communications; and the savings in lowered maintenance costs and better maintenance of Ministry vehicles.

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## FINANCING THE SECTOR

Public health expenditures in Colombia have risen rapidly during the past decade; however, most of the real per capita increase has been channelled to the various social security agencies which serve no more than 7% of the population. The most complete available historical review of sector finances was prepared by the World Bank in their 1970 Report on Colombia.<sup>1/</sup> The first part of this section is based on that report. The second part of the section analyzes the investment budget of the National Government over the period 1966-1975.

### A. Total Sector Finances

During the decade of the 60s there was a substantial rise in expenditures on health in Colombia. In 1961, health outlays amounted to 1.8% of the GNP; by 1970 total sector expenditures exceeded 4 billion pesos, or slightly more than 3% of GNP.<sup>2/</sup>

Tables 43 and 44 show the total public sector expenditures for health and the sources of financing for the years 1961 through 1970. Investments for water and sewerage in urban cities of over 2,500 inhabitants have been omitted. A small part of the overall increase may be attributable to improvements in reporting over the decade, and the depreciation of the peso has significantly lowered the real impact of the increase. Nevertheless, the magnitude of increase and the notable rate of acceleration clearly illustrate that government policy has shifted in favor of increased public health effort.

Public health financing through the Ministry of Health budget rose from 162 million pesos in 1961 to 578 million pesos in 1969, equivalent to a 140% increase in real terms during that eight-year period. During that period, however, Ministry budgets as a percentage of total public sector health outlays fell from 30% in 1961 to 20% in 1969. When the costs of health programs dedicated to special employee groups, primarily ICSS and the welfare funds, are deducted from the total outlays, it is readily apparent that programs benefitting the general populace have not received significant increases in public support. In 1961, programs of general impact received 72% of total sector financing, or about 1% of GNP, and in 1969 they received 47% of total sector financing, again about 1% of GNP.

<sup>1/</sup> IBRD: "Economic Growth of Colombia;" Baltimore: Johns Hopkins University Press (1972)

<sup>2/</sup> A different statistical base from that used by DNP led the World Bank to report a slightly smaller overall increase than DNP; the IBRD report shows 1970 expenditures at 3.5 billion pesos, or 2.8% of GNP.

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TABLE 43

PUBLIC EXPENDITURES FOR HEALTH BY AGENCIES WHICH SERVE  
THE GENERAL POPULATION, AND WHICH SERVE SPECIAL POPULATION GROUPS  
1961 - 1970

(in millions of current Col\$)

Year	Total	Expenditures for the General Population <sup>1/</sup>		Expenditure for Specific Population Groups <sup>2/</sup>	
		Col\$	Index	Col\$	Index
1961	542.2	387.1	100	155.1	100
1962	599.5	409.4	106	190.1	123
1963	790.6	521.1	135	269.5	174
1964	956.4	627.5	162	338.9	219
1965	1,101.5	663.7	171	437.8	282
1966	1,371.3	776.2	201	595.1	384
1967	1,642.4	841.8	217	800.6	516
1968	2,017.1	936.0	242	1,081.1	697
1969	2,762.9	1,298.0	335	1,464.9	944
1970	3,507.0	1,516.1	392	1,990.9	1,284

<sup>1/</sup> Includes: Ministry of Health, National Nutrition Institute, National Cancer Institute, Health Services of the Department, cities, and health care institutions which receive support from the "beneficencias" through lotteries, Totogol, and own income.

<sup>2/</sup> Includes: Health services of the Ministry of Defense, Military Hospital, Colombian Institute of Social Security; Medical Services of National Employees, of Ministry of Communications, of the National Telecommunications Corp., of the Ministry of Labor, of the Ministry of Public Works, of the National Railways, of the Ports of Colombia, and other agencies with smaller programs.

Sources: Study of Human Resources for Health and Medical Education in Colombia-  
Min. of Health, Assoc. of Col. Med. Schools, 1967; Econ. Investigations  
Dept. of Natural Plan. 3/5/70.

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TABLE 44

EXPENDITURES FOR PUBLIC HEALTH, BY SOURCE OF FUNDS<sup>1</sup>, 1961-1970

(in millions of current Col\$)

	1961		1962		1963		1964		1965		1966		1967		1968		1969		1970 <sup>2</sup>	
	Col\$	%	Col\$	%	Col\$	%														
Total	542.9	100	599.5	100	790.6	100	956.4	100	1,101.5	100	1,371.3	100	1,642.4	100	2,017.1	100	2,762.4	100	3,507.0	100
Internal Sources	538.2	99	589.7	98	781.8	99	942.6	99	1,091.4	99	1,361.1	99	1,632.1	99	2,006.7	99	2,631.1	95	3,374.1	96
a) Ministry of Health	162.4	30	181.5	30	178.6	23	203.5	21	208.5	19	307.0	22	346.5	21	406.6	20	573.2	21	671.2	19
b) Other Ministries	23.6	4	37.5	6	35.4	4	57.3	6	62.5	6	(75.6)	6	(90.0)	5	(107.1)	5	(127.4)	5	(151.6)	4
c) Social Security and National Cajas	121.9	22	132.0	22	212.4	27	245.4	26	349.2	32	(483.6)	35	(669.8)	41	(927.6)	46	(1,284.7)	46	(1,779.3)	51
d) Other Central Agencies	10.2	2	21.5	3	23.6	3	34.9	4	31.6	3	35.9	3	(40.8)	2	(46.4)	2	(52.3)	2	(60.0)	2
e) Lotteries, 5 and 6, Totogol, etc., (Beneficencias)	112.8	21	99.2	17	181.4	23	230.0	24	284.6	23	(287.0)	21	(323.0)	20	(364.0)	18	411.0	15	(463.0)	13
f) Departments and Municipalities	88.3	16	93.1	16	118.1	15	137.0	14	146.0	13	(128.0)	9	(112.0)	7	(98.0)	5	56.0	3	(75.0)	3
g) Payments for Hospital Services	22.0	4	24.9	4	32.3	4	34.5	4	38.0	3	(44.0)	3	(50.0)	3	(57.0)	3	65.0	2	(74.0)	2
h) Taxes on Beer	-	-	-	-	-	-	-	-	-	-	(44.0)	3	(50.0)	3	(57.0)	3	65.0	2	(74.0)	2
2. External Sources <sup>3</sup>	4.0	1	9.8	2	8.8	1	13.8	1	10.1	1	(10.2)	1	(10.3)	1	(10.4)	1	132.5	5	132.9	4
Gross National Product <sup>4</sup>	30,067.0		34,199.2		43,525.5		53,760.3		60,797.6		73,612.3		83,525.2		94,550.5		(109,300.4)		(126,897.8)	
Health Expenditures as percent of GNP	1.8%		1.8%		1.8%		1.8%		1.5%		1.9%		2.0%		2.1%		(2.5%)		(2.8%)	

<sup>1</sup> Does not include expenditures for water and sewerage in urban areas.

<sup>2</sup> 1970 figures represent budget as opposed to expenditures; figures in parentheses are estimates.

<sup>3</sup> Included in 1969 and 1970 figures are World Food Program contributions.

<sup>4</sup> 1969 and 1970 estimated by National Planning Department.

Sources: Study of Human Resources for Health and Medical Education in Colombia - Ministry of Health, Association of Colombian Medical Schools, 1967; National Hospital Plan, Bank of the Republic; Economic Investigations - National Planning Department.

Note: The listings for Beneficencias, Departments and Municipalities, Payment for Services and Ministry of Health take into account data from the historical series up to 1965 and estimates for 1969 prepared by the Ministry of Health; for other years figures have been developed by interpolation and projection - Human Resources Unit - Department of National Planning - March 5, 1970.

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On the other hand, members of social security and welfare benefit systems are now receiving a proportionally greater share of public health benefits than are received by their own dependents and by the general population. These systems include somewhat less than 1.5 million workers, or about 7% of the total population. This small group benefits from over half (53%) of total public health expenditures.

Available data do not lend themselves to reliable differentiation between operational expenditures and investment as traditionally defined -- construction of new facilities and purchase of original equipment. The difficulty results partly from the changing organizational structure of the sector during the last decade and partly from the definitional problems of separating health "investment" from "operational expenditures."

For example, for 1965, 55.5 million pesos (5% of the total 1,101.5 million peso expenditures for health) were allocated to capital investment in construction: 50.4 million pesos for hospitals and other facilities, 5.1 million pesos for rural water supplies. In 1970, the investment budget of the Ministry of Health amounted to 228 million pesos, exclusive of investment in water supply and sewerage services. This was equal to 6.6% of total expenditures on public health. The investment of 228 million pesos includes about 47 million pesos for hospital and health center construction and equipment, and approximately 173 million pesos for a variety of activities in which construction or the purchase of fixed equipment -- the usual basis for inclusion in a capital investment budget -- are minor or absent elements in the uses of these funds. Included in such "investments" are the malaria eradication campaign (61 million pesos), mass vaccination programs (24 million pesos), leprosy control (19 million pesos), tuberculosis control (3 million pesos), maternal and child health services (49 million pesos), and education and training of personnel (17 million pesos).<sup>1/</sup> In addition, the Colombian Institute for Social Security and the National Hospital Fund were planning to allocate about 100 million pesos on construction of hospitals and health centers. These investment expenditures would then work out at 10% of total public expenditures on health in 1970.

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<sup>1/</sup> We have no quarrel with classification of disease eradication as "investment." Obviously, the elimination of diseases creates a national asset: a healthier labor force, and asset creation is "investment."

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In recent years external financial support for health sector activities has been at a low level. From 1964 through 1968 direct financial assistance ranged from 4.0 million pesos to 13.8 million pesos annually. Most of the external financing was earmarked for special projects in the form of stimulatory or initiating grants. In addition to direct financing, considerable external financial assistance, especially during 1968-1971, was provided through the allocation of AID program loan-generated counterpart. Counterpart allocations to the health sector, which ceased in 1972, were made as follows:

	<u>(millions of pesos)</u>	<u>US\$ Equivalent</u>
1965	5.0	.5
1966	24.4	1.8
1967	11.0	.8
1968	147.9	9.1
1969	109.3	6.2
1970	121.1	6.5
1971	<u>104.1</u>	<u>5.2</u>
TOTAL	<u>522.8</u>	<u>30.1</u>

The counterpart funds have been used largely in support of disease control and rural sanitation programs. (We have not included here the counterpart funds allocated to water and sewerage systems in large cities.) Total external financial support amounted to well under 2% of total sector finances prior to 1968, grew to about 5% in 1968, and has fallen back to the 2% level by 1971.

External sources have provided substantial technical assistance, supplies, and fellowships for foreign study. PAHO, UNICEF, and AID have been the major sources of this assistance. Private sources, such as the Rockefeller Foundation, the Milbank Memorial Fund, and the HOPE Program have also been prominent donors. Since 1969, the World Food Program has been a source of substantial assistance in kind through its donations of food to the Colombian nutrition program.

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B. National Investment Budget 1966-1975

Total expenditures on health by all levels of government have fluctuated very close to 10% of total government expenditures from 1966 projected through 1975, according to data collected by the DNP. During the same period, health expenditures by the National Government have risen and will continue to rise from 6% of the National Budget in 1966 to 8% in 1972 and 11% in 1975. Current expenditures for health have generally accounted for about 5% of GOC total current expenditures. Starting in 1973 the current expenditures financed by the National Budget will increase significantly as a new income source, the "Situado Fiscal," comes into effect. The "Situado Fiscal" is what we call "revenue sharing," i. e., an apportionment of certain specified tax revenues to local governments earmarked for primary education and health expenditures. In the 1973 budget, over 500 million pesos are allocated to health through this revenue source.

As noted above, it has been difficult to segregate investment from current expenditures in the health sector. The DNP has recently attempted to break down data from the national investment budget by programs. The results of their efforts, together with a resumé of the 1972-1975 plan, are shown on Table 45 . Financing for the activities now included in the investment budget was very low in the late 1960s. Substantial growth occurred in 1970-1972, and another major effort is expected during the period of the three-year plan, 1973-1975. Investment during the latter period will exceed by two and a half times that effected during the earlier period. Health investment is growing in importance within the GOC investment budget, rising from 8% in 1966 to 13% in 1972 and 18% in 1975.

Investment in recuperative facilities (i. e., the construction and equipping of hospitals and health centers) will grow slightly faster than total investment, rising from 20% of the 1970-1972 total to 24% of 1973-75 investment, but will peak in 1973 and then decline to 16% of 1975 capital outlay. Preventive health services (promotion, protection, and rural sanitation) remain at 54% of the total during both periods, but rises to 59% by 1975. Administrative expenses fall from 18% to 8% of the totals, while ancillary services (training, research, etc.) rise from 8% to 14% of total investment.

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TABLE 45  
NATIONAL GOVERNMENT <sup>1/</sup> INVESTMENT <sup>2/</sup> 1966-1975  
(Millions of Current Pesos)

<u>Program</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Health Promotion	6.5	6.5	14.8	57.4	128.5	224.9	338.2	402.2	503.3	579.3
Health Protection	25.0	43.0	52.4	87.2	85.3	105.4	125.0	182.9	217.0	258.0
Recuperation (Hospitals)	37.8	60.5	74.8	88.4	105.7	177.5	152.5	522.6	520.5	315.0
Training	1.4	2.0	14.1	13.4	22.2	27.0	38.0	93.5	108.5	123.0
Research	-	-	.6	.3	.3	16.4	17.4	31.0	48.5	61.0
Complementary Inputs	16.8	7.2	11.2	18.3	4.4	24.8	27.7	41.2	86.5	106.8
Planning and Information	-	-	-	-	-	6.0	11.1	18.2	35.1	31.7
Rural Sanitation	19.0	27.7	30.0	47.8	58.9	56.8	67.5	240.0	275.0	336.0
Administration	<u>7.8</u>	<u>8.3</u>	<u>10.5</u>	<u>29.8</u>	<u>88.7</u>	<u>141.1</u>	<u>161.6</u>	<u>127.4</u>	<u>135.8</u>	<u>159.0</u>
	114.3	155.2	208.4	342.6	494.0	779.9	939.0	1659.0	1930.1	1969.8

<sup>1/</sup> Support from the Investment Budget to MinHealth, ICBF, INPES, Hospital Fund, Cancer Institute, and CORPAL.

<sup>2/</sup> Actual Expenditures plus Reserves, 1966-1971; National Health Plan, including requested AID Sector Loans, 1972-1975.

SOURCE: DNP; *Strategia y Mecanismos para la Ejecución de Políticas de Salud*, 1972.

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Although specific programs and projects may be subject to careful inquiry, there are no a priori grounds on which to quarrel with the general distribution of investment expenditures. The justification of each part of the overall plan is discussed in Part III of this document.

Limited data on the unit costs of public health services are available.

Hospital services, for instance, measured by patient discharges, cost approximately US\$1,500 per discharge in 1971. Projections of additional services resulting from hospital construction completed by 1974/1975 under the health plan show a 7% increase in service at a marginal cost of US\$1,000 per discharge. The new units are expected to be considerably (33%) more efficient than existing hospitals.

There is considerable data on the cost effectiveness of planned expenditures on health protection campaigns, but comparison with earlier years is difficult. For example, the malaria campaign, at a cost of US\$3.5 million, will prevent 810,000 cases of malaria (US\$4.30 per case), and 13,500 deaths annually. The massive vaccination against measles and polio, which costs about US\$1.3 million, will prevent 2,000 deaths annually, i. e., US\$650 per prevented death. These and similar prevention campaigns are of sufficiently high economic return that little doubt exists as to their cost effectiveness.

Similarly, the unit costs of rural sanitation services financed by INPES seem quite reasonable. The investment cost per person served by the average water project is about US\$35 and US\$20 per person served by sewerage works. Costs of administering the systems and amortizing the investment are covered by nominal user fees which are accepted by the communities prior to construction of the systems.

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CHAPTER V - ROLE OF HEALTH IN COLOMBIAN DEVELOPMENTA. Colombian Development Policy and Strategy

The Colombian National Development Plan, as presented in late 1971, represents a significant evolution in formulating the criteria and purposes of Colombian development. In preceding years, the National Planning Department (DNP) worked toward creating an annual four-year sliding program for public investment. The Plan had been based on the presumption that a determined level of investment was not only associated with, but was a prime cause of a desired rate of economic growth. The earlier plans attempted to assure a particular level, or range of levels, of public investment consistent with the overall investment deemed necessary to achieve given growth targets. It was posited last year, for example, that a minimum annual growth in real GNP of 7.5% was required over a period of many years in order to make acceptable inroads on the problem of unemployment.

The 1971 Plan conceives of the problem differently. It assumes that investment per se may not necessarily be sufficient as the prime mover of development, but rather that an increase in effective demand on the part of the lower income classes is also vital to stimulate economic growth. There is an expanding body of reputable economic theory which supports such an assumption in an economy like Colombia's.

Having made this assumption, the Plan then proposes to operate directly on the problem of employment. That is, instead of merely associating certain levels of employment creation with investment-stimulated economic growth, the objective is first to create employment. Fuller employment in turn will lead to a more even income distribution, which will create greater effective demand, especially of labor-intensive wage goods. If the demand is guided properly, it will also augment incentives for investment in greater production.

The strategy by which the Plan seeks to achieve such result includes four main areas of attack. First, the Plan urges a major effort at urban development, mainly in the field of construction, and especially low and middle income housing.

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There are both economic and social reasons for this approach. The social problems of the rural sector cannot be resolved by acting on rural areas alone. There must be a rising effective demand for farm products, and this demand must be generated mainly in the cities. Likewise, rural/urban migration cannot be halted solely by operating in the rural sector, and social solutions must be found in the cities. There is a huge demand for housing, and construction generates high employment for unit of capital invested, and has a low import component. There are two principal mechanisms by which to finance housing: government subsidy operating directly through public and quasi-public financial institutions, and by the self-sustained generation of private savings. The first would create additional employment to the extent that it substitutes for less labor-intensive uses of public investments, but the substitution also may cause bottlenecks in other important sectors. The second will produce new employment because it will create "new" savings. The Plan envisages a balanced mix of both methods, the former because low income housing requires subsidy.

The second area of attack is on export promotion, chiefly of commodities requiring a fairly high labor intensity. Labor-intensive export production will provide employment beyond that which the domestic market could induce, as well as foreign exchange.

The third attack is to be on agricultural production and land redistribution. Modern productive methods are not to be eschewed simply because they are not labor intensive, although such methods will be encouraged only for crops which could not be produced efficiently without them. Production is to be stimulated pari passu with the rising urban demand for food products and rising possibilities for export of agricultural products. More equitable land distribution will be sought primarily to improve income distribution, thus broadening the markets for manufactured wage goods and agricultural inputs, but also because smaller farms, intensively exploited, have been shown (generally) to produce more of certain essential crops per unit of land than large holdings.

The fourth prong of strategy is income distribution. More progressivity is to be introduced into the fiscal system in order to bring about more equitable income distribution and the scope of social services is to be broadened. An increase in effective, aggregate demand, and thus, overall consumption is the objective.

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A careful study of the distributive effects of public expenditures (see footnote, page 16) has shown primary education and public health, among all forms of public expenditure, to be those which have the greatest equilibrating effects on the distribution of real income. The GOC over the past several years has been shifting the focus of public investment in favor of social services, especially education. The Plan builds on this record in advocating the fourth, distributive, strategy. Substantial increases in health investment, as called for by the Health Plan and outlined in this sector analysis document, support that strategy.

Underlying the strategy of the Plan is an analysis or "diagnosis" of the causes of underdevelopment in Colombia. The Colombian economy is described as dualistic. There is a top level of wealthy and powerful families who have a high propensity to consume luxury and imported goods. On the other hand, there is the other Colombia: the poor and unemployed with a large potential demand for what can be produced right in Colombia and with a high component of local resources, but whose effective demand is very limited. This dualism must be systematically reduced by improved income distribution, so as to widen domestic demand, thereby generating more employment, which in turn stimulates investment in production, and calls forth the savings to finance that investment.

The Plan acknowledges that the attack in these four areas must be sustained over a long period of time -- two to three decades -- with a "minimum critical effort," if it is to have a real chance of success.

#### B. Socio-Economic Benefits of Health Investment

Three types of socio-economic factors are subject to analysis in judging, on other than purely humanitarian grounds, the value of the health sector program. The program has positive effects on the common development criteria -- production or GNP; on the criteria more recently emphasized both within Colombia and in international development circles -- distribution; and on the cost-effectiveness of public expenditures -- micro-economics or internal efficiency. Analysis of all three of these sets of factors is constrained by as yet unresolved conceptual problems, as well as by data deficiencies. Part

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of the sector program itself, the operational research element, will increase the availability of data, particularly that which relates to cost-effectiveness.

On the micro-economic scale a few gross measures of the benefits of health sector investment can be determined with available methodology and data. For example, Colombia's National Survey of Clinical Morbidity undertaken in the mid-1960s has permitted the DNP health planners to estimate that in 1967 the population of 15-64 years of age suffered 166 million man-days of illness-related incapacity. The average daily GNP per adult in Colombia during 1967 was the equivalent of US\$1.48. In the absence of sophisticated production function analysis, assuming a marginal labor/output ratio of one,<sup>1</sup> we can estimate that the production response to reducing the infirmity rate to 83 million man-days lost in 1967 would have been an output increase of US\$122.8 million, about 1.2% of GNP. At 1972 exchange rates, this amounts to about 2.7 billion pesos of annual gross production benefits to be expected from any public health investment that succeeded in halving adult morbidity.

The above crude estimate of the overall production benefits of better health measures is only part of the GNP gain that may be expected from investment in the sector. Health improvement is itself a direct consumption good. As better health enhances the material well-being of the members of society, the GNP, which is a proxy measure of aggregate well-being, should also rise. Conceptually, we are not able to measure the amount by which real GNP increases because of improved health, but the amount must be substantial. Total consumption is the aggregate of every family's consumption. Analysis of family budgets of families with health problems indicates that large amounts of consumption of goods is foregone in order to finance the consumption of health services where need arises. Projecting this datum over an entire unhealthy society, it can be seen that substantial effective demand for goods could be released were general health to improve. That is, real consumption

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<sup>1</sup>/ In general, the marginal labor/output ratio is considerably less than one in Colombia; to the extent unskilled labor is in surplus, its marginal productivity approaches zero. Nevertheless, the structure of the additional labor that would be available, if the morbidity rate were to fall, is such that the marginal productivity of the labor added thereby can be assumed to be fairly high. That is, substantially increased production efficiency should result from a decrease in absence, or, in hand labor endeavors, from a stronger work force.

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could rise substantially following a real improvement in the general level of health. The amount by which consumption of goods rises following health improvement is a proxy measure of the real GNP gain attributable to the health investment that created the improved health status. Although such an increase in consumption cannot be estimated currently for Colombia, reference to family budgets in other societies indicates that the increase would be significant.

The National Plan's principal economic justification for health investment is based on the distributional effects of public health activities. In line with changing developmental goals throughout the world, Colombia's planners in their most recent iteration of the three-year plan have turned from purely quantitative objectives to qualitative, welfare-oriented goals, among which a more equal distribution of well-being is primary. While sophisticated measures of the distributional effects of public expenditures have not yet been perfected and probably would exceed Colombia's data capabilities, it is clear that the activities supported by the health sector program will improve the distribution of benefits of development.

It is the poorest strata that suffer the most from infirmities subject to public health control. Sanitary facilities are rare in rural areas and under-supplied in urban slums. Effective recourse to curative care is considerably more difficult for the very poor than for the middle and upper classes and those enrolled in the social security systems. Thus, the poor generally wait to seek care until their problems are serious. Since efficiency of health services depends on the precociousness of their delivery, the cost of care for the poor is exaggerated because of the narrow effective coverage of the system. Thus, even the limited resources devoted to care of the general population provide less actual health per person served than would those same resources if used more efficiently.

There is clear historical evidence of a relative stagnation of financial resources allocated to health services for the general population. The middle and upper classes have access to private medical services. This group may account for 20%-25% of the population. Another 5%-7% are served by

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the social security agencies. Thus, at least 70% of the population are served only by general public health services which have been financed at a level of 1% of GNP throughout the last decade, while the remainder of less than 30% enjoyed the benefits of health expenditures approximating 3% of GNP. Again, because health is a direct consumption good, health services that are relatively more directed to the general population and, thus, reduce the gap in health status between the poor and rich effectively operate to reduce disparities in real income levels.<sup>1/</sup>

A particular aspect of the distribution issue which is emphasized in the National Plan, and is already the recipient of substantial AID financial support, is the deliberate policy of the GOC to correct resource allocations that favor Colombia's four major cities at the expense of some 30 intermediate sized cities. This regional development focus of the National Plan is at the heart of the AID-supported urban/regional sector program. Regional development also plays a major role in the allocation of investment funds in health, especially those for hospital construction. Improved health facilities will be a significant inducement to retain human resources, and thus, financial resources as in the intermediate cities, relieving concentration in the large cities. Parenthetically, it should be noted that the health sector program has also been designed to complement the other key sector programs receiving AID and multi-lateral support. For instance, disease prevention campaigns and health post construction are given particular emphasis in agricultural development areas. Moreover, it is widely recognized that the efficiency of educational investments is enhanced by improved health. For example, Chapter VI of this analysis cites research showing that differences in intelligence quotients between malnourished and well nourished children of the same socio-economic groups in Colombia exceeds 15%.

The Government's primary justification of the major new element of the health plan, the hospital-centered regionalization scheme, is based on the

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<sup>1/</sup> Miguel Urrutia's study of the incidence of public expenditures ("Revista del Banco de la Republica," July, 1971) found that public health was one of the fields where public expenditures are best able to improve income distribution, especially at the lowest income levels. The lowest 40% of the population is estimated to receive 78% of the benefits of non-social security public health programs.

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presumed effect of that scheme on the third type of economic consideration, cost-effectiveness or internal efficiency. The National Planning Department foresees the rationalization of health resource distribution along regional lines as a means of lowering costs per unit of service provided. It is expected that heretofore wasteful and uncoordinated distribution of personnel and facilities can be corrected by the establishment and implementation of norms for functions, size, and staffs of facilities in various sizes of localities. Patient referral and a clear division of responsibilities will keep health resources within each region fully occupied, with each level providing the type of service assigned to it and for which it is staffed and equipped. The increasingly large amount of resources to be channelled through the national investment budget will give power and meaning to the planning and coordinating efforts of the Planning Department and Health Ministry. The planners will be reinforced by the information and applied research generated by the program itself. Actual measures of cost-effectiveness of the sub-programs will be generated by the research and information projects of the Health Plan. Overall, the expected increase in efficiency of services should justify a considerable part of the investment program. To the extent information is currently available, the cost-effectiveness of each element of the investment program is discussed in the preceding chapter on financial resources.

From the standpoint of socio-political development, the provision of effective public health services strengthens government's role as an integrative social force. Health is one of society's most strongly felt needs. To the extent that public services satisfy that need, the general population will tend to assume a positive attitude toward government, i. e. the potential for relative stability will be strengthened.

The particular health sector program envisaged, indeed already under way in Colombia, includes another more precise aspect which favors political development in line with Title IX of the Foreign Assistance Act. The rural sanitation program depends heavily on community action. Local groups request, help construct, manage, and repay most of the investment costs of each project financed by the program. Generally, their rural sanitation works are the first

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concrete projects which the communities undertake. The community action experience gained through this program often leads to further active communal participation in development. It is expected, for instance, that community groups will play an active role in the operation of health posts constructed through another element of the sector program.

In sum, there is a strong presumptive case that investment in better health for a larger proportion of the population will yield substantial benefits in economic terms. Moreover, since health is a major factor in the quality of life, and ultimately the determinant of survival itself, it seems incontrovertible that broad access to health services is among the most valued manifestations of development. This is not to argue that health has a superior claim on development resources in relation to other vital sectors. The Colombian Government's intention is to effect reasonable increases in the share of resources allocated to health, and more important, to raise the productivity of their use.

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## CHAPTER VI - SPECIAL TOPICS

### A. The Regionalized System of Integrated Health Services

The centerpiece of the Colombian Government's new health strategy is a decision to reorganize the public health system along lines of "regionalization" and "integration." These are not abstruse terms, but it has not been easy for us to ferret out their precise meaning in this particular context.

The Government maintains (see Table 46 ) that regionalization already has been consummated in four departments, and is partially established in 18 departments, intendencias and territories (out of a total of 30). We have taken a deliberately skeptical approach toward this matter, seeking to assure ourselves that the emperor is really wearing new clothes, at least in the departments we have visited for the express purpose of assessing the status of regionalization. Our general finding is that the emperor, though exposed in places, is not naked.

In analyzing the potential of regionalized integration, it is essential to have a clear description of what is envisaged by these concepts, how the system will be organized, what the institutional interrelationships and lines of authority will be, and who will have responsibility for which actions and services. Many of these questions, in fact, have been resolved, at least in theory. However, in our search for a clear and complete understanding of the system, we have concluded that the task of definition is still in process.

The general objectives have been determined. The broad avenues that must be travelled to attain those objectives have been mapped, and much progress also has been made in specifying the mechanics of the system, e. g. the specific functions of each level of the system have been precisely set forth, and what is known in the military as a "Table of Organization and Equipment" is available in great detail. Nevertheless, there remain a few definitional and conceptual lacunae which may not be filled until further experience in actual operations has been gained, and the results of evaluation are available to ascertain where "debugging" is necessary.

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TABLE 46

SCHEDULE FOR REGIONALIZATION

COLOMBIA 1.967 - 1.978

<u>DEPARTMENTS</u>	<u>1.967</u>	<u>1.968</u>	<u>1.969</u>	<u>1.970</u>	<u>1.971</u>	<u>1.972</u>	<u>1.973</u>	<u>1.974</u>	<u>1.975</u>	<u>1.976</u>	<u>1.977</u>	<u>1.978</u>
Antioquia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Atlantico	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bolivar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boyaca	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caldas	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cauca	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cesar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cordoba	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cundinamarca	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Choco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Guajira	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Huila	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Magdalena	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Meta	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Narino	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Santander	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quindio	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

(continued on next page)

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 TABLE 46 (CONTINUED)  
 SCHEDULE FOR REGIONALIZATION (CONTINUED)

<u>DEPARTMENTS</u>	<u>1.967</u>	<u>1.968</u>	<u>1.969</u>	<u>1.970</u>	<u>1.971</u>	<u>1.972</u>	<u>1.973</u>	<u>1.974</u>	<u>1.975</u>	<u>1.976</u>	<u>1.977</u>	<u>1.978</u>
Risaralda	---	---	-.-. .	---								
Santander	---	---	---	---	---	-.-. .	-.-. .	-.-. .	---			
Sucre	---	---	---	---	---	-.-. .	-.-. .	-.-. .	-.-. .	---		
Tolima	---	---	---	-.-. .	-.-. .	-.-. .	-.-. .	---				
Valle del Cauca	---	-.-. .	---					---				
<u>INTENDENCIAS</u>												
<u>&amp; COMISARIAS</u>												
Arauca	---	---	---	---	---	-.-. .	---					
Caqueta	---	---	---	---	-.-. .	-.-. .	---					
San Andres	---	---	---	---	-.-. .	-.-. .	---					
Amazonas	---	---	---	---	---	---	-.-. .	-.-. .	---			
Guainia	---	---	---	---	---	---	-.-. .	---	---			
Putumayo	---	---	---	---	---	---	-.-. .	---	---			
Vaupes	---	---	---	---	---	---	-.-. .	-.-. .	---			
Vichada	---	---	---	---	---	---	-.-. .	-.-. .	---			
<hr/> - - - Started -.-. . Partial progress _____ Established												

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What appears to us as vagueness in certain aspects of the system may be just that. In general, however, it more probably represents a desire on the part of the Colombian planners to retain some flexibility in refining the process in practice and perfecting goals and methods in the light of experience and evaluation.

Let us first describe the structural aspects of regionalization and integration.

1. Regionalization

As the term "regionalization" is employed in this context, it refers to the stratified organization of medical attention facilities, i. e., the health post, health center, local hospital, regional hospital, and university hospital in ascending order of size, complexity of service offered, and degree of administrative, supervisory, teaching, and research responsibility. It is in this context that emphasis is placed on the referral of patients "up and down" the system to provide the appropriate level of medical attention and the downward flow of orientation, supervision, technical assistance, and evaluation which each level provides to the level immediately below it. Attention is also given to identifying the specific items of equipment and the appropriate mix of professional and para-professional staff to provide the proper medical care at a given level in the system.

The stratification of medical facilities, their particular kinds of services and the types of personnel and equipment are clearly defined in a study/policy document by ASCOFAME and the Ministry of Health entitled "Levels of Medical Attention for a Regionalized System in Colombia." Refinements and changes are, of course, being made in practice, but basically the system is as follows:

a. Rural Level

There are slightly more than 4,000 communities of less than 1,500 inhabitants considered as "rural level," which will be served by a health post or, in exceptional cases, by a health center. A health post is a very simple structure, sometimes a remodelled small dwelling. An auxiliary nurse is permanently stationed there, and several health promotoras may be attached to

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the post, working in the even smaller communities in the area. Increasingly, there are attempts to relate the local empirical midwives to the system with some training and supervision provided by the auxiliary nurse of the post. The promotora and, to some degree, the midwife are expected to provide basic health information/education to the rural population, perform first-aid and some injections, assist with child birth (midwives) and refer patients to the health post. Increasing emphasis is being given to periodic home visits and health service provided in the home. The auxiliary nurse provides the very basic health care (emergency treatment and first-aid) at the post under the supervision of doctors and nurses who visit periodically along with sanitary promoters and dental personnel. A major responsibility is selection of patients for referral to the next level, or arranging for medical consultation when the doctor visits. As in the other levels, the auxiliary and the promotora are directly involved in the implementation of the maternal/child care program, including family planning and nutrition.

b. Local Level

In the approximately 300 communities of over 3,000 inhabitants which do not have a regional or university hospital, a local hospital is called for. Some theoretic distinction is made between somewhat more sophisticated services in local "B" as compared to local "A" but this distinction is rarely manifest in practice. In some cases, however, there are health centers instead of hospitals per se. These are little more than health posts with some beds (usually maternity). There is generally a doctor in residence, however.

Local-level hospitals are small, with from 10-90 beds per institution. The services offered include:

- General medical services - laboratory - pharmacy - x-ray service;
- Emergency services;
- Out-patient clinics, including medical attention, educational programs, and sanitation service;
- Hospitalization.

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Persons receiving local-level services include patients referred from rural health facilities as well as the inhabitants of the immediate area.

These local-level institutions are also responsible for supervising the activities and providing periodic staff assistance to the health posts.

Permanent professional personnel include, according to size of hospital, at least one nurse and two doctors per institution; all other services are provided by aides (nursing, laboratory, oral hygiene, pharmacy, dietary services, administration, and maintenance).

The physician is responsible for: determining health conditions in the community and designing and supervising the program for it (including preventive measures such as nutrition programs, vaccination programs, etc.); pre-natal and infant out-patient services; and general medical attention for the community (diagnosis, treatment and referrals to regional or university facilities if needed).

The nursing auxiliary provides the nursing care (treatments, administration of medicines, etc.) in addition to assisting the physician in examinations. The nursing auxiliary is also responsible for gathering data and statistics as necessary.

Employment of a trained nurse is a goal for the local-level hospitals and therefore is included in the list of permanent personnel; however, given the severe shortage of graduate nurses (as explained elsewhere), there are very few professional nurses actually present in local-level hospitals. The nursing auxiliaries assume the responsibilities of the nursing service, and are supervised by the nurse from the regional-level institution.

The laboratory and x-ray departments are equipped for routine examinations such as blood and urine tests, or simple x-rays of extremities, thorax, or abdomen. Persons in need of more complicated diagnostic procedures are referred to the regional level where laboratory and x-ray procedures are more sophisticated.

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### Regional Level

In the approximately 85 larger cities of Colombia which are departmental capitals or heads of health program areas, a regional hospital is necessary. Regional-level hospitals vary in size from 50-500 beds per hospital; some smaller hospitals have been classified as regional hospitals without having all of the prerequisites for that classification, because they are the largest and best equipped hospital in an inaccessible area. It is assumed that as an area develops, socially and economically, these hospitals will improve and eventually meet the standard for regional hospitals and health units as described in the National Plan.

According to the National Hospital Plan, regional hospitals should be staffed by physicians of all specialties (psychologists, ophthalmologists, dermatologists, etc.), in addition to the basic services of medicine, surgery, and obstetrics-gynecology. The minimum number of each specialty in a regional hospital has been prescribed in the National Plan; for example, one surgeon for each 50 beds, or one ophthalmologist for each 300 beds. There should also be a trained dietician, pharmacist, public health physician, public health nurse, radiologist, pathologist, and odontologist for area supervision. Thus, all common medical specialties in principle should be available to the rural and urban communities of the region from the regional health center/hospital.

In some respects of technical supervision, training, and patient referral, these hospitals are subordinate to the university hospitals. Nevertheless, for purposes of program planning and implementation, they are considered, under the overall supervision of the sectional health services, to be the head of the regionalized, integrated system in their area.

The regional hospital, equipped and staffed to provide all but the most sophisticated medical care, is also responsible for supervising the related local hospitals and treat patients referred from the lower levels. In addition it has been determined by the Ministry that the regional hospital will supervise and coordinate the "non-medical" programs of health care in the

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region, as well as assure that the actions of "direct campaigns" are fully integrated into the regionalized structure. The responsibility for effecting this emphasis, coordination, and integration is placed in the hands of a doctor with specialized training in public health. In our view, the assumption of responsibility for comprehensive public health programs (especially preventive measures) in the entire region is the most important characteristic of the new system, for reasons explained later. Its eventual effects should be more fundamentally useful than the "mechanical" function of patient referral.

### d. University Level

Although the regional hospitals and the sectional health services are designated as the planning, administrative, and supervisory headquarters of the regional system, the university hospital is still the apex of the system as concerns teaching, research, medical care, and referral of patients. It is in these university hospitals (eleven of them in seven major cities) where the most advanced techniques are used and the most sophisticated services available. Due to their favored location in the large cities and their relationships with the universities, they are generally fully staffed and fully occupied in spite of normal budgetary problems. They provide medical care at rates of occupancy, consultations per doctor, and numbers of patients treated similar to rates in many developed countries.

Although the university hospitals are busy with medical attention and patient care, they are a moving force in experimenting with community medicine, outreach services, and delegation of responsibility, thus providing a continuing stimulus to the regional system to put these emphases into practice. Part of their influence on the regional system is exercised through the training programs, both as they place residents or interns into the regional system for field experience, or as persons working in the regional system receive in-service training in the hospital or under its auspices.

### e. Sectional Health Services

Almost as important as the Ministry itself in stimulating the development of the regional system is the sectional health service which is organized in every department. It is expected that these services, functioning

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under contractual relationships with the departmental government, will be the administrative center for coordinating and integrating the various health activities of the department. The chief of the service is appointed by the governor of the department; increasingly, professionals with training in public health are being named to these positions.

The size and economic base of the department determine the size and capability of their staffs. Generally, there is a chief of medical attention, who may also be director of the regional hospital in the capital city. There is an administrative chief and back-up clerical personnel. A coordinator of the maternal/child care program and a public health nurse are also prescribed. The nurse may serve as coordinator/supervisor of all nursing services within the department.

One or two persons trained in health planning and an architect/engineer may also be present. Usually, closely related to the service, and sometimes an integral part of it, is the sectional office of INPES. In any event, all basic sanitation programs developed by INPES in the region must have the approval of the sectional health service. The chief of the service is also a member of the PINA (Integrated Program of Applied Nutrition) committee and thus has opportunity to develop a closely coordinated application of nutrition intervention programs with other health activities in the area. As consideration is being given by ICBF to coordinating or integrating its nutrition and social welfare activities, some opportunity will be given to more supervision of these relatively independent efforts by the sectional health services. The operational elements of the direct campaigns of vaccination/immunization and vector borne disease control campaigns are becoming the responsibility of the sectional health services.

The funds available to the departmental beneficiencias (lotteries) for health activities must now be spent according to plans developed with the sectional health services. In turn, the sectional services can expend funds only against a plan and budget approved by the Ministry of Health.

In addition to the stratification of medical attention, regionalization also calls for a stratification of authority and supervision, delegation of responsibility to non-professionals, improved communication, and training throughout

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the system. In these important areas of authority, supervision, delegation, etc., we have not found as much clarity of definition as that which exists with reference to the several levels of stratified medical care institutions.

While the Ministry of Health exercises general responsibility and authority over the system, much of this is being delegated to the sectional health services. The extent of delegation; the readiness of different regions to accept delegation; the criteria to be used for degrees of further delegation; measures to be used to supervise, stimulate, sanction, or otherwise assure compliance by the sectional services, are all questions under study. At present, these issues are being treated on a case-by-case basis, reflecting the social, economic, and political milieu of the various departments and the personalities involved.

Other questions are also being handled on an ad hoc basis. One example would be: how does the authority of the university hospital (in some ways the apex of the regionalized system), as it is exercised over the regionalized system, relate to the authority of the sectional health services, which in turn have some authority over the several university hospitals as well as the regional hospitals.

In later paragraphs we discuss the "integrated" aspect of the system, and other examples of unclear relationships will be shown. We expect, however, that the studies presently being made of this process and some of the practical interim solutions under experimentation will soon point the way to clarification of these issues.

The following statement by the National Planning Department on administrative relationships and lines of authority shows that the problems in this area are recognized as critical, and that some progress toward elucidation and solution has been made:

" . . . for further clarification, reference is made to the administrative aspects, which are the most problematic element in establishing the regionalization system relationships.

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Administrative and Technical Relationships of the Regional Level - The regional hospital and, therefore, its related organizations, staff, and administration have total responsibility for the delivery of services in the corresponding area of influence. In other words, the director of the regional hospital is the one responsible for the planning, programming, implementation, and supervision of health programs in the corresponding area. The magnitude of the task to be accomplished, and the basic administrative principle of division of labor demand a more complex organization at this level. Therefore, since the director of the regional hospital is responsible for service delivery in his area, specific duties must be assigned to administrative branches designated or organized for the appropriate purpose.

In each of the states (departamentos) there is a hospital which has the main concentration of services. Generally this hospital, often called the departmental hospital, is located in the capital city.

Relationship Between the Hospital (Regional B) and Sectional Health Service - The sectional health service is in charge of the planning and direction of health services in the respective department (state.) The departmental hospital is the basic institution at the apex to receive patients referred from the other levels and needing specialized treatment because of their particular illness.

In some instances the departmental hospital is used as a teaching center for a faculty of medicine, so that besides operating as a departmental hospital, it also carries out the functions of a university hospital. These provide referral services which cover other departments besides the one where the hospital is located. Secondly, post-graduate medical programs are developed here as well

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as training for other health professions for which the university has responsibility. Finally, this university hospital has an important role in the in-service training of health professionals within the area assigned to it in the country. As concerns the relationship between the departmental hospital and sectional health service, it has been determined that, although the organizational chart of the regionalized system shows the university hospital or, in its place the departmental hospital, at the top of the pyramid, this refers to the delivery of health services. It should not be identified as the administrative center where policy decisions are taken; the administrative center is the sectional service. Administrative relationships of the departmental hospitals and the university hospitals with the other organizations of the department are provided for through the organization of the sectional service, itself. In technical fields, a certain degree of supervision is carried out by the university hospital or the departmental hospital, but this is always channeled through the activities of the basic public health organization, the sectional health service."

## 2. Integration

Turning now to the meaning of "integration," it should be recognized that as the regionalized system was developed, emphasis was placed somewhat more strongly in the beginning on developing a system of medical care or what might be called "curative medicine," However, it was not without significant elements of "preventive/community medicine." For example, the document "Levels of Medical Attention . . ." indicates the responsibilities of the doctor of the local hospital to be the following:

- Determination of the health condition of the community, through epidemiological surveys;
- Design and implementation of a local health plan and administration of the service;

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- Application of preventive measures, both to individuals and the community; measures to control communicable diseases, parasitic infections, nutritional problems, poisonings, accidents, and some types of tumors;
- Maternal/child health program and family planning;
- Care of the sick (with a long guide for treatments and procedures appropriate for the local-level hospital).

As the concept of the regionalized system matured, there was growing attention to preventive and community medicine concepts. Thus, there has been an increasing tendency to super-impose the concept of "integrated health care" on the concept of a regionalized system of medical attention. Now, as the director of a regional hospital speaks of himself as the regional health director, he is not merely speaking of his responsibility for the medical/clinical service of his hospital and those of the subordinate local hospitals, health centers, and health posts. He more likely is confirming acceptance of his responsibility for outreach services to the community, at least of his own hospital, and often of those of the subordinate health institutions. This clearly implies a coordination and integration with such generally "non-medical" health services as environmental sanitation programs, nutrition, education, and supplementary feeding activities, malaria, and other endemic disease control or eradication programs, etc. Obviously, these add a substantially enlarged dimension of potential conflict of authority and responsibility. Theory, principle, policy, and strategy dictate that the hospitals, health centers, and posts will be the backbone of this system, being responsible for, in addition to medical care, an integrated comprehensive health care service in an outreach program to the community. The achievement of this in practice will require the clear recognition of this goal and dedication to its achievement by sectional health services, as well as the leadership of health institutions at all levels of the regional systems. Clear-cut lines of authority and responsibility must be established between these traditionally "medically-oriented" institutions and those institutions or programs which have traditionally operated "preventive health campaigns" in a more or less independent fashion.

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Concurrently with the mounting concern for integration of various types of health care measures, there has emerged an interest in integration of the various official and semi-official institutions providing health care in Colombia. For example, in addition to the direct involvement of the Ministry of Health, the sectional health services, and the related medical care institutions, there are at least four other significant channels of health-related service whose activities need more complete coordination with the Ministry.

Nominally, two of the more important institutions are already under the direction of the Ministry as they are institutes whose charters call for Ministerial supervision. Nevertheless, both INPES and the ICBF, as semi-autonomous decentralized institutes, do enjoy considerable independence of action. This often makes for more efficiency in achieving their established goals, but can also mean less than full cooperation and coordination with other activities in the health field. Additionally, there are the sizeable (in funding) services provided by the ICSS and the health activities of the other Ministries and government agencies largely through their individual "social security" systems.

The Ministry has started gingerly to exercise more responsibility in coordinating the policy, strategy, implementation, and evaluation of the programs of its decentralized agencies. Considerable progress has been made in effecting appropriate relationships with INPES. Perhaps, because of its recent establishment, its relatively independent source of funding for much of its operational budget, and internal organizational problems of ICBF itself, much more remains to be done to achieve the objectives of integrating this potentially very important institute into the main stream of Ministry objectives and activities.

There is considerably more difficulty in integrating the activities of the ICSS and the other Ministries, particularly if attempts are made to encroach upon the significant amounts of funds available for medical services in these other institutions. These funds are jealously (and justly) guarded by their contributors: industry, labor, and government employees. Efforts at spreading these services on a contributory basis to larger sections of the urban poor or rural population will be difficult at best, especially considering the narrow economic base these populations represent. To spread these services without

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substantial additional contributions would scarcely meet with the approval of present contributor users who already criticize the dilution of service due to opening the plans to, for instance, self-employed workers. Nevertheless, some progress has been made in pre-empting a part of the proceeds of social security bonds to help finance the National Hospital Fund. Advances are also seen in the joint study of available hospital services. Duplication of facilities and costly equipment has been avoided by a growing practice of joint use among public hospitals and social security institutions through cost-sharing programs.

3. Examples of Stages of Progress in Installing the Regional System

In seeking to better understand the regional system, to evaluate (albeit superficially) its effects, and to identify various stages of progress in its implementation, several areas of Colombia were visited.

a. Two Incipient Examples: The Status Quo Ante

In Barranquilla, only a rudimentary initiation of the system was observed. Although the personnel of the sectional health service were well informed about the Ministry's plans for regional integration, efforts to date had not produced much progress toward creating a functional system. The various medical attention facilities had been identified according to their appropriate level in the system. However, little had been accomplished in making them integrated parts of the recuperative system and even less in helping them to see themselves as members of a coherent system of preventive action. Hospital directors still appear to view themselves as primarily responsible only for the medical care provided by their own institution. Policies and programs are developed as independently as possible by the individual hospitals, yielding their prerogatives to the sectional health services only so far as necessary to get their annual budget support. The example of Barranquilla is useful in illustrating the traditional situation, the status quo ante, which the new health strategy seeks to change.

We also visited Cartagena to discuss with health officials in the Department of Bolivar the status of implementation of the Government of Colombia's new system of integrated or comprehensive health care. We met

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with officials at three levels of the system (the departmental office of the Health Ministry -- the integrated health district of Bolivar), the university hospital (connected with the University of Cartagena), and a regional hospital. We also met with the director of the departmental INPES office.

At the two higher levels in the system (departmental, university hospital), there appears to be a good understanding of the conceptualization of the new integrated system. At the regional hospital level the director understands to some degree how the new system should function, but his perception of it is limited.

The director of INPES was aware of the Government's policy of integration of health services. Yet, although a member of the technical coordinating committee of the departmental integrated health district, he did not view his basic rural sanitation program as an integral part of the new comprehensive system.

The system of referrals up and down and the concept of supervision and control by a health entity of the next lower level in the network exists only in the traditional sense. Dr. Guillermo Valencia of the medical faculty at the University of Cartagena and the university hospital indicated that a key to the successful implementation of both these important aspects of vertical integration in the new system is the completion, scheduled for late 1973, of the new university hospital in Cartagena. The new facility has 500 beds, two-thirds more than in the older hospital, modern equipment, more staff, and a higher budget, up from about 17.0 to 50.0 million pesos.

These expanded staff and facilities are necessary for adequate treatment of patients referred upward through the system, for diagnosis of patients for referral downward, for needed research, and for the proper level of supervision and control of the regional hospitals.

Improved transportation among the various levels of health facilities in the integrated system is also vital to making it work effectively, especially the referral system which often will involve low-income people without access to private transportation.

A better system of communication (e. g. telex) among the various levels would contribute greatly to making the system effective in an area with widely scattered health facilities.

In summary, the level of vertical integration envisioned within the new regionalized health system is not yet in effect. Referrals among the different levels of health care and the level of supervision and control extended downward by the various health entities continue at about the same level as in the traditional system.

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The regional hospital in Carmen de Bolivar is one of four in Bolivar Department. It serves an area containing 130,000 people, and is supported by seven rural health posts and two "service centers" which provide beds for patients. The director is assisted by another doctor and a dentist and a small staff of nurses and nurses aides, including several nuns. The hospital provides limited out-patient care.

The hospital director works 12 hours a day. Facilities are inadequate. Equipment is either not available at all or in bad condition. Under these conditions, the director has neither the time nor the financial support to assume responsibility for all health programs (medical and non-medical) in his area of jurisdiction. He visits the rural health posts and service centers about once a year, and the regional hospital in Cartagena about once a week. He occasionally participates in seminars and meetings offered by the University of Cartagena Medical Faculty and the university hospital sends out members of its staff to work with him in special programs. However, this type of activity predated the institution of the new regional health system and does not represent a significant change in institutional relationships.

The director is aware of the new government focus in health care, but he does not necessarily view his role, in the broadest sense, as that of being responsible for all health activities in his area. He is aware of the importance to health of potable water, proper sewage disposal, nutrition, vaccination programs, etc., but with his heavy work schedule, inadequate facilities, staff, and equipment, and limited professional contacts, his perspective is confined to carrying out his day-to-day duties. In order for him or any other regional hospital director in similar circumstances to assume responsibility for all health programs in his region, special training and orientation in the new philosophy would be required as well as additional staff and other support designed to free the director's time and energy for the broader policy and program matters for which he is responsible.

b. A Middling Example: Upward Bound

The chapter on personnel described visits we made to Villeta, Mosquera, and Facatativa, which represent three levels of the partially integrated

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system in the Department of Cundinamarca. As noted earlier, the local-level hospital in Villeta has 64 beds and is in good condition, even though constructed in 1943. It is also fairly well equipped, and the equipment shows evidence of good maintenance. The hospital is also well staffed with both resident and part-time physicians, and there are even more auxiliary personnel available than prescribed in the regulations. The presence of a graduate nurse on the staff is unusual at this level, but Villeta has one.

The out-patient department was efficiently organized (in the month of July there were 541 consultations, or an average of 26 per day); each patient was interviewed by a social worker aide before the consultations. Family information was elicited, and individual health education was given at this time. The physician and dentist made weekly visits to rural health posts, and weekly meetings were held at the hospitals with the promotoras of the rural centers. Twice as many patients being seen for the first time were from rural areas as compared to those from the urban area; these are referrals made by promotoras and physicians.

The program of the hospital in Villeta is an indication of progress being made in the implementation of the regionalized system. We surmise that it reflects more individual local initiative than leadership from the departmental authorities in establishing the system. The nearly complete staff, the variety of curative and preventive services offered, the evidence of patient referral, the active delegation of functions to auxiliary personnel, etc., illustrate that even in remote areas the concepts of the system can be put into practice.

c. A Small But Encouraging Example

We have seen health posts and centers whose conditions and performance are deplorable. However, the kind of service envisaged by the Government's new program is feasible, as we observed in a small post near Medellin.

Here, the doctor was on time for his scheduled work from 8:00 to 11:00. Some twenty patients (mostly mothers and children) were seated on comfortable benches in the pleasant, attractive room outside his door. While

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there, they observed brightly colored posters providing some notion of nutrition, child care, early cancer detection, home sanitation, and family planning. Each of the patients had been given a number by the attractively uniformed auxiliary nurse who had received them and taken a simple medical history. When their number came, they were called by name and received in a warm fashion by the doctor.

Hours were posted on the bulletin board for special programs of nutrition education, well-baby clinic, family counselling in family planning, and a vaccination campaign. We did not observe the vaccination campaign, but were told that the post always exceeded its goals in vaccination/immunization efforts.

The dental office was used every afternoon. It was well furnished with simple but new equipment. Records indicated 10 to 15 consultations each afternoon.

One room of the health post was a well-arranged, clean storage area for the supplementary feeding program. One of the two auxiliary nurses assigned to this post was responsible for nutrition education and food distribution to a group of 60 mothers and pre-schoolers.

There were no promotoras assigned to this post as yet; the major outreach of the post to the community was the follow-up visits by the auxiliary nurse related to the food program, and the less frequent visits of the sanitation officer who split his time with a post in another community.

The above case is a microcosm of the potential which exists for highly effective service even under trying conditions. It does not represent the norm, but it is a paradigm of the Government's objectives.

d. The Best Example: Approaching the Goal

Our visit to the Department del Valle was that which showed us the greatest degree of progress in developing the system. It is an imperfect image, but does provide the clearest understanding of what the Ministry is attempting to stimulate throughout the country.

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Although the physical facilities, equipment, medical personnel available, and the method of patient referral are key elements to the system, in this visit we focused on the organizational structure, the lines of authority, the levels of responsibility, and interinstitutional relationships which we believe are critical elements of making the system functional.

(1) Sectional Health Service - Departamento del Valle

(a) Location

The service is housed in Cali on the seventh floor of a large office building owned by the Valle beneficiencias, not an unusual location since the state lottery (beneficencia) provides about 70% of the funds for departmental health services. The offices are modern and well equipped but not pretentious.

(b) Headquarters Organization<sup>1/</sup>

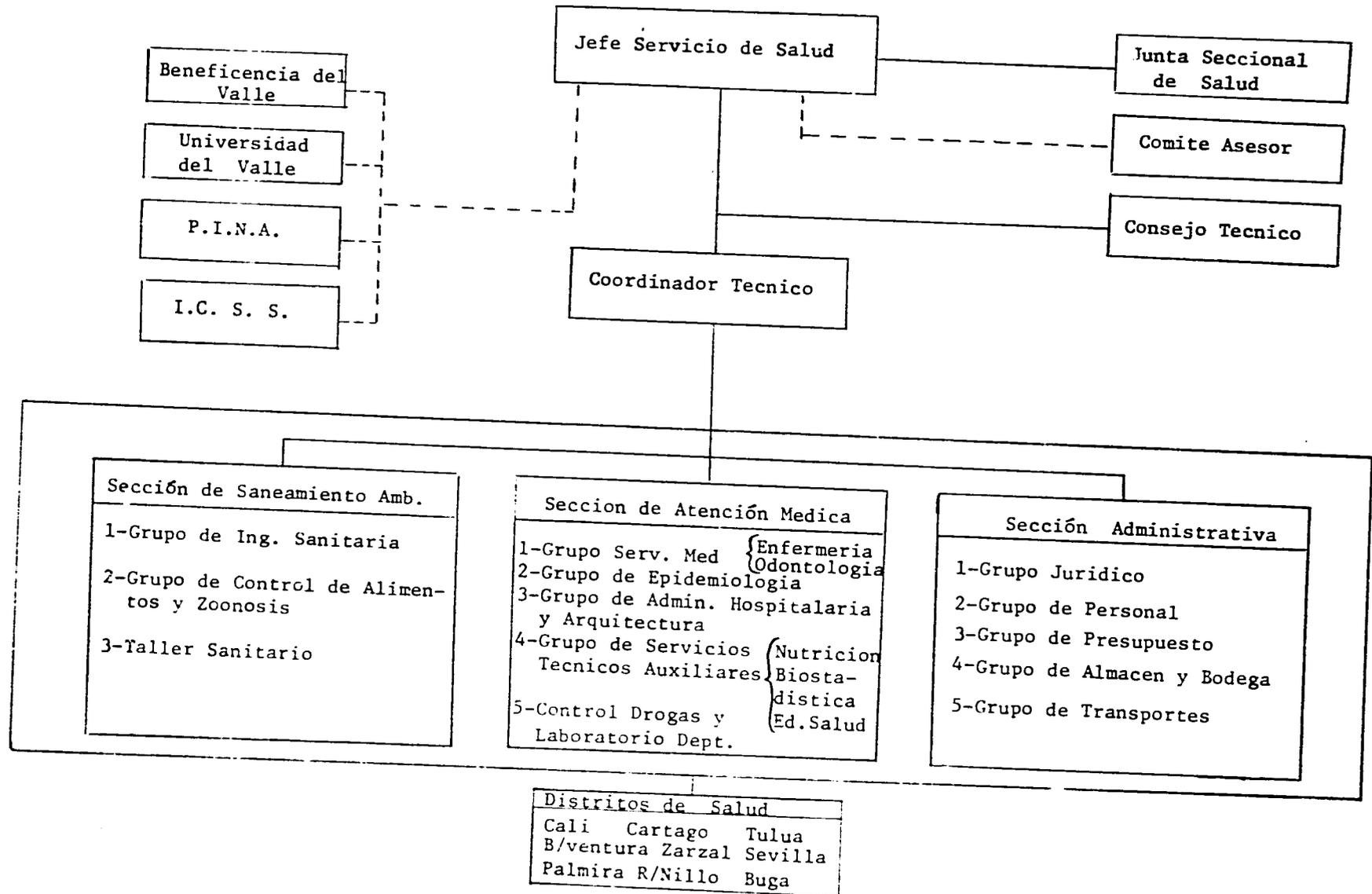
The Chief of the service is a political appointee of the Governor of the Department. He is a member of the Governor's cabinet -- the Secretary of Health -- but the Ministry of Health designated him as Chief of the sectional health services. He is also a medical doctor. The technical personnel of the service concur that experience with this system has been good. As a politician, the Chief has the administrative experience and political acumen to present viable programs to the political leadership. With his medical background, he understands the technical staff and can interpret their proposals to political decision-makers.

The service operates according to the dictates of 1964 legislation and a contract between the state and the Ministry.

The Chief of the service receives his major technical and policy advice from the technical council and the sectional health board. The sectional health board, which meets monthly, establishes major policy (within Ministerial guidelines) and passes on the departmental health plan and budget

<sup>1/</sup> Organization Chart, Table 4'

ESTRUCTURA ORGANICA DEL SERVICIO DE SALUD DEL VALLE DEL CAUCA - TABLE 47



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before presentation to the Ministry. The board is made up of representatives from the university, the departmental government, the National Government, the departmental assembly, the beneficencias and the Church. The technical group which develops the health plan and provides technical advice to the Chief is composed of the technical coordinator (a medical doctor with post-graduate training in health planning in Chile), the chief of the environmental sanitation section (who has graduate training at the School of Public Health in Medellin), the chief of the medical attention division (who has health planning post-graduate training at Johns Hopkins), four group chiefs of the medical attention section, and the chief of the administrative section (who also has post-graduate training in health planning at Johns Hopkins).

Each of the sections is responsible for coordinating the regional plan and developing the departmental program in its respective program area. It then supervises and evaluates the implementation of the plan by the districts, providing technical assistance as needed.

(c) Headquarters Personnel

The sectional office is staffed with 18 professional, 10 technical, 104 secretarial and auxiliary, and 64 general service personnel. Salary levels are such that well-trained personnel can be attracted.

(d) Finances

The health program is financed at a level of about 200 million pesos (US\$8.7 million) a year from the following sources:

- |                           |     |                  |
|---------------------------|-----|------------------|
| - Beneficencias (lottery) | 70% | )                |
| - Ministry of Health      | 8%* | ) Departmentally |
| - Departmental government |     | ) pooled funds   |
| (beer, liquor and         |     | )                |
| gambling taxes)           | 22% | )                |

At the institutional level a local budget is financed from:

- Departmental Funds
- Municipal Funds
- Patient Charges
- Other sources (private charity, coffee federation, etc.)

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\* This is expected to increase to about 25% in 1973 through the "situado fiscal."

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An important implication for the regional system is that the departmental health budget and, in less degree, the local budgets must be approved by the Ministry (a procedure that provides leverage for control and direction, to assure adherence to the criteria of the new health strategy).

It is also noteworthy that now the funds of the beneficencia are administered by the sectional health service and not in an independent fashion as in the past.

(e) Interinstitutional Relationships

(1) With the Ministry

By law and contract, the Ministry determines overall policy and strategy, develops program guidelines, approves budgets and plans developed by sectional services, provides some technical assistance, and supervises budget and program implementation.

The Ministry operates one direct campaign in the department -- that of control of malaria, yellow fever, etc. This is closely coordinated with the sectional program. The direct campaigns of the MOH in vaccination/immunization are in Valle only financed and supplied by the Ministry, while sectional employees implement the activities. The maternal/child care program is totally integrated with general public health services.

(2) With INPES: Basic Rural Sanitation

Here, too, complete integration has been consummated. The sectional service carries out INPES programs under its own strict direction. One section of the service is responsible for all environmental sanitation personnel, program, and finance. It develops programs jointly with INPES and receives some supervision from INPES, but the sectional service carries out the programs. This integration has been developed to such a degree that the director of the regional hospital in Palmira says his basic channels for integrating the various services under his jurisdiction are the environmental sanitation personnel who report to him throughout the district.

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(3) With ICBF (PINA)

The major ICBF program of concern to the health authorities in Valle is the nutritional education and supplementary feeding activity of PINA. In this instance, efforts of program integration have not yet matured because local PINA officials have resisted intromission in their vertical line of command. Coordination is inadequate to satisfy the health authorities who contribute some 500,000 pesos annually for this service. Since they seek only to integrate the maternal/child care aspects of the PINA program (not the school feeding), it is not necessary that full integration be accomplished. However, improved coordination is certainly to be desired. At the regional level, there is closer coordination (possibly even de facto integration) than was indicated by discussions at the sectional level. Those carrying out the PINA maternal/child nutrition program at the local levels are generally hospital nutritionists and auxiliary nurses working out of health service facilities. Though administration and supervision of the program is in the hands of PINA, the operation is close enough to health personnel to provide opportunity for coordination.

(4) With the University

Relations seem particularly well developed with the university, informally through personal association, and formally through contracts for research and training programs. The day of our visit coincided with a meeting of sectional personnel with the head of the department of community medicine of the faculty of medicine. The purpose of the meeting was to work out the institutional arrangements for transferring to the sectional services the administrative responsibility for health delivery in an experimental area where the university was working. It was also to set up a cooperative venture between the sectional service and the university in computer processing of departmental health statistics. The knowledge of, and interest in, the departmental health program demonstrated by the head of the community medicine department confirmed the opinion that much of the progress in developing the regional system in Valle is due to these close relationships and the stimulus of the faculty.

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The university plays a role in helping the sectional service develop the health plan. Assistance is provided in formulating the "diagnosis" as well as evaluating the plan of action. This process is also used as part of the teaching program of the university; it serves as "case studies" which put students in touch with reality. The relations are further improved in that the faculty has considerable confidence in the capacity of the sectional service, particularly at the technical level. The technical group has enjoyed impressive stability with several of its members having 17 to 20 years of service. Five of the sectional employees are also part-time faculty members.

The university serves a vital role in training key personnel of the regional system. Seventeen doctors working in the system are presently enrolled in a program of "Residents in Public Health," which requires one year of academic training at the university, and a year of supervised practice in one of the institutions of the public health system. Seven of the regional hospital doctors who have not been trained in public health administration are enrolled in a two-year post-graduate course that meets Fridays and Saturdays at the university. The university also uses the public health system as part of its medical faculty training program. All interns in their last year of studies are rotated for six weeks to rural institutions for part of their clinical training.

(5) With the University Hospital

In Valle the objective of maintaining the university hospital, through contractual relationships, as the top of the patient referral, teaching, and research pyramid, while not confusing it with the administrative, planning, supervisory authority of the regional hospitals, seems to have been achieved.

(6) With the Municipality of Cali

As recently as last year, the Valle health plan spoke of the unsolved problems in developing coordinated efforts with health services in the city of Cali. This major urban center of more than a million population

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(almost half of the population of the department) operated its own health services largely independent of the sectional health services. The sectional health services directly assumed the administrative, supervisory responsibility for the several local hospitals that could have been considered part of the regional zone of influence of Cali. In October, 1972, however, the sectional health services signed a contract with the Municipality of Cali and the Hospital Evaristo Garcia which makes Cali a part of the system and Evaristo Garcia the regional hospital for the district.

(7) With the ICSS

A committee has been formed with ICSS and sectional health personnel to study better means of coordination. Real progress has been made in joint studies of needed facilities and in working out relations where the public health facilities will provide services on contract to ICSS. It is the opinion of the chief of medical attention that coordination will not go further until the unified service law is passed by Congress (the only real purpose for this law, in his opinion).

(f) The Regional Structure

The Department of Valle is divided into nine regions, each with its respective regional hospital, local hospitals or centers, and rural posts. The university hospital is the final referral point for complicated cases from the regional hospital, and serves a significant number of Cali patients or others who are "outside the system." However, the regional hospitals are clearly identified as the administrative, planning, programming head of their respective district, both for curative and preventive medicine and "non-medical" prevention actions. The institutions are distributed as follows:

	<u>Regional Hospitals</u>	<u>Local Hospitals</u>	<u>Health Centers</u>	<u>Health Posts</u>
Cartago	1	3	5	9
Zarzal	1	4	1	8
Roldanillo	1	1	1	8
Sevilla	1	1	-	7
Tulua	1	3	2	21
Buga	1	4	3	12
Buenaventura	1	1	-	5
Cali	<u>1</u>	<u>3</u>	<u>2</u>	<u>18</u>
TOTAL	9	24	15	99

The attached map does not show all the health posts. They have been added in the Palmira district which was visited. (Table 48).

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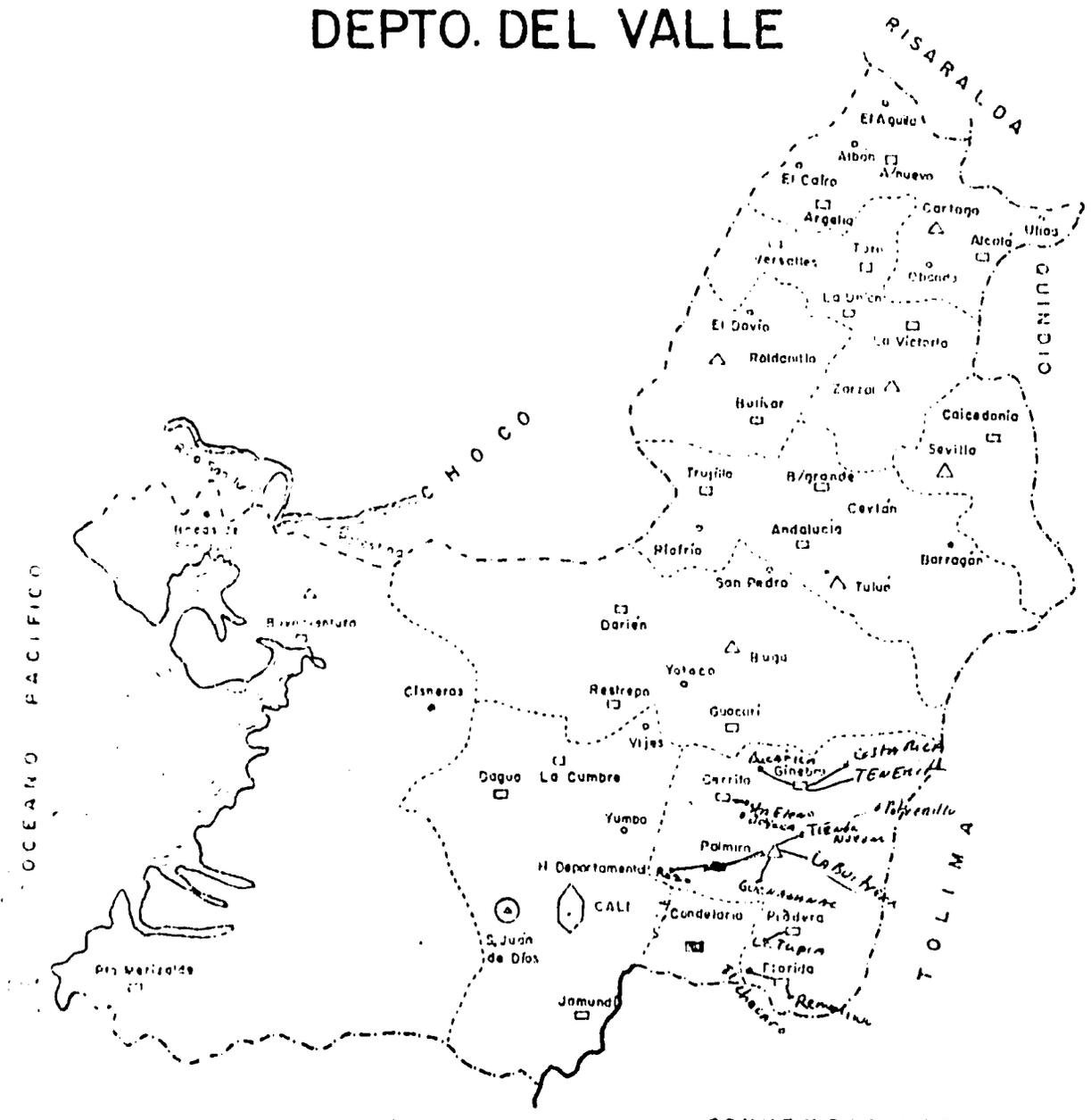
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TABLE 48

SERVICIO SECCIONAL DE SALUD DEL VALLE

# AREAS PROGRAMATICAS

## DEPTO. DEL VALLE



### CONVENCIONES:

- Hospital Departamental
- △ Hospital General
- ▲ Hospital Regional
- Centro Hospital
- Demostración Universitaria
- Centro de Salud
- Puestos de Salud

(g) Sectional Training Plan

Mention has already been made of training being provided by the university to key sectional leadership. The sectional office has placed considerable emphasis on in-service training and post-graduate study at the University of Valle, the School of Public Health at Medellin, and abroad. It has also organized many special courses in cooperation with the University, the School of Public Health, the School of Nursing, SENA, and the Superior School of Public Administration. In 1973 it will provide training according to the following plan:

<u>Course</u>	<u>Type of Trainee</u>	<u>Time</u>	<u>Numl</u>
Public Health I Residence	Medical doctor (public health experience)	1 year	2
Public Health II Residence	Medical doctors, former directors of regional institutions.	1 year	5
Training to Public Health II Residents	Public health residents	1 year	2
Community Medicine Rotation	University of Valle, 7th year students	6 weeks	50
Medical Auditor Program	Medical doctors	1 year	
- In-service training (medicine, surgery, specialties)	Medical doctors from sanitation program	1 month	10
- Information (updating in diagnosis, treatment, cobalt therapy & use of the regionalized system)	Doctors	3 days	110
Public Health Administrator	Medical doctor	18 months	1
Maternal/Child Health	Doctors and nurses	5 days	40
Hospital Administration	Medical doctors, directors of hospital centers	10 weeks	2
Administration Techniques	Medical doctors (directors)	5 days	10

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<u>Course</u>	<u>Type of Trainee</u>	<u>Time</u>	<u>Number</u>
Programming, Coordination, Control & Communications Administration Techniques	Medical doctors (directors)	5 days	10
Administration Techniques	Medium-level officials (section and group directors)	5 days	20
General Services Adminis.	Regional hospital administrators	5 days	10
- Materials purchase and distribution, storage, and control of stocks	Administrators	5 days	10
- Audit Techniques	Administrators	5 days	10
General Administration, Legal Measures, Accountability, Budget	Non-professionals, administrative assistants	5 days each one	36
- In-service Training (warehouse, statistics)	Same personnel (supplementary training)	5 days each one	36
Occupational Health Resident I in Public Health	Sanitary engineer	10 months	1
	Sanitary engineer (for public health administration)	1 year	3
Course for Promotor II of Sanitation	Environmental sanitation promoters, grade I	6 months	12
Course for Sanitation Promoters - Grade I		2 months	10
Updating Seminar	Sanitation personnel	3 days	106
Public Health Nurse (Post-Graduate)	Graduate nurse	1 year	3
- Nursing Licentiate	Central level nurse	1 semester	1
General Nurse	Nursing students beginning 3rd year	1 year	8
Nursing Seminar	Nurses from health institutions in Valle	3 days	50

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<u>Course</u>	<u>Type of Trainee</u>	<u>Time</u>	<u>Number</u>
Maternal/Child Care Training	Health service, new nurses	5 work days	8
Training in TBC Program	Health service, new nurses	5 work days	8
Nursing Practice in Health Services	Nurse, last year students	10 weeks	10
Auxiliary Nurse	Pupils submitted by health service dependent institutions	18 months	80
Training in Maternal/Child	Auxiliary nurses (new personnel)	6 working days	15
- (2 courses) updating in maternal/child	Auxiliary nurses in charge of the program	2 days each	48
- (3 courses) updating auxiliary nurse personnel in TBC	Auxiliary personnel in charge of the program at health institutions	2 days each	46
- (6 courses) training in hospital services for auxiliary nurses	20 in-training, 40 in-service, auxiliary nurses	3 months each	60
(4 course) Rural Health Promotors Course	Candidate from the rural areas	12 weeks each	100
Medium Level Statisticians Training for Statistics Assistants	New personnel Distrital level and A-type employees	7 months 2 months	2 8
Presentation and Analysis of Statistical Data	Medium-level statisticians	5 days	20
- Planning Techniques (in health)	Medium-level statisticians	2 weeks	20
Training drugstore managing	Drugstore managers	1 week	40

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(h) Supervision

The amount and quality of supervision is a key element in assuring success with the regional system. However, a careful evaluation of this in practice would be necessary to draw any but the most superficial conclusions. A massive guide for supervision has been developed, and supervision has been identified as a major responsibility of departmental section chiefs and the hospital director, preventive medicine director, technical director, environmental sanitation director, and chief of nursing at the regional level (not merely for their own hospitals but for the entire district). Our driver noted a large increase in supervisory travel; drivers, we find, are perceptive sources of information.

(i) Communication

Although Valle has one of the country's better networks of land communication, sectional health authorities, nevertheless, recognize poor communication as one of their major problems. Recently, two ambulances have been assigned to each of the regional hospitals, and plans have been made to install radio telephones in each of the local hospitals.

(j) Delegation of Functions and Use of Auxiliary Personnel

Although the Valle University has been one of the strongest advocates of this concept, we infer that it is just taking hold in the department, and perhaps more out of necessity than design. For example, the director of medical attention of the sectional service showed little enthusiasm for the role of promotoras (of which there are only 135 in the department). However, the hospital director and head of preventive medicine at Palmira both endorsed the importance of promotoras in the system. They have monthly meetings with the promotoras who work in the health posts near the hospital, and quarterly meetings with all the promotoras in the districts.

(k) Observed Advantages of the System

The chief of medical attention of the sectional health services noted the following advantages of the system, to which he said he was fully committed:

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- There is a greater sense of security for the doctors who work in the outlying areas and for the population of the small communities and rural areas who are beginning to see the health service as something that is capable of serving their needs better and more quickly.

- The system helps to utilize more efficiently the available resources.

- It gives the University a better training ground and provides superior in-service training opportunities for personnel.

The director and chief of preventive medicine of the regional hospital spoke of the following advantages:

- Five years ago, the department had a very primitive health service; there was no coordination, no programs. Now there is an integrated, coherent program.

- The system has increased coverage. Several years ago the hospital had 8,000 out-patient consultations per year; now it has 80,000. Formerly it had 1,800 hospitalizations per year; now it has 4,000.

- Previously, the activities of curative medicine and preventive action were carried out separately with little information, no supportive relationship, and some duplication of effort. Now there is integration or at least coordination and better information.

(1) Situation at a Regional Hospital

General

The 180-bed hospital at Palmira is not a modern structure, but is clean and gives the impression of order and efficiency. It has about 80% occupancy in the hospital, and handles about 150 normal out-patient consultations daily and 30 emergency consultations.

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Organization and Personnel

The organizational chart (Table 49) is of a similar hospital in Buga. However, the organization of the hospital in Palmira is essentially the same. Characteristics of particular relevance to the regional system are the following:

- The director of the hospital is also the director of the health district, and he both accepts and is proud of this role. He is a medical doctor who has post-graduate training in medical administration at the School of Public Health in Medellin.

- The chiefs of the section of administrative service (post-graduate training in hospital administration, School of Public Health), section of medical attention, section of technical services, section of preventive medicine and public health (post-graduate in public health, University of Valle), and the head nurse (post-graduate in public health nursing) are also chiefs of these sections for the total district as well as the hospital itself.

Relation to Other Hospitals and Supervision

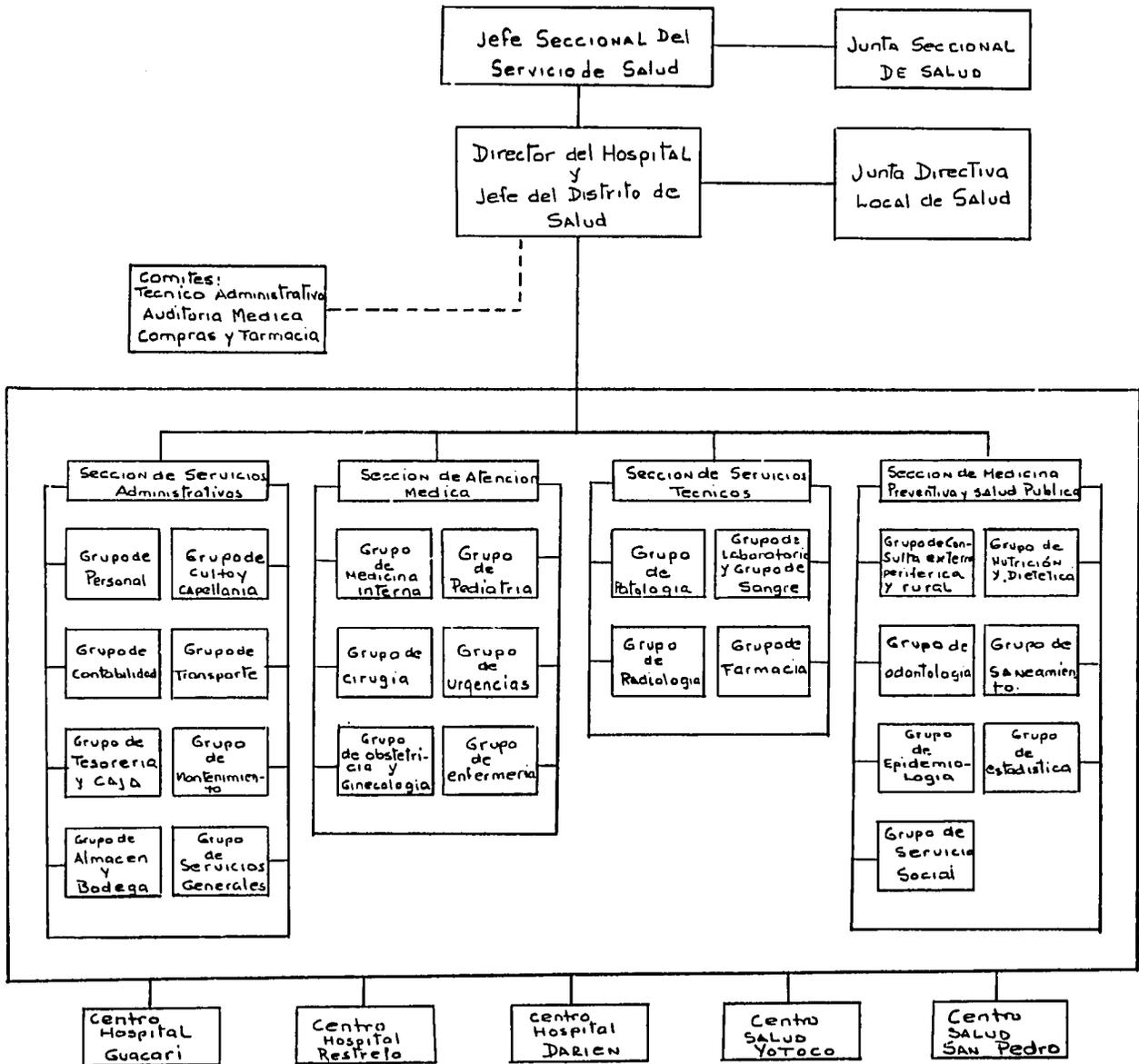
The director of the regional hospital sees his role related to the local hospitals as primarily one of technical assistance and supervision. Our conversation did not clarify to what degree the local hospitals are involved in developing the district plan or the extent of participation of the regional hospital in developing the district plan or in implementing the departmental plan. There is obviously involvement but, in our brief visit, we could not ascertain the intensity of formal participation. Since there is no statutory requirement for linkages between the local and regional hospital, the regional director is unsure of authority that goes beyond personal relationships and service contracts for referrals. Nevertheless, a plan of supervision exists which projects group visits (director and administrative, technical and nursing chiefs) twice a year to the local hospitals and special visits as needed. There is some difference of opinion between the director and the chief of medical attention of the department regarding the role of hospital boards. The departmental chief suggests the board's authority should be strengthened to assure

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ESTRUCTURA ORGANICA DEL DISTRITO INTEGRADO DE SALUD PUBLICA

HOSPITAL SAN JOSE

BUGA



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more involvement, stability, and community participation. The regional hospital director expressed an opinion that seems current at the Ministerial level -- that one of the problems in securing full integration of the regional system has been the autonomy and independence of action of some of these local hospital boards.

Referral of Patients

Referral in this case was viewed more as a way of diverting patients from overcrowding the university hospital in Cali than as a means of serving the local hospitals. Eighteen patients were referred to Palmira from local hospitals in November (an unrecorded number also used the out-patient facilities). The patients came with a medical history resumé on a standard form and according to a standardized referral procedure. Patient referral is under the responsibility of the chief of preventive medicine and public health. He noted that there is also a standard report for informing the local hospital on patient progress.

The hospital in Palmira reports that it did not refer many patients to Cali because it is capable of attending most cases, with the exception of the most sophisticated treatment such as neuro-surgery.

4. Schedule for Regionalization

Table 46 is the current schedule of the Ministry of Health for completion of the process of regionalization in all departments, intendencias, and territories. In formulating this timetable, the Ministry considered various factors which determine the readiness of each area to establish the system. The major factors are:

- a. Status of development of the sectional service: its staffing and ability to plan, supervise, coordinate, and evaluate comprehensive public health programs, including curative and preventive care, basic sanitation, etc.
- b. Availability and condition of physical facilities.
- c. Availability of qualified health personnel.

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d. Degree of influence of medical faculties in the area in promoting the concepts of the system.

e. Ease of communications within the area.

We consider the schedule to be fairly realistic in one sense, i. e., it is reasonable to expect that much of the required hardware and part of the software can be in place by the indicated years. But attitudes, traditions, and customs die hard, and these kinds of "software" may take somewhat longer to change than the schedule predicts. In any event, Colombia is embarking upon a radical transformation of its public health service, and if the timetable can be approximately met, that will be a significant achievement.

5. Observations on the System

a. We have verified that regionalization and integration are approaching maturity in the Department of Valle. In Cundinamarca, we found that the system is partially established, just as the Government has reported. Unfortunately, time did not permit us to survey the situation in the three other departments (Caldas, Quindio, and Risaralda) which, according to the Government, also have completed the process. However, as Table 50 shows, remarkable improvements in health recently have been achieved in Risaralda. Thus, something very good must be happening in that department, and we must assume that that something is regionalization and integration at work.

b. We are persuaded that existing legislation is reasonably adequate to create effective interinstitutional relationships, but strong local leadership is essential to achieve unified direction of, and coordinated effort among, agencies which traditionally have acted autonomously.

c. Although we cannot prove cause and effect, health conditions and efficiency of resource use are being enhanced where the system is already operating. (See Table 51 .)

d. In our limited sample, we noted that nutrition is the least integrated component of the most integrated system -- Valle. This requires remedial action.

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TABLE 50  
RISARALDA  
HEALTH INDICATORS 1967-1971

	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
Total hospital discharges			21,597	22,274	25,537
<u>Death rate for some diseases</u> <u>(per 100,000 population)</u>					
Communicable diseases and intestinal disorders	185.3	150.4	120.0	113.6	127.4
Diphtheria	38	31	3.8	2.3	2.4
Measles	11.8	8.4	15.0	7.0	8.7
Nutritional problems	86.0	66.3	63.7	57.5	47.7
Problems of pregnancy, birth and post-partum	7.2	4.9	5.2	2.5	1.7
Disease of early infancy	118.7	76.9	63.1	51.2	46.1

During this period, considerable emphasis was placed on environmental sanitation, and by 1970 it was estimated that 96.2% of the urban homes and 50.2% of the rural homes had running water; 90% of urban homes and 56.1% of rural homes had toilets or latrines.

Some of the dramatic reductions in malnutrition, diseases of infancy, and problems of pregnancy can no doubt be attributed to the rapid development in Risaralda of the expanded maternal/child care program of the Ministry, as well as the development of one of the larger nutrition education and supplementary feeding programs of the country, both of which have been closely integrated with other health care activities.

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TABLE 51HEALTH PROGRESS IN VALLE DEL CAUCA DURING  
ESTABLISHMENT OF INTEGRATED REGIONALIZED HEALTH SYSTEMS

	<u>1966</u>	<u>1971</u>
Population	1.8 million	2.2 million
Death rate	9.7	8.1
Hospital discharges	65,379	77,918
Hospital beds	2,979	2,493
% occupancy	55.8%	63.7%
Average days of hospital stay	9.3	7.4
Medical time per bed occupied	49 minutes	32 minutes
Graduate nurse time per bed occupied	10 minutes	8 minutes
Auxiliary nurse time per bed occupied	183 minutes	210 minutes
Consultations	771,626	1,097,844
Consultations/medical hour	2.3	3.9
People with water and service of waste disposal	949,373 51%	1,250,000 60%

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e. The Ministry of Health must be vigilant in assuring that its priorities (e.g. maternal/child care combined with family planning) are not downgraded in fully integrated regional systems. Independent programs possess a dynamic of their own. But sectional or regional health chiefs may have individual proclivities at variance with national priorities and, by subtle means, could weaken activities which were vigorous before integration. Thus, incentives or sanctions should be devised to stimulate full compliance with policy. For the same reason, effective systems of reporting, auditing, and evaluation are essential to assure that the Ministry is well informed on the uses of health resources at departmental, regional, and local levels.

f. Much improvement is necessary in physical facilities, availability of supplies, and communications. These, of course, are to be provided in the new health plan.

g. Expanded production of auxiliary personnel is indispensable to establishment of integrated regional systems throughout Colombia. This, too, is an important part of the plan.

h. A clearer definition of "delegation of responsibilities" and standardized patient referrals procedures are needed,

i. All medical schools in Colombia must begin to propound the system, teach its methods, and study its deficiencies.

j. And, to recapitulate, regionalization and integration are not planners' pipedreams. The system already exists in parts of Colombia and the early results are impressive.

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B. Maternal/Child Health Program

1. History

The results in 1966 of the "Study of Human Resources for Health," and the "National Morbidity Study" confirmed the low level of health in children and pregnant women in Colombia. These studies presented the following facts:<sup>1/</sup>

- a. Fifty percent of the total number of deaths occurred in children five years of age and below.
- b. Twenty-one percent of the deaths in one year were attributed to reversible disease, and 75% of these occurred in the age group up to 15 years.
- c. The six leading causes of death were diseases prevalent in children
- d. Among the first six causes of hospitalization were abortion, gastro-intestinal diseases, and measles -- diseases which attack children and pregnant women.
- e. The poor distribution of doctors (only 9.2% of them worked in communities of 20,000 inhabitants or less, where 63.6% of the population was located).
- f. The high prevalence of proteic-caloric malnutrition, especially in pre-school age children.
- g. The poorly dispersed and inadequately utilized institutional, human, and economic resources throughout Colombia.
- h. The high population growth rate (3.2%).

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<sup>1/</sup> "Programa de Extension de Servicios de Proteccion Materno-Infantil," 1972 OPS/OMS, page 16.

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Colombia, as a signatory country of the Punta del Este Charter, had already committed itself to the development of intensive programs in maternal/child health improvement; that commitment, reinforced by the influence of the above-mentioned two studies, led to an arrangement between the GOC and the Pan American Health Organization. The resultant organization was the Program for the Extension of Protective Maternal/Infant Services or PESMI. This agreement in April, 1969, effectuated a program for improved maternal/child health care the first phase of which extends to 1973.

2. Objectives of the Maternal/Child Health Plan of PESMI

The principal objectives of this Plan are to:<sup>1/</sup>

- a. Diminish the maternal morbidity and mortality rates, especially emphasizing problems of multi-parity, reduced abortions, cervicaluterine cancer, and other gynecological pathology.
- b. Reduce infant and child mortality and morbidity, taking special action against reducible diseases.
- c. Contribute to family responsibility and well-being through education and better health services.

3. Organizational Plan

The Ministry of Health is divided into three main divisions: direct campaigns, medical attention, and environmental health. PESMI is part of the medical attention division, but is administered (according to the administrative plan of the MOH and OPS/OMS) from a trusteeship from the division of direct campaigns. The "central level" of the PESMI program consists in a permanent advisor for OPS/OMS, and representatives of ASCOFAME, Planeacion Nacional, the National Cancer Institute, and the division of direct campaigns, public health physicians and obstetrician-gynecologists; public health nurses; health educators; and administrators.

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<sup>2/</sup> Ibid, page 18.

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The "sectional level" of PESMI coordinates with the sectional health services extension of the medical attention division of the MOH, and is the intermediate level of the national program. This level, too, has an advisory committee which works closely with the medical coordinators and nurses at the sectional level.

The "local level" is the operative part of the PESMI program, working from hospitals, health centers, and health posts associated with the sectional health services of the MOH. The personnel in this level include physicians, nursing auxiliaries, and health promotoras.

#### 4. Functions of the Program

The functions of the maternal/child health program have been divided into four basic groups: services to the community, educational activities, personnel training activities, and training for rural health promotoras. The four groups are then subdivided into the many activities of the program.

Services to the Community include all of the activities pertaining to maternal/child care: the pre-natal program, post-natal services, family planning, cytological examinations for cancer detection, child growth and development, and medical consultations for children and mothers.

As has been stated, PESMI coordinates maternal/child health services with the sectional health services. In municipalities with permanent medical supervision provided by the MOH, a complete program devised by PESMI is offered. This program includes all of the above activities relating to maternal/child care.

In municipalities that have permanent MOH nursing auxiliary staff only, PESMI provides resources for family planning education and control to the community. The maternal/child care in these health centers is provided by the MOH program rather than that of PESMI.

There are still areas in the country where PESMI provides no services; the goal of the organization is to eventually provide programs coordinated with the sectional health services of the Ministry in all MOH health centers in the country.

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In 1971, medical consultations as part of the complete maternal and child health programs provided by INPES were realized in 178 communities, 39 more than in 1970. The number of pregnant women seen in consultation was 70,938, or 37% of the estimated total number of pregnant women in that area (see Table 52 , page 207); the number of children from birth to 15 years of age seen in consultations was 328,700, or 16% of the total population of this age group. These percentages of coverage by PESMI are lower than those percentages of coverage by Ministry of Health programs throughout the entire country (Table 53 , page 208); this has been attributed to the fact that PESMI works in rural areas where facilities are less accessible, and economic and cultural values are different from those in urban areas. The attitudes of people of the community and personnel in health centers must be changed so that they understand the importance of well-baby clinics and routine medical consultations in education, nutrition control, and vaccinations.

The coverage of the age group 1-4 years is especially low considering that this group is considered high-risk for illness and death.

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TABLE 52INDICATION OF THE EXTENSION OF THE MEDICAL CONSULTATION PESMI  
1970 - 1971

	<u>1970<sup>1/</sup></u>	<u>1971<sup>2/</sup></u>
<u>Medical Consultation</u>		
<u>Pre-Natal</u>		
<u>Total No. Consultations</u>	98,245	133,950
Total No. of Patients Coverage % <sup>3/</sup>	51,522 34%	70,938 37%
<u>Children Less than 1 Year</u>		
<u>Total No. Consultations</u>	91,658	125,024
Total No. of Patients Coverage %	50,010 48%	80,820 49%
<u>Children 1-4 Years Old</u>		
<u>Total No. Consultations</u>	125,790	192,567
Total No. of Patients Coverage %	75,905 17%	119,711 20%
<u>Children 5-14 Years Old</u>		
<u>Total No. Consultations</u>	113,073	188,181
Total No. of Patients Coverage %	75,005 8%	128,169 10%
<u>Children 0-15 Years Old</u>		
<u>Total No. Consultations</u>	330,521	505,772
Total No. of Patients Coverage %	207,110 14%	328,700 16%

1/ In 139 municipalities2/ In 178 municipalities3/ Percentage of estimated number of people in each category in the area served by PESMI.SOURCE: "Extension de Servicios de Proteccion Materno Infantil," 1972  
OPS/OMS, page 106

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TABLE 53

INDICATION OF MATERNAL/INFANT MEDICAL CONSULTATIONS IN COLOMBIA  
AND MATERNAL/INFANT CONSULTATIONS PERFORMED BY PESMI  
1971

<u>Medical Consultation</u>		<u>Country*</u>	<u>PESMI</u>
	) <u>Total No. Consultations</u>	691,872	133,950
	)		
Pre-natal Consultations)	Total No. of Patients	320,017	70,938
	) Coverage % <sup>1/</sup>	41%	37%
	) <u>Total No. Consultations</u>	728,869	125,024
	)		
Children -- birth	) Total No. of Patients	401,746	80,820
1 year	) Coverage %	59%	49%
	) <u>Total No. Consultations</u>	1,102,851	192,567
	)		
Children --	) Total No. of Patients	612,141	119,711
1-4 years old	) Coverage %	25%	20%
	) <u>Total No. Consultations</u>	1,138,257	188,181
	)		
Children -	) Total No. of Patients	726,339	128,169
5-15 years old	) Coverage %	14%	10%
	) <u>Total No. Consultations</u>	2,969,977	505,772
	)		
Children --	) Total No. of Patients	1,740,226	328,700
0-15 years old	) Coverage %	35%	16%

---

\* Including PESMI

<sup>1/</sup> Percentages of estimated number of people pertaining to each category in the areas served by PESMI.

SOURCE: "Programa de Extension de Servicios Materno Infantil," page 107

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Educational Activities include education on both an individual and group basis; teaching is done by all members of the health team but especially by the promotoras and nursing auxiliaries. These activities are designed to change customs, attitudes, and habits of the population in order to improve utilization of health services, prevent disease, and promote good health practices. Topics for individual and group education include maternal and child health, family planning, environmental health and sanitation, vaccination education, nutrition, and services available in community health centers. Materials including graphs, equipment for demonstrations, and mimeographed speeches with visual aids are available from the central office to the promotoras and auxiliary nurses for better understanding of these topics by the community.

Nutrition programs of PESMI are frequently coordinated at the local level with the several food supplement programs available to the people (CARE, CARITAS, World Food Program). Also, in some areas garden projects for the women are encouraged. At the monthly classes sponsored by PESMI (for mothers), supplementary foods are distributed at the same time as the mother learns the importance of proper diet and correct preparation of fresh vegetables as well as supplementary foods. Increasing emphasis is placed on securing a more adequate coordination of nutrition efforts as part of the total activity of maternal/child care.

Training Activities are the third part of the maternal/child health program. Maternal/child and family planning short courses are provided to the personnel of the central level; scholarships to international courses are provided by OPS/OMS.

A program sponsored by the M.OH and the Public Health School of the University of Antioquia in Medellin is provided for the training of medical coordinators and nurse specialists in maternal/child care for work at the sectional level. The program is designed to (1) illustrate the integration of the maternal/child health program in the national health policy, (2) educate the physician-coordinator and nurse in the performance expected of them in their job, and (3) obtain unity in all sectional services so that programs are correctly interpreted and followed.

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A third program is concerned with the training of physicians in local level institutions. The medical schools are used as training centers for these programs. This course is offered as continuing education, permitting the physician to complete and better integrate the knowledge in maternal and child health he received from medical studies. This is a five-day course and includes panel discussions, lectures, and work groups concerning the maternal/child health program.

A fourth program is the training of nursing auxiliaries; this is an 80-hour course provided in addition to the curriculum of the nursing auxiliary schools. The purpose of this program is to create nursing auxiliaries who are conscious of the role they play in the health of mother and child. Special emphasis is placed on family planning, and the training and supervision of the rural promotora by the auxiliary.

The chart below indicates the number of people involved in the various educational activities.

It will be noted that there was a marked drop in persons trained in 1971. Part of this is due to frequent suspension of classes in the medical schools where these courses are given. It also reflects that with the additional efforts put forth in 1969 and 1970, there was somewhat less urgency for training in 1971. Unfortunately, it seems to also suggest that this activity did not receive the continuing support it should have.

NUMBER OF HEALTH PERSONNEL TRAINED BY PESMI

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>Total</u>
Medical Coordinators and Maternal/Child Nurses	-	-	66	66
Physicians in Family Planning	152	264	68	484
Nursing Auxiliaries	131	336	162	629
"Promotoras"	853	1,120	616	2,589

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Training of Rural Health Promotoras is the fourth part of maternal/child health activities. Promotoras are leaders selected from their own communities to receive education from the MOH to enable them to perform the following duties:

- Develop activities in the community for the promotion of health, prevention of disease, and provision of simple medical care.
- Participate in monthly meetings of the health center, and submit monthly information about their activities.
- Collaborate with the local level health services in programming for the improved health of the rural population.
- Encourage the use of available health facilities by the rural population.

These duties are carried out by means of home visits, health lectures, individually and in groups, participation in vaccination programs, provision of simple health treatments and injections for the community, and collaboration with the sanitation officer in community sanitation projects.

In the development of these auxiliary personnel, it is important that they be carefully chosen, receive adequate training, have permanent supervision, and receive continual education.

The training program for the promotora is a course of 347 hours, of which 30% are classes in theory, 63% practice, and 7% observation. The program is the responsibility of the sectional services medical coordinator and MOH nurse, other personnel from the sectional services, and the local level physicians and auxiliary nurses.

In the years 1969-1971 training was provided to 2,589 promotoras, 1,622 were still active in 235 rural communities in 1971.<sup>3/</sup> Some 37% of trained promotoras do not continue working, mainly because of migration from the community. An increase in utilization of health services by the people has been found where promotoras are active in the community and receive adequate supervision and guidance from professional personnel.

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3/ "Proyecto Para la Formacion de 7,000 Promotoras Rurales de Salud en Colombia," M.OH, page 8.

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5. Human Resources

Human resources for the PESMI maternal/child health program are listed in the following charts according to year and type of personnel:<sup>3/</sup>

<u>Central Level</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
Doctors	1	4	4	5
Nurses	-	-	3	3
Health educators	-	-	2	2
Statisticians	-	-	1	1
Administrative personnel	-	6	9	11
OPS/OMS advisor	-	1	1	1
<u>Sectional Services Level</u>				
Physician coordinators	-	9	21	25
Maternal/child nurses	-	3	16	19
Administrative personnel	-	11	43	43
<u>Local Level</u>				
Physicians	-	-	-	594 <sup>1/</sup>
Daily number of medical hours	-	305	367 <sup>2/</sup>	566 <sup>2/</sup>
Nursing auxiliaries	-	28	78	139
"Promotoras"	-	28	1,458	1,622

1/ Including 247 physicians in Antioquia and Valle who are partially or indirectly financed by PESMI.

2/ Not including Valle and Antioquia.

3/ SOURCE: "Programa de Extension de Servicios de Proteccion Materno Infantil," OPS/OMS 1972, page 38.

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6. Future Plans

Priority to maternal/child care programs has been assigned by the Ministry of Health. The following are projections for the future.

a. Geographic Area

The area covered will be all of Colombia except the comisarias of Vichada and Guainia, which together have a population of only 15,000 people. The goal set by PESMI is to provide at least a part of the maternal/child health care program designed by PESMI in the 670 municipalities where minimal M.OH health services are now available.

b. Human Resources

Of the 604 municipalities which presently have maternal/child health programs, 235 will have a total of 1,622 rural promotoras; the other municipalities continue to have the more traditional type maternal/child care program. The number of municipalities with promotoras should increase greatly in the next three years as a result of the massive program for formation of 7,000 promotoras and the inclusion of complete PESMI programs in more municipalities.

The hours of medical service on the local level will continue to increase in relation to the growing activities, as will the number of nursing auxiliaries.

At the sectional level the number of doctors and nurses will be increased to thirty, the actual number needed.

Increases in the number of personnel at the central level are needed for improved evaluation and program planning of the maternal/child health program.

c. Equipment

UNICEF is donating clinical equipment to hospitals and clinics; PESMI plans to donate additional equipment not furnished by UNICEF. At the present time, the amount of equipment to be donated by UNICEF is not known so the exact amount of equipment donated by PESMI has not been determined. One million cycles of contraceptives are also to be ordered for use in the family planning program.

d. Coverage of Services

Coverage is projected to increase 10% annually, until the following number of persons are covered by PESMI in 1974:

- 111,650 pregnancies, 67% of the estimated total.
- 127,601 in family planning, 23% of the possible solicitants.
- 151,826 children less than one year old, 84% of the total number.
- 231,858 children 1-4 years old, 35% of the estimated total number.
- 242,502 children 5-14 years old, 18% of the estimated total.

e. Training

Twelve hundred more nursing auxiliaries are considered necessary, and will be trained in coordination with ASCOFAME. A change of curriculum in the auxiliary nursing schools is being considered so that eventually more education in maternal/child care would be provided, and PESMI could discontinue its program of training nursing auxiliaries.

The training for medical coordinators and nurses will be continued as needed.

The largest program in training is that of promotoras; the Ministry of Health, ICBF, and ICSS are planning to train 7,000 promotoras in three years beginning in 1972.<sup>4/</sup>

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<sup>4/</sup> Ibid, page 134.

C. Nutrition<sup>1/</sup>1. The Problem

Malnutrition is one of the most serious of public health and social welfare problems in Colombia. Malnutrition ranks seventh as a cause of death. Moreover, it contributes significantly to mortality due to gastroenteritis and pneumonia. These two diagnostic categories occupy the first and second place among causes of death, and account for 18% of all deaths. (Table 2.) The severity of the problem is further illustrated by the high infant mortality rate and by the high mortality rate in the 1 to 4 year-old age group acknowledged as an indicator of malnutrition in developing countries. (Table 54.) Malnutrition appears as the fourth principal cause of death in the 1 to 9 year-old age bracket. (Tables 55 and 56.) Concurrent malnutrition is estimated to account for close to 100% of deaths from measles, and at least 50% of deaths from diarrhea. Data in Table 57 shows the high specific mortality rates in Colombia for these two conditions. Tables 58 and 59 illustrate the fact that malnutrition and the common infectious diseases aggravated by malnutrition appear among the first five causes of hospital and health center visits.

Global data on food availability (Table 60) and Table 61 show significant deficits when compared to recommended allowances. Moreover, given the current rate of growth in population and agricultural production, the situation is unlikely to change on a short-term basis. As noted below, the low purchasing power of large sectors of the population is a determinant of the volume of agricultural production. The problem is compounded by a marketing system with many intermediaries that renders food more expensive. Additional problems are faulty food habits and ignorance that prevent optimum utilization of the available products.

Malnutrition takes its toll from the low socio-economic strata. Sixty-seven percent of children under five years of age in this social group

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<sup>1/</sup> This section is based largely on a report especially prepared for USAID/Colombia by Dr. M. G. Herrera, of the Department of Nutrition, School of Public Health, Harvard University.

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TABLE 54MAJOR CAUSES OF DEATH IN CHILDREN 1 TO 4 YEARS, BY SEXCOLOMBIA, 1967

<u>Causes of Death</u>	<u>Total</u>	<u>Males</u>		<u>Females</u>	
		<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Gastroenteritis and Colitis	8,294	4,184	50.4	4,110	49.6
Bronchial pneumonia	2,806	1,371	48.9	1,435	51.1
Chronic bronchitis	2,771	1,369	49.4	1,402	50.6
Vitamins and other nutritional deficiencies	2,267	1,115	49.2	1,152	50.8
Pneumonia	606	287	47.4	319	52.6
Influenza	365	173	47.4	192	52.6

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Source: Boletin DANE No. 221, 1969

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TABLE 55

INFANT AND PRESCHOOL MORTALITY RATES AND RATIO  
BETWEEN THE TWO RATES

COLOMBIA 1960-1968; U.S.A. 1967

YEAR	Infant Mortality Rate <sup>1/</sup>	Preschool Mortality Rate <sup>2/</sup>	Ratio Between Infant and Preschool Mortality Rates
<u>COLOMBIA</u> <sup>3/</sup>			
1960	100	17.6	5.7
1961	90	14.7	6.1
1962	89	14.0	6.4
1963	88	13.8	6.4
1964	83	13.3	6.2
1965	82	12.6	6.5
1966	80	10.6	7.5
1967	79	11.4	6.9
1968	65	9.7	6.7
<u>U.S.A.</u> <sup>4/</sup>			
1967	22	0.8	27.5

1/ Infant mortality: per 1,000 live births.

2/ Preschool mortality: per 1,000 children from 1 to 4 years of age.

3/ National Department of Statistics, Bulletins No. 191 and 194,  
Bogotá, Colombia

4/ WHO, World Health Statistics, Annual, 1967.

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TABLE 56MAJOR CAUSES OF DEATH IN CHILDREN 5 TO 9 YEARS, BY SEXCOLOMBIA, 1967

<u>Causes of Death</u>	<u>Total</u>	<u>Males</u>		<u>Females</u>	
		<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Undefined as unknown diseases	893	474	53.1	419	46.9
Gastroenteritis and colitis	855	434	50.8	421	49.2
Vitamins and other nutritional deficiencies	418	207	49.5	211	50.5
Chronic Bronchitis	334	162	48.5	172	51.5
Bronchopneumonia	320	147	45.9	173	54.1
Anemias	293	153	52.2	140	47.8
Measles	291	142	48.8	149	51.2
Whooping cough	144	60	41.7	84	58.3
Pneumonia	95	49	51.6	46	48.4
Influenza	60	31	51.7	29	48.3

Source: Boletín DANE No. 222 de 1970

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TABLE 57SPECIFIC MORTALITY RATES DUE TO MEASLES AND DIARRHEASCOLOMBIA, 1960 - 1968, USA and France, 1966 1/

<u>Year</u>	<u>Measles</u>	<u>Diarrheas</u>
<u>Colombia</u> 2/		
1960	12.9	121.7
1961	7.5	116.9
1962	12.5	124.5
1963	10.0	119.4
1964	10.1	113.7
1965	13.6	117.9
1966	7.4	107.0
1967	11.9	108.3
1968	9.0	95.0
<u>USA</u> 3/		
1966	0.1	3.6
<u>France</u> 3/		
1966	0.2	0.8

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1/ Mortality rate per 100,000 population

2/ National Department of Statistics, Bulletins Nos. 191 and 194, Bogotá, Colombia.

3/ WHO, World Health Statistics, Annual, 1966 and 1967.

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TABLE 58THE FIVE MAJOR CAUSES FOR HOSPITAL ADMISSION - BY AGECOLOMBIA, 1966

AGE GROUPS (Years)		
Under 15	15 - 44	45 and more
Respiratory disease 17.6	Pregnancy and postpartum 24.2	Cardiovascular diseases 12.7
Intestinal infections 16.1	Urinary and genital diseases 13.1	Urinary and genital diseases 11.3
Intestinal parasites 11.4	Respiratory diseases 6.6	Gastrointestinal diseases 7.8
Nutritional deficiencies 5.8	Gastrointestinal diseases 6.4	Respiratory diseases 7.1
Other infections and parasitic diseases 5.1	Intestinal infections . 5.9	Nutritional deficiencies and anemias 4.6
56.0%	56.2%	43.5%

Source: "Estudio de Recursos Humanos para la Salud y Educación Médica en Colombia," "Diagnósticos de Consulta Externa," Bogotá, D. E. , Marzo, 1968.

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TABLE 59

THE FIVE MOST FREQUENT CAUSES FOR  
HEALTH CENTER CONSULTATION - BY AGE

COLOMBIA, 1966

AGE GROUPS (Years)		
Less than 15	15 - 44	45 and more
Respiratory disease 20.9%	Pregnancy and postpartum 63.6%	Cardiovascular 15.3%
Intestinal infections 20.6%	Genitourinary diseases 6.0%	Respiratory diseases 10.2%
Intestinal parasites 10.6%	Respiratory diseases 4.5%	Gastrointestinal diseases 8.7%
Nutritional deficiencies 5.6%	Intestinal infections 3.0%	Genitourinary diseases 7.9%
Other parasitic and infectious diseases 4.1%	Gastrointestinal diseases 2.9%	Nutritional deficiencies 6.6%
61.8%	80.0%	48.7%

Source: "Estudio de Recursos Humanos para la Salud y Educación Médica en Colombia," "Diagnósticos de Consulta Externa," - Bogotá, D. E., Marzo, 1968.

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TABLE 60CURRENT FIGURES AND THEORETICAL GOALS FOR  
FOOD AVAILABILITY FOR HUMAN CONSUMPTION IN COLOMBIA <sup>1/</sup>

Food Groups	Deficits	Percent of	1975-Goals <sup>2/</sup>	Annual Incre-	Actual
	M. T.	Requirements Available	M. T.	ment in Pro- duction Needed to obtain 1975 Goals <sup>3/</sup>	Annual Increment 1966-1970
				%	%
Milk	1,412	50.9	2,316	10.4	4
Meat, Fish and eggs	745	80.7	696	5.4	1
Legumes	170	74.1	230	6.3	1.7
Cereals	1,629	90.0	2,011	4.3	1.4
Roots	-	132.2	2,530	0.3	0.5
Vegetables	225	48.2	451	14.9	1.4
Fruits	2,105	49.6	3,484	10.6	0.4
Fats	115	62.2	170	8.2	1.5
Sugars	-	168.2	-	-	-

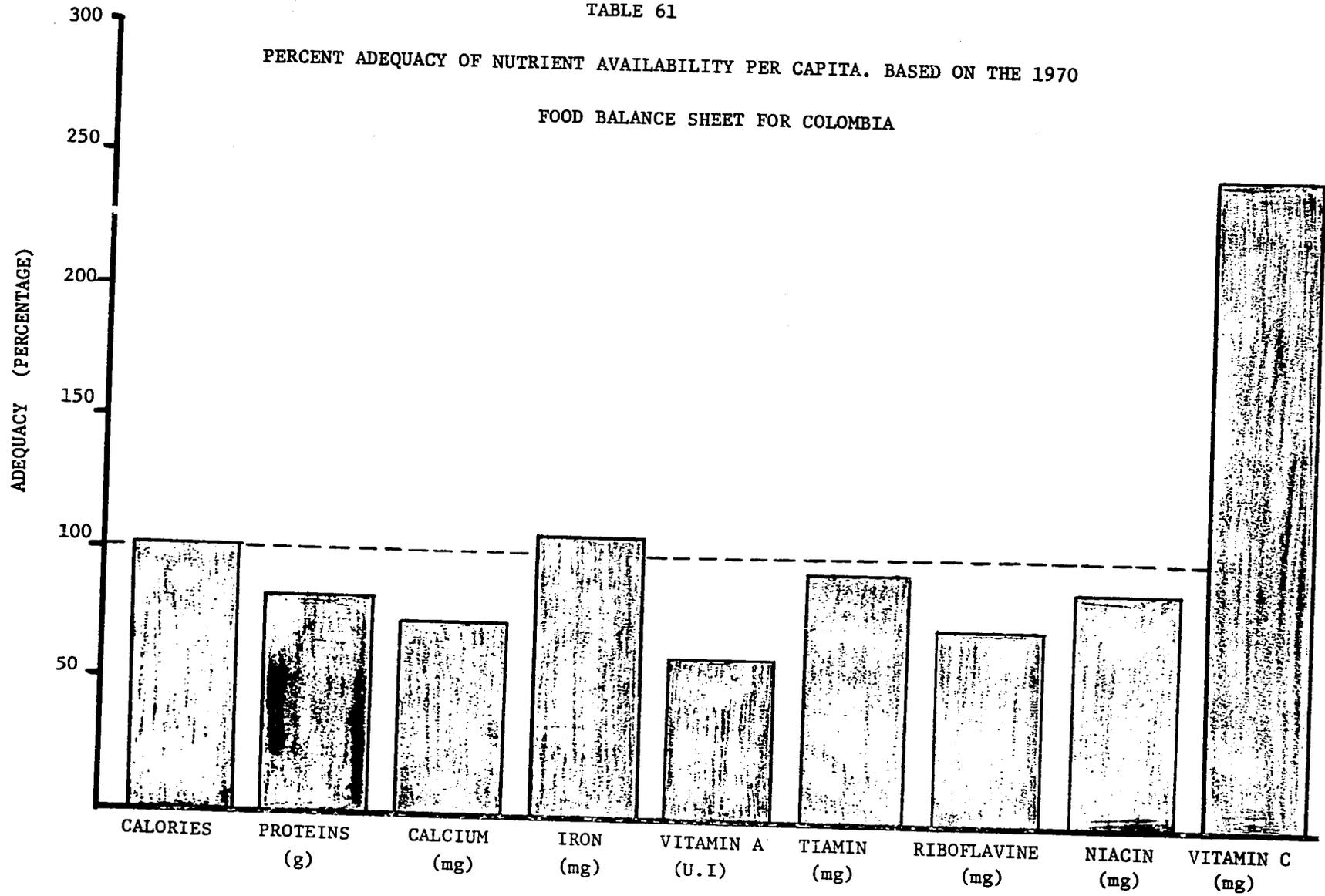
<sup>1/</sup> Figures in thousands of metric tons.<sup>2/</sup> Assuming 3.2% annual population growth.<sup>3/</sup> For a 10-year period, 1970-1980

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TABLE 61

PERCENT ADEQUACY OF NUTRIENT AVAILABILITY PER CAPITA. BASED ON THE 1970

FOOD BALANCE SHEET FOR COLOMBIA



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(which comprises <sup>1/</sup>70% of the population) were found to suffer from some degree of malnutrition.

Table 42 summarizes data on dietary intake related to the Colombia recommended dietary allowance (ICBF-N). Significant deficits in calories, protein and vitamin intake are evident among the underprivileged in both rural and urban areas.

Impact of Nutrition on Other Sectors - Malnutrition conservatively accounts for one-third of the estimated 100,000 deaths that occur annually among children under five years of age. This potentially preventable mortality entails not only human suffering but also significant waste of resources invested in rearing the victims who never reach productive age. More importantly, deprived malnourished children suffer from physical and intellectual retardation reflected in general intelligence scores and specific defects in cognitive development. If left untreated, the retardation is permanent and results in low educational attainment. The association between malnutrition and low cognitive function has been documented in Colombia by the ICBF research unit (collaborative project Harvard-Giessen). Differences in intelligence quotients between malnourished and well-nourished children of the same socio-economic groups exceeds 15%. (Table 43.)

Learning and behavior problems related to both malnutrition and environmental deprivation are important causes of the very high school drop-out rate documented in Colombia. Governmental efforts to build new schools and educate more teachers may be partially undermined by the effects of malnutrition. The synergism between malnutrition and disease is well documented. Moreover, the association between malnutrition, poor health, and low productivity of the labor force has been shown in studies carried out in Germany, Indochina, and Costa Rica.

A recent survey by the Colombian Association of Medical Schools and MOH showed that Colombian workers are disabled by disease a total of 96 million man-days/year. Assuming a minimum salary of 20 Colombian pesos a day, the losses amount to 2 billion pesos/year. Chronic adult undernutrition no doubt contributes to this important problem although no data on this point is available in Colombia.

<sup>1/</sup> ICBF-N, Publicacion DIR 70-01, Bogota, 1970

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**TABLE 62**  
**PER CENT ADEQUACY OF FAMILY DIETARY INTAKE OF CALORIES AND NUTRIENTS**  
**PER CAPITA-DAY IN TEN URBAN AND RURAL AREAS (COLOMBIA, 1963-1966<sup>1/</sup>)**  
**BY SOCIO-ECONOMIC LEVELS**

<u>Area &amp; Socio- Economic Level</u>	<u>No. of Families</u>	<u>Calories</u>	<u>Proteins</u>	<u>Calcium</u>	<u>Iron</u>	<u>Vitamin "A"</u>	<u>Thiamine</u>	<u>Riboflavin</u>	<u>Niacin</u>	<u>Vitamin "C"</u>
<u>URBAN</u>										
High	20	114	126	87	165	135	110	110	124	200
Middle	16	93	106	69	112	107	77	92	102	148
Low	9	80	80	43	108	54	67	55	87	101
Very Low	44	76	67	39	109	56	82	47	77	91
<u>RURAL</u>										
High	10	98	97	66	124	84	98	74	95	216
Middle	15	87	82	49	140	56	88	60	93	161
Low	47	90	82	54	125	68	77	68	94	192
Very Low	94	77	64	40	108	50	81	54	89	174
All Levels	166	83	72	46	115	56	83	61	90	178

1/ ICBF-N

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TABLE 63

GENERAL INTELLIGENCE QUOTIENT IN  
WELL-NOURISHED AND MALNOURISHED CHILDREN FROM  
LOW SOCIO-ECONOMIC STATUS

	<u>Well-Nourished</u>			<u>Malnourished</u>		
	<u>n</u>	<u>x</u>	<u>S. D.</u>	<u>n</u>	<u>x</u>	<u>S. D.</u>
Less than 2 years	93	100.9	13.2	96	36.2	14.7
2 to 5 years	90	95.7	12.8	96	80.9	15.1

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Note: Differences between well-nourished and malnourished are statistically significant.

$p < .001$

SOURCE: ICBF-N Malnutrition and Mental Development.

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2. Organizations Concerned with the Nutrition Problem

Increasing awareness by GOC of malnutrition as a national problem is reflected in the development of state structure to design and coordinate nutrition policy and to carry out applied nutrition programs. The Institute of Nutrition (INN) was founded in 1945 as a branch of the Ministry of Health. The principal activities initially were a series of nutrition surveys and a campaign to eradicate endemic goiter. In 1963 the Institute of Nutrition became an autonomous entity; nutritional education and applied nutrition programs were initiated. In 1968, the INN was incorporated as a division (ICBF-N) of the newly created Colombian Institute of Family Welfare (ICBF) and was charged with planning and implementing welfare policy in three areas: nutrition, social welfare, and legal protection of minors. Resources devoted to nutrition have increased notably as outlined in Table 64. ICBF-N is financed by the proceeds of a special tax on iodized salt and appropriations are channelled through the Ministers of Health and Education. The organizational structure of ICBF-N is depicted in Fig. 65. A summary of the programs undertaken by each of the divisions follows:

a. Research Division

Research has been planned according to program requirements. Initial efforts were oriented toward diagnosing the nutrition and food problems of Colombia in order to design appropriate applied nutrition programs. Once action programs were initiated, research was undertaken with the following goals:

- (1) Development of methods to evaluate and classify the nutritional status of children.
- (2) Establishment of recommended dietary allowances and food consumption for Colombia.
- (3) Development of new foodstuffs for human consumption.

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TABLE 64

TECHNICAL AND ECONOMIC RESOURCES ASSIGNED TO THE  
NUTRITION PROGRAM IN COLOMBIA, IN 1963 AND 1971

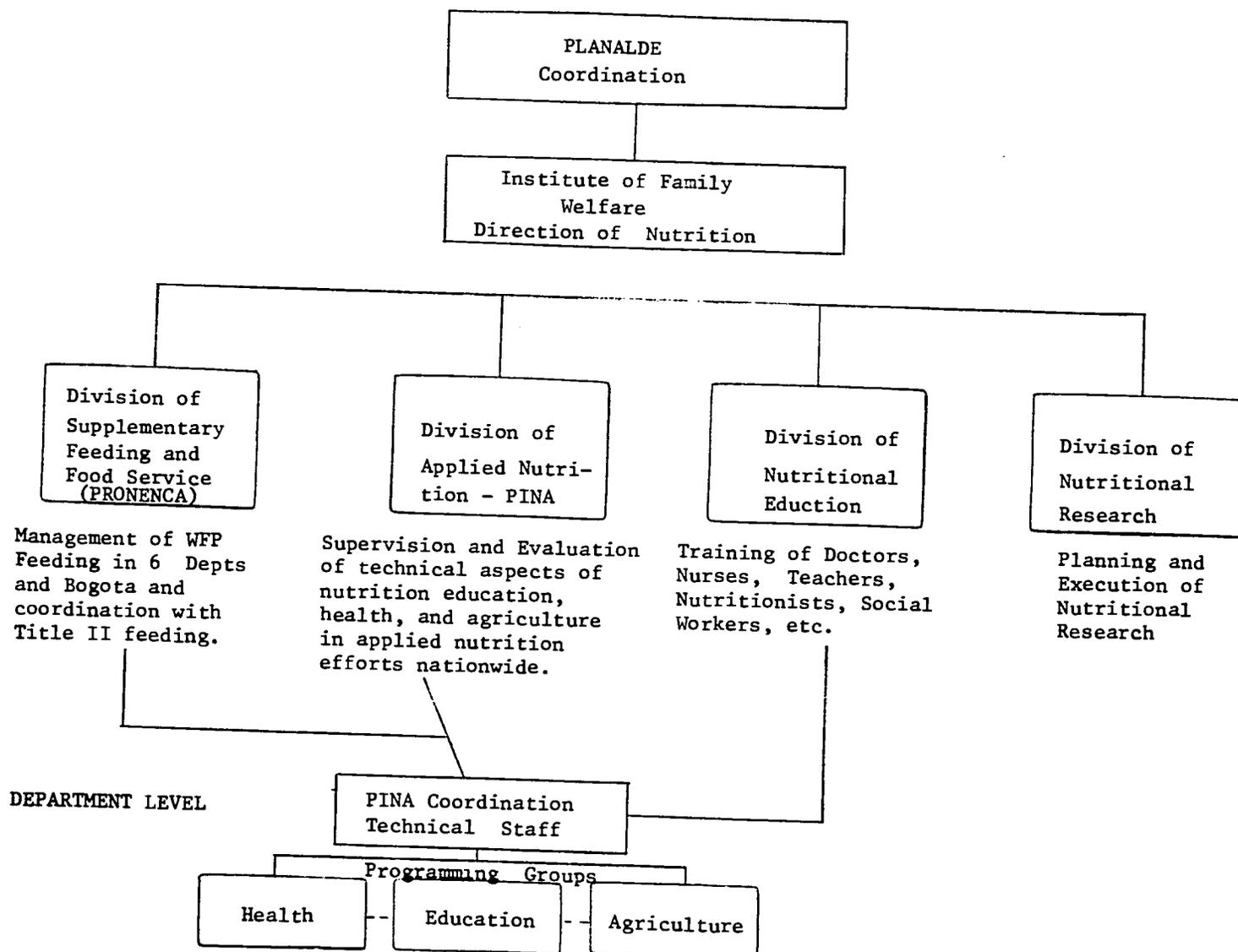
<u>Resources</u>	<u>1963</u>	<u>1971</u>
Professional Staff of the Direction of Nutrition of CIFW:		
- Public Health Physicians with training in nutrition	3	38
- Non-medical nutritionists	8	159
- Other professional personnel	11	38
Executive and technical personnel of other governmental agencies working with PINA at state level	22	446
Total budget for nutrition	US\$179,750	US\$15,614,216
- From the national budget	129,750	4,301,000
- From the state budgets	25,000	2,333,450
- From the International Agencies (WFP, UNICEF, PAHO/WHO)	25,000 <sup>1/</sup>	8,979,766 <sup>2/</sup>

1/ From UNICEF alone.

2/ Approximately 90% of the total accounts for food aid (WFP).  
Bilateral food aid is not included, since it is not directly  
administered by the Institute.

FIGURE: 65

FOOD AND NUTRITION IN COLOMBIA: GOC IMPLEMENTING STRUCTURE



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- (4) Design of nutrition education programs.
- (5) Development of vegetable mixtures of high biological value.
- (6) Design of methodology for program evaluation.
- (7) Study of cognitive development in children and its relationship to malnutrition and other environmental factors.
- (8) Development of new indicators of the nutritional status of the population.
- (9) Study of national food availability.
- (10) Setting goals for food production to satisfy national nutritional requirements, i. e. :

(a) ICBF-N carried out a cross-sectional study of the growth, development, and nutritional status of Colombian children. The sample size was 12,000. Anthropometric, biochemical, and hematological parameters were studied. This data base was used to prepare national height and weight for age standard tables.

(b) Recommended dietary allowances were calculated for the Colombian population according to age-sex and physiologic state. This information was translated into recommendations of daily intake of common foods.

(c) Animal protein is in short supply and beyond the means of Colombians in the low-socio economic groups. The acceptability of two high quality protein vegetable mixtures\* has been studied (Incaparina, Colombiarina).

ICBF-N made a detailed study of Opaque-2 corn. Calorie and nutrient and amino acid content were determined. Metabolic balance studies were carried out in children that confirmed the good biological

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\* Vegetable products are combined in such a way that the amino acid content of their proteins complement each other resulting in a protein similar to animal protein in biological value.

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value of the protein in this species. Acceptability was then studied and a recipe manual prepared to encourage the use of this foodstuff. As a result of the combined efforts of ICA and IDEMA, production and sales of this corn have increased significantly.

(d) In order to improve the nutrition education programs in operation throughout the country, research is under way to design diets of maximum nutritional value for low-income population. The project consists of surveying in detail the food habits and preferences of the low-income population in different parts of the country. The best possible combinations of foods currently consumed by these families will be determined to assure adequate intake of essential amino acids (same principle as vegetable mixtures). The data has been collected and analysis is in progress. Part of this project has been carried out in collaboration with the Colombian Institute for Technological Research (IIT). This investigation will provide a manual of acceptable low-cost diets for distribution in different areas of the country.

(e) Colombia expects gradually to substitute nationally produced foods for those presently obtained from international agencies for utilization in the food supplementation programs. ICBF-N is therefore developing vegetable mixtures of high biological value and studying their possible application in the supplementation program. Three such mixtures appear promising, having passed nutritional and acceptability trials. ICBF-N is now planning a feasibility study to determine whether the mixtures can be produced and utilized in large scale and at reasonable cost.

(f) ICBF-N is interested in developing methods to evaluate the effects of massive intervention programs. A preliminary evaluation of the large-scale supplementary feeding program administered by ICBF-N has been completed. A prospective study is under way to establish whether the results of feeding children in a day-care center is more effective than home supplementation. The relative advantages of whole vs. skimmed milk are being studied in the same sample.

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(g) For the past three years ICBF-N has undertaken a study of the interrelationships between malnutrition, socio-economic deprivation, and cognitive development in children. This has been a collaborative undertaking with Harvard University and more recently the University of Giessen. An interdisciplinary research group which includes nutritionists, pediatricians, obstetricians, psychologists, a sociologist, and a systems engineer has made a major investment in methodology and feasibility assessment.

The overall objectives of the investigation are to identify factors in the environment of the deprived child that depress cognitive development (i. e., malnutrition, lack of psychologic stimulation). The effect (and cost) of different interventions will then be tested: early nutritional supplementation, medical care, and psychological stimulation through family education. The dependent variables in the study are the physical growth and development of the child, as well as his cognitive functioning and learning ability. This work complements the investigations being carried out at Universidad del Valle in Cali. At the Human Ecology Research Station a study is in progress to determine the effects of nutrition and rehabilitation and psychosocial stimulation on the intellectual competence of economically deprived and malnourished children. The results of both research programs are expected to yield important guidelines for the design of effective intervention programs that can be applied by ICBF. The goal of such programs is the protection of the child during the most vulnerable period of growth to preserve health and cognitive competence. The ICBF-Harvard-Giessen project is in the final stage of the pilot phase, and the longitudinal five-year phase is scheduled to start in 1973. The project is financed through 1973 by ICBF (20%), NIH through Harvard University (60%), and German Research Council through University of Giessen (20%). Increasing participation of ICBF during the coming years is thought desirable by the project staff.

(h) Transferring levels are under study as a possible indicator of protein nutritional status.

(i) and (j) Food balance sheets are regularly prepared by ICBF-N. Based on this information, food production goals have been proposed to eliminate deficits over a reasonable time.

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(11) The following research projects are planned during the next three years:

On-going Projects

- (a) Vegetable mixtures
- (b) Maximum nutrition at minimum-cost diet design
- (c) Development of applied nutrition program methodology  
evaluation.
- (d) Development of methodology to evaluate applied nutrition  
programs.
- (e) Transferring as an indicator of nutritional status
- (f) Malnutrition, socio-economic deprivation and cognitive  
development.

New Projects

- (g) Nation-wide survey of nutritional anemias and Vitamin  
A deficiency.
- (h) Feasibility studies of fortification of cereal weaning foods
- (i) Feasibility studies on iron and Vitamin A enrichment of  
common foods (sugar).

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b. Division of Applied Nutrition

This division of ICBF-N runs the PINA (integrated applied nutrition program) in 15 departments and Bogota. Each PINA agency is staffed by the coordinator of the program, a public health physician trained in nutrition, and 3 to 12 nutritionists. The coordinator functions as the executive secretary of a local committee formed by the State Governor, the Secretaries of Agriculture and Education, the head of the Health Service (SSS), the regional director of ICBF, and representatives of other private or government agencies involved in the program. The committee reflects the philosophy of the program, i. e., coordination of all elements concerned with local nutrition program planning and execution. The PINA is financed by the ICBF (in part through grants from UNICEF, FAO-WHO), but also receives state and community contributions thus encouraging local commitment. The PINA organization also promotes agricultural extension projects in the rural area. (Table 66.) The coordinating mechanism of PINA is utilized in the execution of the nation-wide applied nutrition and nutrition education programs described below. The resources allocated to these nutrition programs in 1963 and 1971 are summarized in Table 64.

c. Division of Supplementary Feeding and Food Services

This ICBF-N division was created to plan, administer, and evaluate the PRONENCA (National Program of Nutrition Education and Nutritional Supplementation - WFP).<sup>1/</sup> This division also has the responsibility of coordinating the food supplementation programs of the Vol-Agencies (AID, CARE, CARITAS). The general goals of PRONENCA are to reduce morbidity and mortality among infants, preschoolers, school children, and pregnant and lactating mothers. The operation combines distribution of WFP foods and nutritional education. The present contract with WFP expires in 1974.

Two programs aimed at different target groups operate through the PINA structure: (1) a maternal and child health program at the health centers, nutritional recuperation centers, day-care centers and pediatric

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<sup>1/</sup> World Food Program

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TABLE 66

ASSOCIATIONS OF AGRICULTURAL EXTENSION ORGANIZED BY  
THE APPLIED NUTRITION PROGRAM (PINA) IN COLOMBIA

1963 - 1971

<u>Type of Association</u>	<u>Organized in the</u> <u>period 1963-1971</u>		<u>Currently in</u> <u>operation, 1971</u>	
	<u>No. of</u> <u>Assoc.</u>	<u>No. of</u> <u>Members</u>	<u>No. of</u> <u>Assoc.</u>	<u>No. of</u> <u>Members</u>
Farmer's groups	148	2,326	105	1,591
Housewives' clubs	624	16,734	604	20,989
4 - H clubs				
Agricultural cooperatives	336	7,082	246	4,144
Community development groups	30	1,960	31	2,796
Other rural organizations	58	3,901	51	4,000
Parent's clubs	21	1,563	11	312
School clubs	19	474	14	344
Adult education clubs	36	93	6	93
Others	96	1,884	22	298
	<hr/>	<hr/>	<hr/>	<hr/>
TOTAL	1,388	36,017	1,090	34,567
	=====	=====	=====	=====

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hospitals, and (2) a school feeding program. Table 67 shows the 1971 coverage obtained by both programs. Table 68 shows the proportion of recommended dietary allowances supplied to the beneficiaries. Table 69 shows the magnitude and source of economic resources used in the PINA and PRONENCA programs in 1970-71. Note that the budget was almost doubled between 1970 and 1971.

The research division has evaluated the effect of PRONENCA on a large sample of beneficiaries by comparing observed increments in height and weight with expected increments derived from the Colombian standard tables. Some of the results of this evaluation are presented in Tables 70 and 71. Significant (although actually small) differences in height and weight increments were observed in the malnourished subjects. No significant effect was noted among the initially well-nourished subjects. A beneficial effect of the program is also suggested by the changes in nutritional status summarized in Table 72.

The MCH component of the PRONENCA program lasts only for a period of six months for each group of beneficiaries. Any lasting effects of the intervention depends, therefore, on changes in food habits brought about by the educational component of the program. There is some evidence at hand that the ability of a participating mother to answer questions about nutrition is improved by the program. (Table 73.) No information is yet available regarding enduring effects of the program on the nutritional status of the beneficiaries. Evidence presented below would suggest that a significant number of recipients do not have enough income to purchase an adequate diet even if they could select the most economical combination of foodstuffs. On the other hand, any lasting improvement in food habits would, of course, be worthwhile.

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TABLE 67

NATIONAL PROGRAM OF NUTRITION EDUCATION AND SUPPLEMENTARY  
FEEDING (PRONENCA) COLOMBIA. COVERAGE OF BENEFICIARIES  
IN THE AREAS RECEIVING WFP FOOD AID

Groups	WFP AREAS <sup>1/</sup>		
	Population in the age group <sup>2/</sup>	Beneficiaries No.	%
School children	3,175,905	758,884	23.9
Children under five years of age	1,537,576	294,864	19.1
Mothers	459,959	90,142	19.6
TOTAL	5,173,440	1,143,890	22.1

<sup>1/</sup> States of Antioquia, Bolivar, Caldas, Huila, Tolima, Valle del Cauca, Bogotá, D. E.

<sup>2/</sup> The total estimated population in the WFP areas on July 1st, 1971 based on figures by the National Department of Statistics (DANE), was 10,951,398.

NOTE: The areas receiving bilateral food aid (AID, CARE, CRS/Caritas) have approximately the same population and the same coverage.

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TABLE 68

NATIONAL PROGRAM OF NUTRITION EDUCATION AND SUPPLEMENTARY FEEDING (PRONENCA), COLOMBIA 1971  
PERCENT OF DIETARY RECOMMENDED ALLOWANCES SUPPLIED TO BENEFICIARIES OF THE DIFFERENT SUB-PROGRAMS

<u>Sub-program</u>	<u>Calories</u>	<u>Proteins</u>	<u>Fats</u>	<u>Carbohydrates</u>
<u>Children under five</u>				
<sup>1/</sup> SERN's	46	99	91	22
Health Centers	40	92	67	21
Day Care Centers	46	79	88	24
Hospital Pediatric beds	26	48	26	22
<u>Pregnant and nursing mothers</u>				
Health Centers	25	41	38	14
<u>School Children</u>				
Urban primary schools	17	38	13	16
Rural primary schools	6	18	9	4
Vacation camps	33	61	49	20
School hot lunch	17	31	25	10

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<sup>1/</sup> Nutrition Education and Rehabilitation Services.

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TABLE 69

DISTRIBUTION OF ECONOMIC RESOURCES FOR THE IMPLEMENTATION  
OF PINA AND PRONEN CA ACCORDING TO THE FINANCING SOURCE  
COLOMBIA 1970 AND 1971

Financing Source	1970		1971	
	Col\$	%	Col\$	%
Central Government (ICBF, Min. Educ.)	10,648,748	32	15,571,096	26
State Governments (Municipalities, Secretaries of Health and Education)	11,638,375	35	14,798,391	25
Community participation	7,367,674	22	19,624,314	33
Others	3,554,233	11	10,224,852	16
TOTAL	33,209,030	100	60,218,653	100

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TABLE 70

PRELIMINARY EVALUATION OF THE NATIONAL PROGRAM OF NUTRITIONAL EDUCATION AND SUPPLEMENTARY FEEDING, 1971 <sup>1/</sup>. COMPARISON BETWEEN WEIGHT INCREMENTS OF INITIALLY MALNOURISHED CHILDREN WHO RECEIVED FOOD SUPPLEMENTATION AND THEIR EXPECTED INCREMENTS USING THE COLOMBIAN STANDARDS.

<u>Type Of Service</u>	<u>n</u>	<u>Sum Ranks Observed Increments</u>	<u>Sum Ranks Expected Increments</u>	<u>Z</u>	<u>P</u>
Health Centers	4,195	18,110,395	17,086,751	4.59	.001
Nutritional Rehabilitation Centers	106	13,480	9,098	4.91	.001
Day Care Centers	37	1,723	1,052	3.62	.001
Other Services	117	14,895	12,600	2.22	.02

<sup>1/</sup> Using the Mann Whitney test.

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TABLE 7!

PRELIMINARY EVALUATION OF THE NATIONAL PROGRAM OF NUTRITIONAL EDUCATION AND SUPPLEMENTARY FEEDING, 1971 <sup>1/</sup>. COMPARISON BETWEEN HEIGHT INCREMENTS OF INITIALLY MALNOURISHED CHILDREN WHO RECEIVED FOOD SUPPLEMENTATION AND THEIR EXPECTED INCREMENTS USING THE COLOMBIAN STANDARDS.

Type of Service	n	Sum Ranks Observed Increments	Sum Ranks Expected Increments	Z	P
Health Centers	4,195	16,972,494	18,224,653	5.63	.001
Nutritional Rehabilitation Centers	106	12,381	10,197	2.40	.02
Day Care Centers	37	1,589	1,186	2.10	.03
Other Services	117	11,708	15,787	3.90	.001

1/ Using the Mann Whitney test.

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TABLE 72

PRELIMINARY EVALUATION OF THE NATIONAL PROGRAM OF NUTRITIONAL EDUCATION AND SUPPLEMENTARY FEEDING, 1971

NUTRITIONAL STATUS <sup>1/</sup> OF THE CHILDREN WHO RECEIVED FOOD SUPPLEMENTATION

(Figures represent percentages of each category at the beginning and the end of the program)

<u>Type of Service</u>	<u>M A L N U T R I T I O N</u>									
	<u>NORMAL</u>		<u>MILD</u>		<u>MODERATE</u>		<u>SEVERE</u>		<u>T O T A L</u>	
	<u>% beginning</u>	<u>% end</u>	<u>% beginning</u>	<u>% end</u>	<u>% beginning</u>	<u>% end</u>	<u>% beginning</u>	<u>% end</u>	<u>% beginning</u>	<u>% end</u>
Health Centers	52.1	65.2	17.4	16.1	13.3	9.4	17.2	9.3	47.9	34.8
Nutritional Rehabilitation Centers		29.3	13.2	17.9	28.3	19.8	58.5	33.0	100.0	70.7
Day Care Centers	66.1	86.2	15.6	7.4	11.9	5.5	6.4	0.9	33.9	13.8
Other Services	46.6	64.4	20.1	18.2	12.8	11.9	20.5	5.5	53.4	35.6
<b>TOTAL</b>	<u>51.6</u>	<u>65.0</u>	<u>17.4</u>	<u>16.1</u>	<u>13.5</u>	<u>9.5</u>	<u>17.5</u>	<u>9.4</u>	<u>48.4</u>	<u>35.0</u>

<sup>1/</sup> According to the classification based on the comparison of the current weight value against the expected for the height.

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TABLE 73

PRELIMINARY EVALUATION OF THE NATIONAL PROGRAM OF NUTRITIONAL  
EDUCATION AND SUPPLEMENTARY FEEDING, 1971  
EVALUATION OF NUTRITION EDUCATION ON A SAMPLE OF 10.6% OF THE  
MOTHERS COVERED BY THE HEALTH SERVICES DURING 1970<sup>1/</sup>

	<u>No. of selected mothers</u>	<u>No. of answers</u>	<u>Initial No. of right answers</u>	<u>Evaluation %</u>	<u>Final No. of right answers</u>	<u>Evaluation %</u>	<u>Recent increase achieved by education</u>
Antioquia	1,986	19,860	13,821	70	17,011	86	16
Bogotá	1,616	16,160	9,388	58	12,271	76	18
Bolívar	1,092	10,920	6,123	56	9,000	82	26
Caldas	147	1,393	925	66	1,294	93	27
Huila	212	2,120	1,135	54	1,681	79	25
Tolima	447	4,470	2,642	59	3,649	82	23
Valle	<u>1,116</u>	<u>11,160</u>	<u>5,054</u>	<u>45</u>	<u>9,719</u>	<u>87</u>	<u>42</u>
TOTAL	<u>6,616</u>	<u>66,083</u>	<u>39,088</u>	<u>59</u>	<u>54,625</u>	<u>83</u>	<u>24</u>

<sup>1/</sup> Total number of mothers assisted: 62,414. Sample selected for the study 6,616 mothers (10.6%).

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d. PLANALDE and the Role of USAID, CARE, CRS/CARITAS In The National Nutrition Program

The role of the Vol-Agencies is summarized in the following quotation from an evaluation of PL 480 Title II, Checci & Co., Washington, D. C., July, 1972:

"The National Planning Department, working with the National Institute of Nutrition (ICBF) and other government agencies, developed the National Plan for Food Development (PLANALDE), a strategy for using foreign food assistance in a coordinated manner for both nutritional and other forms of socio-economic development.

"PLANALDE has since become a planning forum for food and nutrition activities, and includes active participation by USAID, WFP, CARE, CRS/CARITAS, and the various government entities concerned with both nutrition and food-for-work programs.

"As a corollary to this expanded GOC strategy and operation backed by WFP, the U. S. Voluntary Agencies were asked to alter their program emphasis and geographical coverage. The PRONENCA/WFP activity was assigned to the six most populous departments and the Capital, containing nearly one-half of the population, while the Vol-Agencies were asked to gradually phase out of this area and into the remaining areas of the country.<sup>1/</sup> CARE was specially affected by this move, and has now ceased all child feeding activities in the PRONENCA/WFP Departments of Antioquia, Bolivar, Caldas, Huila, Tolima, Cauca Valley, and Bogota. The Vol-Agencies were also to become more closely integrated into the Government's technical approach to nutrition education.

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<sup>1/</sup> CRS/CARITAS has remained in feeding in the WFP areas, but has begun to shift to more rural sections of those areas.

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"The role and operating methods of CRS/CARITAS have also changed in the PRONENCA areas. In addition to initiating expansion into more rural areas, CARITAS, in certain departments, has worked closely with PINA in sorting out relative program emphases in M.CH and school feeding, assuming support of health centers and schools which the GOC entities cannot reach, and coordinating other technical aspects of the activities.

"Size and Scope of Title II Project in Colombia

"The PL 480 Title II project is currently importing around 105 million pounds of foodstuffs with a GOC value (exclusive of ocean freight) of nearly US\$12 million. Total recipients are somewhat in excess of 1.5 million Colombians in all categories of feeding, administered through CARE and Catholic Relief Services -- United States Catholic Conference and its counterpart, CARITAS. In addition to the Voluntary Agency effort, the USAID supports a three-year government-to-government feed grain cooperative activity with the Colombian Institute of Agrarian Reform.

"Tables 74, 75, 76 on the following pages present the breakdown of the scope of the program by subproject and by commodities, using data from the approved AERs for the years 1969 and 1972, the current year. While the AER data may not reflect accurately the actual quarterly shipments of food, they are convenient and comparable, and represent the general magnitudes of activity being carried out. The year 1969 was chosen as a base period, representing the last year the Vol-Agencies operated in the major urban centers before the introduction of the PRONENCA/WFP program. During the interim period of adjustment, CARE and CRS/CARITAS have resumed roughly the same levels of feeding in the major sub-projects. The mixture of food items has changed, showing a decrease in the use of non-fat dried milk (NFDM), increased

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TABLE 74

SCOPE OF TITLE II IN COLOMBIA  
NUMBERS OF RECIPIENTS BY SUB-PROJECT

<u>CARE</u>	<u>Approved 1969 AER</u>	<u>Approved 1972 AER</u>
MCH Pre-school	<u>196,000</u>	<u>182,310</u>
Nutrition Centers	-	30,000
MCH Bread and Milk	-	129,180
MCH Health Centers - Day	-	23,130
School Feeding	<u>883,000</u>	<u>548,782</u>
School Restaurants	-	133,282
School Bread and Milk	-	258,000
School Milk	-	167,500
Other Child Feeding (Hospitals, Orphanages, Day-care Centers, etc.)	<u>45,000</u>	<u>11,335</u>
Adult Institutional Feeding	<u>24,000</u>	<u>8,545</u>
Food for Work	<u>30,000</u>	<u>150,000</u>
Workers	-	25,000
Dependents	-	125,000
Total CARE Recipients	<u>1,178,000</u>	<u>910,972</u>
<u>CRS</u>		
MCH Pre-school	55,039	62,118
School Feeding	<u>395,268</u>	<u>395,268</u>
School Restaurants		
Bread and Milk		
Other Child Feeding (Hospitals, Day-Care centers, etc.)	93,196	52,860
Summer Camps	7,790	1,770
Adult Institutions Feeding	32,582	21,423
Food for Work		
Workers	32,302	17,765
Dependents	129,208	71,060
Family Feeding	<u>40,438</u>	-
Total CRS Recipients	<u>785,823</u>	<u>622,264</u>
<b>TITLE II PROJECT TOTAL</b>	<u><u>1,963,823</u></u>	<u><u>1,533,236</u></u>

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TABLE 75

SCOPE OF TITLE II IN COLOMBIA  
AMOUNTS AND VALUE OF COMMODITIES

CARE

	Approved Revised 1969			Approved 1972		
	000 Lbs.	at \$/Lb.	CCC Value US\$ <u>1/</u>	000 Lbs.	at \$/Lb.	CCC Value US\$
Wheat flour	9,455	.042	397,110	11,077	.047	520,619
NFDM	22,689	.230	5,218,470	12,643	.304	3,843,472
Bulgur	5,266	.043	226,438	3,577	.045	160,965
CSM	-	.085	-	7,034	.087	611,958
WSB	-	.085	-	2,061	.083	171,063
Vegetable Oil	4,910	.150	736,500	4,310	.180	743,400
Rolled wheat	7,478	.045	336,510	<u>2/</u>	.047	
Corn meal	3,330	.036	119,880	<u>2/</u>	.051	-
	<u>53,128</u>		<u>7,034,908</u>	<u>40,802</u>		<u>6,051,207</u>

1/ Exclusive of Ocean Freight

2/ Inventory carried over

Source: Checchi and Company: Computed from USAID, Vol. Agency Records

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TABLE 76

SCOPE OF TITLE II IN COLOMBIA  
AMOUNTS AND VALUE OF COMMODITIES

CRS, USAID, TOTALS

	Approved 1969			Approved 1972		
	<u>000 Lbs.</u>	<u>at \$/Lb.</u>	<u>CCC Value US\$</u>	<u>000 Lbs.</u>	<u>at \$/Lb.</u>	<u>CCC Value US\$</u>
Wheat Flour	18,038	.042	757,596	10,912	.047	512,864
NFDM	15,164	.230	3,487,720	8,634	.304	2,624,736
Bulgur	6,161	.043	264,923	3,738	.045	168,210
CSM	-	.085	-	1,323	.087	15,101
WSB	-	.085	-	5,068	.083	420,644
Veg. Oil	6,962	.150	1,044,300	4,483	.180	806,940
Rolled Wheat	6,598	.045	296,910	3,417	.047	160,599
Corn Meal	<u>2,212</u>	.036	<u>79,632</u>	-	-	-
	55,135		5,931,081	37,575		4,789,094
<u>USAID - Feed Grain</u>						
Corn	-			27,558		808,000
<b>TITLE II TOTALS</b>	<u>108,263 lb.</u>		<u>\$12,965,989</u>	<u>105,935 lb.</u>		<u>\$11,568,301</u>

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utilization of blended foods (CSM, WSB), and cutbacks or elimination of rolled wheat and corn meal, respectively.

"We should also take note of the size and scope of the World Food Program, since its utilization by the Colombian Government is basic to the country's overall food and nutrition strategy. The agreement (Project #549) with the GOC covers 1969 to 1974, with a total value of US\$41 million, or about US\$8 million per year. The target recipient figures are 330,000 pre-school children, 526,000 school children, and 85,000 pregnant or lactating mothers per year, or a current annual average of one million recipients. Thus, with the WFP input, coverage of malnourished or nutritionally vulnerable Colombians has been raised by about two-thirds, while the total donated food input has been raised by one-half."

ICBF-N has been given the responsibility of coordinating the Vol-Agencies' activities. The relationship between the agencies and ICBF-N could be fruitful in rendering the operation of all programs more efficient. There exists also the potential for developing effective methodology for program evaluation. This methodology could be applied to MCH programs, PRONENCA, and Vol-Agencies, and to both school feeding programs.

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e. Nutrition Education Division

This section of ICBF-N is in charge of promoting nutrition teaching at all levels within and outside official government channels. The division runs advisory and technical assistance programs for schools of medicine and nursing, and schools of nutrition and dietetics. Short courses and seminars are organized and coordinated by the division for (1) physicians and nurses, (2) middle level personnel (auxiliary nurses, primary school teachers, agricultural extension workers), and (3) community workers (community development leaders, volunteers, etc.).

The nutrition education division also prepares educational material: norms, leaflets, posters, and audio-visual aids, TV, radio and press releases are prepared utilizing all ICBF-N staff. Educational activities are considered a common denominator of all the ICBF-N applied nutrition programs. Teaching activities carried out or coordinated by the division during 1971 are summarized in Tables 77, 78, 79, and 80.

Division leaders feel that their operation must be upgraded in the coming years in the following ways:

- (1) Modifying the curriculum of nutrition and dietetic schools in order to produce personnel better prepared to meet the public health needs of the country.
- (2) Revising also the nutrition training programs for auxiliary nurses (the backbone personnel of the health centers throughout the country) so that they can be more effective in this field.
- (3) Evaluating and revising, as necessary, the nutrition education at teacher colleges and normal schools. The goal is to increase the interest and effectiveness of these important multipliers at the primary school and community level.
- (4) Developing a far more effective mass media and audio-visual program.

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TABLE 77

IN-SERVICE TRAINING ON FOOD AND NUTRITION AT THE PROFESSIONAL LEVEL  
COLOMBIA, 1963 - 1971 <sup>1/</sup>

<u>Professional Staff</u>	<u>No. of Parti- cipants.</u>	<u>No. of groups</u>	<u>Average par- ticipants per group</u>	<u>No. of Hours</u>	<u>Average hours per group</u>
Physicians	2,014	93	21	1,527	16
Agronomists and Veterinarians	253	14	18	354	25
Dentists and Bacteriologists	162	22	7	167	7
Nurses	204	17	12	236	13
Non-medical Nutritionists	20	1	20	36	36
Public Health Instructors	18	4	4	89	22
Home Economists	10	1	10	40	40
Other professional personnel	206	11	18	419	38
<u>TOTAL</u>	<u>2,887</u>	<u>163</u>	<u>17</u>	<u>2,868</u>	<u>17</u>

1/ ICBF-N

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TABLE 78

FORMAL TRAINING ON FOOD AND NUTRITION AT THE PROFESSIONAL LEVEL

COLOMBIA 1963-1971

<u>Professional Schools</u>	<u>No. of Students</u>	<u>No. of Groups</u>	<u>Average Students per Group</u>	<u>No. of Hours</u>	<u>Average Hours per Group</u>
Medicine	1,964	69	28	2,693	39
Dentistry	167	7	24	21	3
Nutrition and Dietetics	492	29	17	3,971	137
Nursing	200	13	15	508	39
Biochemistry	128	5	26	168	33
Physical Educ. <u>1/</u>	71	3	24	64	21
CRECENA	107	4	27	1,180	295
TOTAL	<u>3,129</u> =====	<u>130</u> =====	<u>24</u> =====	<u>8,605</u> =====	<u>66</u> =====

1/ Regional Training Center on Food Economy and Applied Nutrition  
(Colombian National University, Colombian Institute of Family  
Welfare, PAHO/WHO, FAO, UNICEF).

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TABLE 79FORMAL TRAINING ON FOOD AND NUTRITION TO THE MIDDLE LEVEL PERSONNEL  
COLOMBIA, 1963 - 1971<sup>1/</sup>

Teaching Institutions	No. of Students	No. of groups	Average Students per group	No. of hours	Average hours per group
Normal Schools for teachers	4,470	128	34	2,607	20
Auxiliary Nurses Schools	2,449	99	24	3,529	35
Auxiliary Social Workers Schools	225	12	18	306	25
Vocational Agriculture Schools	364	11	29	693	63
Rural Home Economics Schools	119	4	33	118	29
SENA <sup>2/</sup>	540	28	19	499	17
High Schools	9,728	324	30	3,480	10
Others	617	24	25	427	17
<b>TOTAL</b>	<b>18,512</b>	<b>630</b>	<b>29</b>	<b>11,659</b>	<b>18</b>

<sup>1/</sup> ICBF-N<sup>2/</sup> National Service for Vocational Training

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TABLE 80IN-SERVICE TRAINING ON FOOD AND NUTRITION TO THE MIDDLE LEVEL PERSONNEL  
COLOMBIA 1963 - 1971 1/

<u>Type of Personnel</u>	<u>No. of students</u>	<u>No. of groups</u>	<u>Average students per group</u>	<u>No. of hours</u>	<u>Average hours per group</u>
Supervisors and school teachers	19,369	566	34	12,709	22
Sanitary Inspectors	1,641	79	20	1,463	18
Auxiliary Nurses	3,820	247	15	7,345	29
Community Development Leaders	239	14	17	478	34
Auxiliary Nutritionists	30	4	7	86	21
Agricultural Extension Agents	190	23	8	805	35
Cooperative Officers	240	1	240	24	24
Agricultural Officers	193	5	38	84	16
Rural Home Economics & Social Workers	403	46	8	1,214	26
Peace Corps Volunteers & Dutch Volunteers	202	15	13	376	25
Others	929	44	21	770	17
<b>TOTAL</b>	<b>27,256</b>	<b>1,044</b>	<b>26</b>	<b>25,354</b>	<b>24</b>

1/ ICBF-N

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It is necessary to increase mass media communication efforts to reach a larger proportion of the population. The division also considers it important to produce a much larger volume of audio-visual and printed material for distribution to branch offices throughout the country. Modern equipment is necessary for this purpose.

The need is also felt for added personnel to augment the quality and quantity of nutrition teaching at different levels. Two hundred and fifty nutritionists with special training in didactic techniques are required.

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f. National Food and Nutrition Policy Committee

The Comité Nacional de Nutrición (Fig. 31) was appointed by the President (late in 1971) and charged with coordinating food and nutrition policy for Colombia. Representatives from the Ministry of Health, National Planning Department, the Agricultural Marketing Institute, the Colombian Agricultural and Livestock Institute, and the Institute for Family Welfare are members of this body.

The Committee intends to present a position paper defining short, medium and long-range goals in February, 1973, at the FAO-UNESCO meeting in Lima. This material is not yet available.

To date the Committee, in collaboration with the National Planning Department, has taken the following steps to increase available information relevant to policy planning:

(1) The ITT<sup>1/</sup> has published a study entitled "Methodology for a Multidisciplinary Analysis of Malnutrition." Utilizing linear programming techniques, the cost and composition of a hypothetical diet were determined. Adequate provision of nutrients (according to Colombia RDA) and minimum cost were specified. The figures obtained were then compared with family income in five urban areas. The results showed that 41% of that population did not earn enough to buy the minimum-cost diet. This study will be extended as follows: Minimum cost adequate diets will be recalculated specifying limits set by maximum realistic consumption of single items and well established food habits (ICBF-N) as well as by regional differences in food production. Utilizing the same techniques similar information will be sought in the rural area where the issue is rendered more complex by subsistence farming and differences in the food market.

(2) DANE<sup>2/</sup> is in the process of publishing the results of a survey of family expenditures in urban areas and is preparing a rural survey. This

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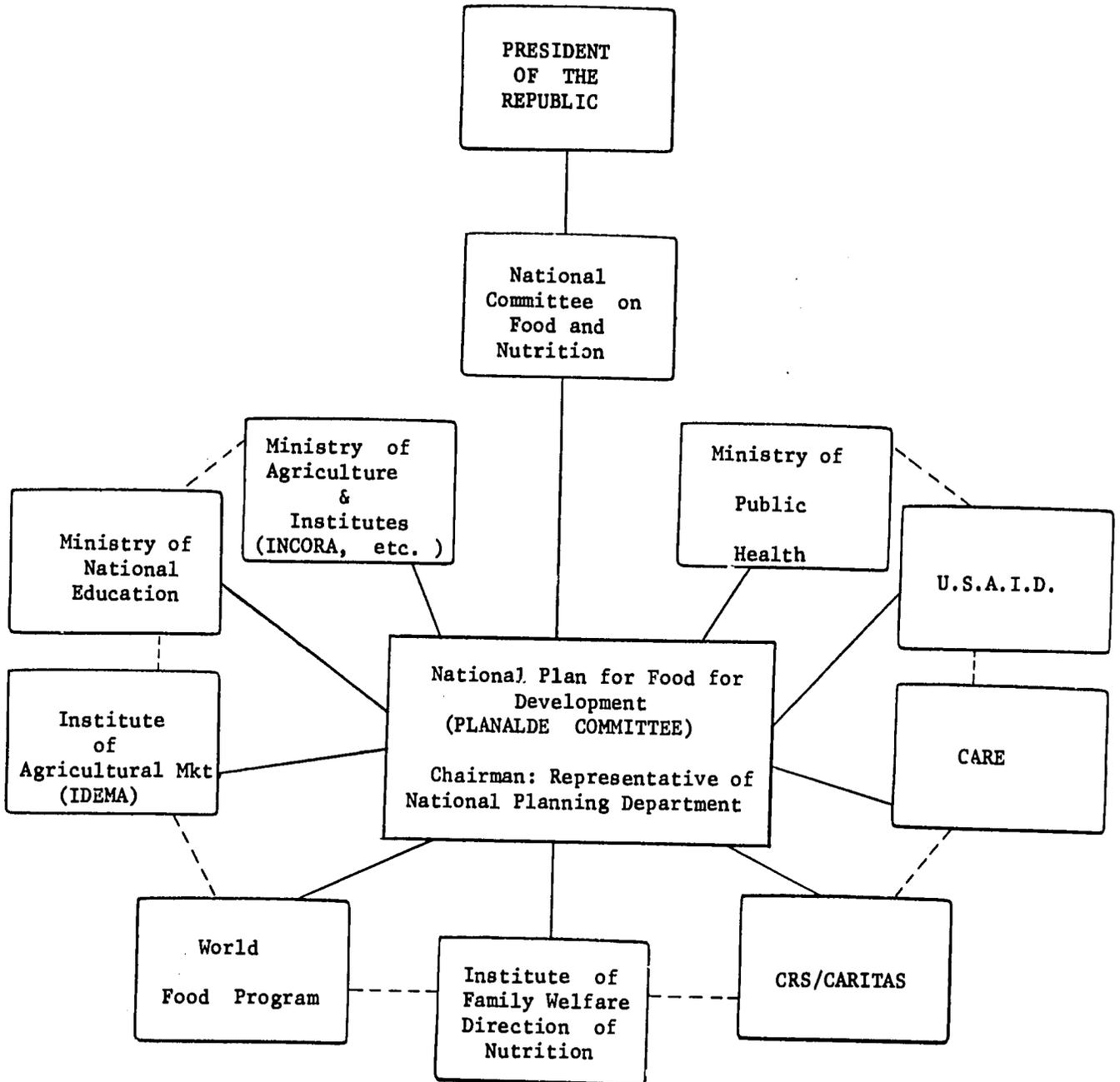
1/ Institute for Technological Research

2/ The National Statistical Agency

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information will shed further light on purchasing power as a limiting factor in nutrition.

(3) ICBF-Nutrition is analyzing the results of a national food habits survey. This study will yield further information on nutritional deficiency in the population according to income and geographic location (urban vs. rural).

(4) An attempt is being made to determine whether agricultural production could meet the nutritional requirements of the Colombian population assuming a minimum-cost diet. The agricultural sector analysis model (OPSA)<sup>1/</sup> will be used in connection with the IIT data on minimum-cost diets. AID consultant help has been sought for this project and results are expected in February, 1973. The analysis will also yield alternatives in food production patterns which could satisfy national nutritional requirements taking into consideration certain intervening variables (e. g. marketing). Further prospective analysis will be possible utilizing different hypothetical growth rates considered in the GOC Development Plan.

(5) During 1973 a study requested from DANE by the Ministry of Agriculture will yield information on food production and costs in a national sample of 20,000 small farms. This will permit refinement of the analysis relating agricultural production to basic diet and food consumption patterns in both rural and urban areas.

It is expected that these investigations will provide a solid base for policy planning. The information pertaining to the minimum-cost diets are expected to be useful in setting goals for altering food consumption patterns, i. e., through mass educational programs. The combined IIT/OPSA information will suggest alternatives in agricultural production capable of meeting nutritional requirements at minimum cost. Data on income levels and malnutrition will help guide policy regarding income distribution and employment.

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<sup>1/</sup> Ministry of Agriculture Planning Office

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### 3. Conclusions and Comments

Moderate to severe malnutrition is an important facet of poverty and deprivation prevalent in at least half of the Colombian population. Malnutrition in Colombia is both a consequence and a cause of poverty. Forty percent of urban Colombians do not earn enough to buy even a hypothetical minimum-cost diet. The root of the problem (but not the whole problem) is therefore insufficient income -- itself a function of economic underdevelopment -- low productivity per capita, rapid population growth, and inequality of income distribution. The only tenable long-range solution lies in the mobilization of human, natural, and capital resources to alter these parameters. This basic solution depends on the success of the GOC to accelerate economic development and employment creation and bring about meaningful social reform. In the best of circumstances this process would take one or two generations. Therefore, the GOC must face the interim economic, social, and human problem of serious malnourishment in 50% of the nation's children. Evidence in Colombia and elsewhere leaves no doubt that funds and efforts to prevent malnutrition and alleviate deprivation in the young does not represent simply an expenditure to palliate human suffering (such as custodial care of the insane or severely retarded). Funds and effort allocated to protect the physical and intellectual potential of the new generations must be considered a retrievable investment in the preservation of human capital essential for the future process of development. The need for this two-phase approach must be understood by the average Colombian nutritionist, economist, and public health physician. It seems, therefore, that teaching basic development economics to students of public health and nutrition, and teaching the principles of nutrition, human development, and education to students of economics would be highly beneficial.

Economic planning and resource allocation between the two alternate pathways (long-range development goals vs. short and medium-range goals for nutrition and social rehabilitation) will continue to be the responsibility of the National Planning Department. Pooling of technical resources, multidisciplinary thinking, and effective communication between institutions concerned with the solution of the nutrition problem is necessary to avoid destructive

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competition and duplication of efforts and to maximize yield. Hopefully, the recently appointed National Committee on Nutrition will exercise the necessary flexible and imaginative leadership to encourage collaboration such as the joint IIT/ICBF-N project to design minimum-cost diets, taking into consideration regional food habits and the IIT/OPSA/AID study of the interrelationships between agricultural potential, national requirements, and diet costs. More could be done to integrate efforts in the health, education, and nutrition sectors by appointing inter-institutional, multidisciplinary, task-oriented groups of experts to investigate such important issues as large-scale fortification of foods, improvements in the marketing and storage systems, expansion of subsidized food markets, and the operation of an integrated MCH nutrition and social service system.

It is evident from the information presented in this section of the analysis that malnutrition and family welfare have received increasing GOC attention during the past three years. This mounting concern is reflected in the founding of ICBF three years ago and in the appointment of the National Committee for Nutrition Planning in 1971, as well as in the increased appropriations. These important organizational changes are expected to unify and renovate Colombian nutrition policy. The following even more recent developments preclude obtaining, at this particular point in time, definite information regarding the nature and extent of the changes contemplated. The formulation of concrete operational projections for the next five years cannot be expected before approximately mid-1973.

The year-old National Committee on Food and Nutrition is still in the process of accumulating information considered necessary to fulfill its mission. However, a preliminary position paper is expected to become available in January, 1973. As of this writing, the National Planning Department has just issued a 134-page document entitled, "Bases for a Food and Nutrition Policy in Colombia," the purpose of which is to "provide the basis for discussions" in the National Committee. While the policy recommendations of this document have not yet been adopted, we consider that they will weigh heavily in the final policy determinations; accordingly, we include the summary and conclusions of this important paper in Part III, "New Health Policy and Strategy," with the caveat that it represents a first approximation (though a serious and authoritative one) to definitive policy.

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The PINA/PRONENCA applied nutrition programs run by ICBF-N are at present undergoing close scrutiny by a joint ICBF-DNP group. Operational aspects as well as potential benefits are being re-evaluated. Decisions regarding the scope, future, and operational characteristics of the WFP-based programs are expected in the first quarter of 1973.

- The very recent appointment of a new director of ICBF-N implies a period of reorganization during which specific policy planning must be deferred.

- A new general director of ICBF is expected to take charge of the Institute in January, 1973. This change again implies a temporary slow down of the decision-making process; although program continuity is assured by strong interim leadership and a technical infrastructure assembled during the past three years.

It seems clear that nutrition policy planning responsibility is generally divided into (a) the activities of the DNP relating to economic planning aimed at accelerating economic development and bringing about income redistribution, the only logical solution of the nutrition problem, (b) the activities of the National Committee on Nutrition, which in close collaboration with ICBF and DNP should provide the necessary policy guidelines in the agricultural and applied nutrition and welfare field. ICBF and specifically ICBF-N and ICBF-PS are the technical organizations in charge of researching, designing, implementing, and evaluating action programs.

ICBF has decided to integrate the nutrition and welfare sectors for the purpose of research planning and policy implementation. This decision is in keeping with the results of current research in Bogota (ICBF-N) Malnutrition and Mental Development Project, Guatemala (INCAP Desarrollo Humano), and elsewhere. These investigations have shown that malnutrition is one of a cluster of interrelated environmental variables that may cripple permanently the emotional and intellectual development of the individual. Dr. Sinisterra et al have evidence to suggest that this self-perpetuating cycle of poverty and incompetence (at least in a technological society) can be prevented by appropriate intervention.

Dr. Leonardo Sinisterra, professor of Nutrition at Universidad del Valle, and Head of the Human Ecology Section, is the new director of ICBF-N. His appointment testifies to the importance given by ICBF leadership to integrating the basic components of family welfare: nutrition, social well-being, and security.

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Research currently being planned at ICBF-N aims to identify those variables that can be altered together with nutrition in order to maximize benefits (physical and intellectual competence, school performance) at minimum cost. Previous methodological work has yielded psychometric instruments adapted to Colombia that can be used to quantify one of the dependent variables, i. e., cognitive development.

Regarding the time of intervention, dramatic improvement in cognitive functioning has been found in children fed, and also exposed to, a stimulating physical human environment in a day-care center situation. On the other hand, there is evidence in the literature relating maternal nutrition to birth weight, and birth weight to subsequent health and cognitive development. Data should be obtained in Colombia on the effects of supplementation and environmental enrichment from before birth to the age of three.

Nutritional and environmental rehabilitation are inseparable from maternal and child health care. It follows that ICBF programs will need to be closely coordinated with the M.OH-M.CH program. Delivery of care could perhaps be carried out by integrated teams utilizing a final common pathway: the promotora de salud or health extension worker.

Considerable experience has been gained in health care delivery systems at the Universidad del Valle. Based on the experiences of Candelaria, a pilot program involving coordination at the field level of ICBF (MOH, SSS Antioquia) and University of Antioquia, is underway in Apartado, Antioquia. The program includes pre-natal care, post-natal care, and family planning, as well as nutrition, social and legal protection of the mother and her children. The program is based on the utilization of locally trained para-medical personnel.

Present and future needs that appear of special importance are:

a. Future manpower needs, particularly in top-level technical personnel are evident. It would seem very important to locate first-class candidates for advanced study in several fields and arrange for their training

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at appropriate locations overseas. A contract should bind the candidate to return and work at ICBF for a specified length of time.

Some fields that may be represented:

- Systems engineering.
- Economics - planning.
- Sociology - quantitative techniques.
- Nutrition - food technology.
- Educational psychology (pre-school).
- Social services program design and evaluation.
- Nutrition and economics.
- Audio-visual and communications techniques.

(Unlike other GOC institutes, ICBF has few personnel in training outside of Colombia.)

Full advantage should be taken of personnel available at ICBF in connection with present on-going collaborative programs for on-the-job training of Colombian personnel.

b. Strengthening program planning or evaluation capabilities will require addition of a systems engineer and a computer programmer to the research division staff. Program planning should be undertaken by multi-disciplinary teams, including members of the group in charge of evaluation and on-going quality control.

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c. It appears very important to support the research currently under way at IIT in collaboration with ICBF-N. Support of the investigation on malnutrition, socio-economic deprivation, and cognitive development appears also of high priority. The information obtained will be highly relevant to policy planning. Moreover, the multidisciplinary team involved could serve as consultants to other applied research activities and program planning. The membership of this team should become progressively Colombian. At the termination of the present project, this cadre of Colombian scientists would have much to contribute to the national efforts to improve the nutritional status and well being of the population.

d. Development of a joint ICBF and MOH/MCH program seems basic to the design of effective intervention programs.

e. Development of a modern mass communication and audio-visual service is necessary for improving training of personnel and extramural teaching programs. A central facility could serve all three divisions of ICBF.

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PART THREE - COLOMBIA'S NEW HEALTH POLICY AND STRATEGY

CHAPTER I - POLICY

In 1971, the Colombian National Council for Economic and Social Policy, chaired by President Pastrana, adopted a new public health policy. The official policy document sets forth a number of postulates which are to orient the formulation of health strategy and programs. An examination of some of these postulates is useful to understand how the Colombian Government conceives of health in terms of overall national priorities and development goals, and the principles which should govern the creation and use of health resources. To avoid subjective interpretations of the Government's perceptions and intentions, the following excerpts from the policy statement are literal translations, except for a few paraphrases to add clarity.

- (a) "Health is an end in itself, an indispensable component of well-being, and an important means of achieving the economic development of the country. The development process, in turn, seeks as a goal individual and collective well-being, and consequently must be capable of increasing the level of health."
  
- (b) "It is obvious that, in terms of economic development, the preservation and promotion of health will yield greater productivity of manpower, increased time available for work, and a larger capacity for production and consumption (all of which) justify the importance of health expenditures as an investment in the human factor. . . . this does not mean, however, that the function of providing health consists merely in reincorporating individuals into the labor market, raising productivity, etc. Economic development must be at the service of health, as an essential component of human welfare."

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- (c) "Within the new policy framework, health is a necessity of the population, one of the indispensable goals of man (and) a right which extends to each person, above any institutional or financial limitation."
- (d) "In the case of Colombia, the promotion of health is fundamentally related to the welfare of mothers and children, since they constitute a high percentage of the population and form the most vulnerable group. e. g. (they are) more susceptible to the conditions of economic and social underdevelopment of the country."
- (e) "The attitude of the community is a determining factor in health policy, and the latter must be oriented so as to eliminate both marginal and traditional beliefs as well as the mere consumption of drugs and bio-medical products, stimulated by mass communication media and advertising."
- (f) "Health technology unquestionably is also a determining factor in (the design of) health services. . . . The decision on the mode of technology . . . affects the costs of services, defines the demands for qualified personnel and thus determines the necessities in material, human, and financial resources. Consequently, the problem of financial resources is strictly related to the policies governing choice of technology, since to the extent that resources allocated to the sector are better utilized, there will be higher yield from investments and, therefore, a decrease in the social and financial costs to the State in the provision of health services. . . . (What is essential is) a technology appropriate to the circumstances of this country (in order to) prevent a generalized transfer of technology which might distort the policies and priorities of the sector, increase costs, and consequently limit access of a large part of the population to health services."

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- (g) "It has become imperative to recognize that the old concept of the self-sufficient physician has been superseded by (that of) the health team composed of a variety of professionals and health workers. . . . The enormous increase in scientific knowledge, and the great volume of population which must be attended with health services make it necessary to diversify and complement the work of the physician with a multiple purpose team. . . ."
- (h) "Demographic trends (i. e., high growth) and health conditions are highly interdependent. Moreover, both population growth and health conditions significantly affect, and are affected by, general economic and social development. Decreases in the rhythm of population growth and improvements in health are directly dependent upon changes in the economic and social structure (such as) better distribution of capital and income, and a substantial qualitative and quantitative improvement in education."
- (i) "The high fertility rate per se represents a factor in the demand for maternal/child health services and contributes to the youthful structure and growth of the population, which in turn have various repercussions on health. It implies that the necessities for maternal/child health attention are already urgent, while at the same time demand rises faster than the present capacity of the country to provide such services. Given the fact that high fertility rates are associated with low incomes. . . the Development Plan gives special emphasis to the allocation of resources to such (maternal/child) programs."
- (j) "Health planning must carefully consider demographic reality. The current rate of population growth and other demographic characteristics cause an excess of demand for health services, and require of the Government a significant

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budgetary, creative, and organization effort. Unquestionably, this also necessitates parallel actions which tend to modify demographic trends in the fields of fertility and migration. The current Development Plan includes an integral policy in this respect, part of which will be implemented through actions in the maternal/child health service, such as objective and adequate information on family planning, and raising the education level of families and married couples. . . . It is intended to provide information and services to enable couples to make a conscious decision on paternity. . . . Maternal/child care programs must contemplate the full implementation of the population policy, within which family planning is indicated as a human right."

- (k) "Although rural migration to the cities is a major phenomenon, it must be recalled, nevertheless, that a considerable portion of the population remains in the rural areas. These zones present different conditions of life and health and, consequently, raise problems of medical planning and care with distinct characteristics. Cultural conditions, beliefs, values, and attitudes toward health, sickness, and medical practice tend to be different from those prevailing in the cities. The dispersed character of rural life makes medical care more costly and difficult, and requires the design of systems unlike those conventionally proposed for the city. The organization of health care must be different to deal with such diverse realities, seeking its extension and improvement through basic sanitation, regionalization of services, simplification of techniques, integration of the community and the health team, and training of auxiliary personnel."

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- (l) "Among the determining factors in the health situation, basic sanitation is the most important for its implications."
- (m) "The Government's actions (are based on) a philosophy of health protection and eradication of communicable diseases. In accordance with these principles, services are oriented toward control of the elements of urban environment (water, garbage, and excreta), toward vaccination campaigns, and the isolation of certain groups whose presence is considered dangerous for the population."
- (n) "The goal in the health sector should be to promote the organization of a service which permits medical care that is integral, efficient, opportune, equalitarian, continuous, and sufficient, and which includes adequate coordination in the management of those extra-sectoral activities that affect health conditions."
- (o) "The regionalization of health services constitutes the indispensable instrument for broadening coverage in the provision of services. Regionalization enables professional personnel to delegate responsibilities and functions to auxiliary and technical health workers, under adequate supervision, which, in turn, facilitates better utilization of human resources, thus widening coverage without deterioration in the quality of medical care. Moreover, regionalization permits the harmonious development of services, both in rural areas and in intermediate urban centers; in this way the services of the latter are converted into true elements of support to programs of rural health care, facilitating the creation of a mechanism of patient referral between the two areas. In addition, services in rural areas would be strengthened by the

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ability to utilize technical resources located in larger population concentrations, and whose isolated installation would not be possible nor viable in rural areas."

- (p) "For the process of delegation of functions to auxiliary personnel to be successful within the system of regionalization of health services, it becomes necessary that the academic health sciences institutions design mechanisms of action oriented toward instilling a commitment in the present faculty members to assure that medical students emerge with positive mentality and attitude toward the process of delegation and, therefore, bring about adequate utilization of auxiliary personnel and the formation of effective working teams."
- (q) "Priority (must be given) to the strengthening of applied bio-social and operational research in order to maintain up-to-date knowledge of the health situation of the country, create real bases for the analysis of actual systems, and stimulate the design of new mechanisms for the delivery of services. This statement of policy is complementary to the foregoing, but it is important to reaffirm it separately because the remainder of this century will be a period of changes in the financing and organization of health services, whose basic point of support will be the research that is accomplished."

Most of the above-quoted postulates are necessarily at a rather high level of generality. Taken together, however, they form a new and distinct concept of public health which, if adhered to in practice, would (a) significantly elevate health on the scale of national priorities, and (b) substantially reorder the use of health resources from the traditional patterns.

This being the case, the important task of analysis in the first instance is to assess the soundness and realism of the postulates. The second task is to judge whether policy, strategy, and programs in fact are congruous with

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the guiding principles. The third is to estimate the degree to which authority, determination, and resources are likely to be available, and used, to execute the policy. The fourth is to attempt a prediction, within the severe limitations of data and empirical experience, of the probable effects of policy implementation.

Regarding the first question, the USAID Mission considers that the hypotheses presented above are generally sound and attuned to Colombian needs. In perceiving health as "an end in itself," a fundamental goal, as well as a means of development, the Colombian Government has formalized in policy the view of major theorists (and AID) that economic resources should be used to more directly attack problems related to the well-being of the common people of developing countries, to give "increased attention to the broader distribution of the benefits of development." Of course, one may question the realism of the assertion that health is a "right which extends to each person, above any institutional or financial limitation." As a declaration of principle, and a long-term ideal, this aspiration is immaculate, but the present analysis clearly shows that Colombia's institutional and financial resources are not adequate to achieve such a goal in the near future. But Colombian health planners fully recognize this fact, as is evident in other statements cited above which advocate:

- (a) A "choice of technology appropriate to Colombian conditions" so as to minimize costs;
- (b) Priority for low-cost, high pay-off preventive and disease eradication services;
- (c) Increased community participation and financial burden sharing in basic sanitation and other services;
- (d) Substantially increased reliance on auxiliary and technical personnel;
- (e) Operational research and systems analysis to innovate delivery systems with higher cost-effectiveness.

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Thus, it appears that Colombian authorities fully appreciate the reality that unit costs of health delivery must be significantly reduced in order to initiate the process of broadening access to health services for a rapidly growing population.

This appreciation is further illustrated in the Government's candid indictment of the traditional structure, i. e., "The country has had an uncoordinated health system, with a fragmentation of resources, an atomization of activities, a lack of unity in general planning and formation of human resources, and consequently a narrow coverage of the population."

Certain other of the Government's basic principles deserve comment. For example, the assertions that fertility reduction is essential, and that family planning is a "human right" are notably pertinent to the Colombian situation and admirably bold in their explicitness. Closely related to the demographic problem, and equally valid as a guide to policy, is the assignment of high priority to maternal/child services. The bases for this choice are abundantly clear: (a) morbidity and mortality have their highest incidence in this category of the population; (b) public maternal/child services are utilized by the lower-income strata and "high fertility rates are associated with low incomes;" and (c) family planning is an integral part of maternal/child services.

Item (p) above, on the role of medical faculties in reforming the public health system is also perspicacious. Obviously, no program such as that upon which Colombia is embarking could succeed without the aggressive participation of the medical schools and, in fact, Colombia already possesses a small but influential advance guard of medical faculties which are propagating new philosophies of "community medicine" and "integrated regional systems." The concept of the medical school as social innovator, as opposed to conventional doctor factory, has taken root in some of the more progressive faculties in Colombia. For example, progress toward an "outreaching" regional health service in the Cali area is being spurred not by edicts from above, but by a growing commitment of the local profession (especially recent generations of graduates) to the ideas which the University of Valle Medical School has been promoting for several years. It is essential to the Government's health program that all medical faculties be inculcated with this kind of mission, and, as noted elsewhere in this analysis, the policy seeks to achieve this.

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In sum, therefore, the set of propositions from which the Colombian Government derives its new health approach is rational. It encompasses principles which public health experts have advocated for some time, but which have rarely been brought together and incorporated in a comprehensive and formally adopted national policy.

This brings us to the policy itself and the question of whether it is consonant with the postulates set forth to guide it. The basic policy is:

"To broaden the present scope of coverage, achieving by phases, coverage of the totality of the population. The programming and expansion of services will then be sustained by quantification and analysis of demand and the establishment of defined objectives with appropriate priorities to satisfy them. Among current priorities, according to the study of the health situation of the country, it is obviously necessary to expand maternal/child health services in the rural area without deterioration of the programs which are developing in urban zones."

This policy clearly is consistent with the underlying principles, especially that which characterizes health as a "right which extends to each person." Indeed, having asserted that "right," the Government could not logically have chosen any policy other than the extension of coverage to "the totality of the population." However, the policy statement, taken at face value, begs two obvious questions:

(a) Within what time frame would (and could) Colombia achieve the goal? and

(b) What is the definition of "coverage?"

In fact, the Government has not attempted to predict a time by which the totality of the population would have access to essential health services. Is it desirable and reasonable to set a date for such an objective? We believe it would be desirable, if reasonable, but the latter it is not. A policy is an

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"adopted course;" not a schedule of events. Moreover, given the presently large deficit in health resources, and competing demands on total resources, the goal unquestionably is many years in the future. In the interim, governments, demographic trends and spatial patterns, educational and income levels, health technology and organization, and many other variables will all change. These changes will affect the rate at which health services can be expanded, the kind of services needed and available, and the society's ability to provide them. It is thus an arbitrary, if not futile, exercise to speculate about this question, and the Colombian Government correctly has chosen not to engage in it.

However, a working definition of "extension of coverage," and a set of plausible targets for progressive extension, are essential to planning, execution, and evaluation of the health strategy. In part, the Government has provided these, and they form links between the basic postulates, the policy itself, and the program derived therefrom. The targets for the various components of the program in fact define "coverage" and serve as benchmarks for measuring progress toward the policy goal.

It must be emphasized here that the Government developed these targets in a relatively short time. They are neither definitive nor comprehensive. They are controversial and, of course, subject to periodic revision. Nonetheless, they constitute the best available means of judging whether and to what extent the program serves the policy.

The first phase of the new health program is scheduled for the period 1973-75. Since this phase includes much preparatory work (training, establishment of new systems, construction, equipment, etc.), it would not be realistic to expect spectacular advances in extension of coverage during this period. Therefore, the Government has projected relatively modest, though significant, gains in physical achievements. It has not attempted to set targets beyond 1975 because the first phase necessarily will involve considerable experimentation with the new systems (and alternatives) of health care delivery, and measurement of their efficiency. The results of such measurement will enable the health planners to project coverage objectives on the basis of empirical evidence of the actual production of the new systems.

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Specific targets for the different elements of the program are provided (when available) in the following section on the National Health Plan. Accordingly, we will not discuss the details here. Rather it is appropriate at this point to review the methods and criteria which the Government intends to employ in assessing progress toward its goals and the productivity of the new systems. This is perhaps more important than the targets themselves because targets, especially for programs in an early phase of evolution, usually contain a large element of conjecture.

The Government will evaluate performance in the health sector by using two kinds of indicators which it calls "proximate" and "remote." Proximate indicators serve to measure directly the gains made in each component of the health plan, while remote indicators register the improvements attributable to the aggregate of all health programs as well as general amelioration of the quality of life.

Proximate indicators will include the following:

- (a) Increase in "first time" out-patient consultations;
- (b) Growth in total consultations;
- (c) Percentage of patients referred (upward or downward) for consultation or hospitalization;
- (d) Hospital beds, availability and utilization;
- (e) Number of attended childbirths;
- (f) Visits and other advisory and supervisory activities carried out;
- (g) Number of dental consultations;
- (h) Average length of stay in hospitals;
- (i) Number of discharges from hospitals;
- (j) Number of doctors, dentists, nurses, auxiliaries, etc.;
- (k) Hourly productivity of health personnel.

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These kinds of proximate indicators will be disaggregated by levels of regionalization and as between rural and urban locations.

Remote indicators would include:

- (a) The crude mortality rate;
- (b) Infant mortality rate;
- (c) Proportional mortality;
- (d) Age specific fertility rate;
- (e) Investment in health at all levels in the system;
- (f) Operating expenditure in health at all levels;
- (g) Principal causes of mortality and morbidity;
- (h) Life expectancy;
- (i) Adequacy of nutrition;
- (j) Physicians, nurses, and other health personnel per 10,000 inhabitants.

To improve its capability for obtaining such indicators and evaluating progress, the Government has instituted a project entitled "Creation of a National and Regional System of Basic Information," described in the following section.

In addition, the National Planning Department has expressed interest in a complex optimizing model for long-term sector analysis, the preliminary outline of which has been presented to the Government by officials of ARA (LA/DR). Preparation of such a model will depend on the availability of substantial funds and personnel. A summary of the proposed methodology is included as Annex B .

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In sum, the new health policy, in our view, is consonant with the Government's precepts on the role of public health in development. As will be seen, the program formulated to implement that policy is designed to move the nation part of the way toward the policy objective in its first phase, and improved systems of measuring achievement and productivity will be used for management and continuous refinement of planning.

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CHAPTER II - THE NATIONAL HEALTH PLAN

In a document entitled "Strategy and Mechanisms for the Implementation of Health Policies," the Colombian Government sets forth its plan of action to attack the problems and exploit the potentials identified in its analysis of the health situation.

A. Program Emphases

1. Broadened Coverage

Provision of health services to an increasingly large proportion of the population will be achieved through priority attention to maternal/child care, and the creation of a regionalized and integrated health delivery system.

Regionalization will improve the efficiency of the delivery system by delegation of functions to para-medical personnel, rationalization of the location, use and staffing of facilities, and unification of planning and management of all public health services, both curative and preventive.

2. Human Resources Training

The quantity and quality of health personnel and their efficiency will be enhanced through an expanded training program, including revised curricula, better incentives, and increased institutional training capacity.

3. Research

Emphasis will be placed on operational and applied bio-social research for the express purpose of assisting health planners to develop and deploy mechanisms which effectively broaden the impact of the health system.

4. Construction

In support of the regionalized delivery system, hospitals and health posts will be constructed (or completed) in accordance with rational criteria for location, size, and type of facilities, and through a strengthened single institution for channelling funds to execute the National Hospital Plan.

5. Intersectoral Coordination

Effective mechanisms of intersectoral coordination will be devised to achieve cohesive planning and programs, especially nutrition, maternal/child care, health education, urban development, and rural sanitation.

B. Program Purposes

The Plan sets forth eight categories of purposes to which the program is addressed: (1) health promotion, (2) health protection; (3) health recuperation; (4) development and training of health personnel; (5) research; (6) procurement, production, and distribution of equipment and material; (7) improvement of systems of planning, administration, and information; and (8) betterment of the quality of the rural environment.

Following is a summary of the plan of action and stated goals in these eight program areas:

1. Health "Promotion" (Fomento)

This area includes actions to improve the general health and welfare of groups of the population considered most vulnerable to disease and mental and social problems. Some of the targets sought in this area are:

a. Provision of the complete spectrum of maternal/child care services to an additional 50 municipalities in 1973, and an additional 57 municipalities in 1974, bringing complete coverage to 342 municipalities of 915 in the country.

b. An increase in the number of pregnant women who will be assisted by the M.C.C. program of 25,000 additional cases in each 1973 and 1974.

c. Annual growth of approximately 20% of the number of children who receive well-baby care and medical consultations under the M.C.C. program.

d. An increase of 7,000 in the number of promotoras trained in the M.C.C. program by 1974.

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e. Social assistance and treatment of minors for approximately 430,000 persons in each 1973.

f. Nutritional supplementation for 170,000 mothers, 510,000 pre-school children, and 1,730,000 school children annually by 1974.

g. Nutritional education for approximately 1,600,000 persons annually by 1974.

h. Repair or remodelling of 25 geriatric facilities in 1973, and 52 geriatric facilities in 1974.

The various components of the "Health Promotion" program are as follows:

a. Maternal/Child Care

This element will provide for continuing and expanding the maternal/child care program described in detail in Chapter VI

Maternal/child care has received a strong impetus from PAHO support and technical assistance within a special pilot program (also summarized in Chapter VI). However, this effort is becoming increasingly integrated into the total program of the sectional health services and the regional planning and implementation districts. The current plan calls for significant increases in GOC funding, several times that of the PAHO input, but the program will maintain many of the sound characteristics that were introduced and tested under the special PAHO program. We find noteworthy the emphasis on an integrated approach to maternal/child care, including pre-natal, obstetric, and post-partum attention, well-child clinics, attention to maternal and child sicknesses, family planning services, nutrition and general hygiene education, and food supplementation programs. This program stresses the use of auxiliary personnel, particularly auxiliary nurses and promotoras. Their importance and status in the program is expected to be an incentive for them to improve their training and performance. The MCC effort will be planned

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and carried out under the direction of the maternal/child section of the Ministry, and the medical attention (maternal/child) group of the sectional health services. It will be implemented generally through out-patient clinics of hospitals and health posts throughout the country. To achieve the fullest integration of the nutrition education and supplementary feeding programs, close coordination with the nutrition program of ICBF will be required.

The GOC plan presents the MCC program as follows:

(1) Justification

- Coverage of public health services for mother and child groups does not exceed 30% for the whole country. (Inevitably, coverage is greater in large cities and among groups benefitted by special programs like social security (ICSS). )

- Demand for such services is large and growing.

- Personnel capable of providing efficient MCC services are or will be available for expansion of the program (though not sufficient to serve the entire country).

- The existence of a national system of health centers and posts technically and administratively integrated with the sectional services; MCC coverage can be increased to 50% with only additional training and financial resources.

- MCC programs are a natural and efficient channel for family planning services.

(2) Characteristics of the Program

<u>Objectives</u>	<u>Benefits</u>
To obtain a level of coverage in mother/child out-patient attention that is commensurate with the risk to these population groups.	Increase in life expectancy.

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Objectives

To offer good quality medical attention during the pregnancy, delivery and post-partum period of high-risk' patients.

To provide adequate attention to normal births delivered in the home.

To improve the quality and quantity of specific kinds of hospital attention for children.

To improve the coordination of out-patient attention and hospitalizations of mothers and children. To improve the regionalized system for mother-child care that starts in the neighborhood with the services of the promotora and is connected with local health services.

To provide trained personnel at all levels to cover the proposed program.

Benefits

Reduction in mother/child mortality.

Reasonable care during births at low cost. Satisfaction of the felt needs of the community and lower maternal mortality and morbidity rates.

Justified increases in the utilization of the installed capacity of the institutions. Contribution to the reduction of the rates of child morbidity/mortality.

Effectuates integration and coordination of medical attention. Improves the quality of attention. Increases utilization of the local health resources. Cuts the unit cost of attention by improving patient orientation.

Improves the technical capacity of medical and para-medical personnel. Improves quality and quantity of services. Satisfies community needs.

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Objectives

To program activities with a rational use of the various factors.

To offer services of family planning in all health units in the country as a regular activity of maternal care.

Benefits

Improves utilization of available resources. Organizes activities at all levels.

Contributes to the implementation of the population policy formulated by the government. Reduces the rates of induced abortion. Emphasizes responsible parenthood.

The following tables (Tables 82 and 83 ) summarize the short-term targets established for the MCC program.

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TABLE 82

FIELD OF ACTIVITY

Municipalities Country Totals 1971	Municipalities With Permanent Medical Resources					Municipalities With Programs Of Complete Extension *				Municipalities In Which Resources for Family Planning only are Added			
	<u>Country Totals</u> 1971	<u>Program Totals</u>				<u>Extension *</u>				<u>Planning only are Added</u>			
		1971	1972	1973	1974	1971	1972	1973	1974	1971	1972	1973	1974
915	687	495	604	644	687	178	235	285	342	317	369	359	345

\* Apart from maternal child care activities, it includes rural health promotoras.

ACTIVITY GOALS - MATERNAL CARE

<u>Years</u>	<u>P r e g n a n t</u>			<u>Medical Consultations to be carried out</u>
	<u>Beneficiary *</u> <u>Population</u>	<u>Coverage %</u> %	<u>Program</u> No.	
1972	199,106	46.8	93,182	186,364
1973	205,477	56.8	116,710	233,420
1974	212,052	66.8	141,650	283,300

\* 80% of the pregnant population in the municipalities with complete program.

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TABLE 82

ACTIVITY GOALS MATERNAL/CHILD CARE  
1ST YEAR

<u>Years</u>	<u>Beneficiary Population *</u>	<u>Coverage of the Program</u>		<u>Medical Consultations to be done</u>
		<u>%</u>	<u>No.</u>	
1972	168,907	64.4	108,776	217,552
1973	174,312	74.4	129,688	259,376
1974	179,889	84.4	151,826	303,652

\* 80% of child population in the municipalities with complete programs.

ACTIVITY GOALS - CHILD CARE 1-4 YEARS

<u>Years</u>	<u>Beneficiary Population *</u>	<u>Coverage of the Program</u>		<u>Medical Consultations to be done</u>
		<u>%</u>	<u>No.</u>	
1972	629,199	24.6	154,728	309,564
1973	649,333	29.6	192,202	384,404
1974	670,111	34.6	231,858	463,716

\* 80% of child population in the municipalities with complete programs.

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TABLE 83

ACTIVITY GOALS - MINORS 5 - 14 YEARS OLD

Years	Beneficiary Population *	Coverage of the Program		Medical Consultations to be carried out
		%	No.	
1972	1,279,195	12.8	163,737	245,605
1973	1,320,129	15.3	201,979	302,968
1974	1,362,373	17.8	245,502	363,753

\* 80% of child population in the municipalities with complete program.

ACTIVITY GOALS - FAMILY PLANNING

Years	Beneficiary Population *	Coverage of the Program		Medical Consultations to be carried out
		%	No.	
1972	520,919	15	78,137	179,715
1973	537,588	19	102,141	234,924
1974	554,790	23	127,601	293,482

\* 15.66% of women in fertile age (15-49 years)

b. Orientation and Treatment of Minor Children

This program, which is primarily oriented toward social welfare and social service, is a recognition of the deleterious effects on the health and welfare of children of broken homes, abandonment, slum conditions, etc. It will be carried out primarily by the Institute of Family Welfare (ICBF) and institutions related to it or under its jurisdiction. The broad authority of the Institute of Family Welfare is derived from Law 75 of 1968 (commonly called the "law of responsible parenthood") which created the Institute under the Ministry of Health. This law charged ICBF with the responsibility of articulating a legal and social welfare system for protecting the rights of children and youth, diminishing the social, environmental, parental causes of juvenile problems, and providing "curative" or "control" solutions.

The plan for this program is presented as follows:

(1) Justification

The socio-economic conditions of the country (low levels of income and employment, education and health), the rapid process of urbanization, the structure of the population, and the changes of family behavior which have occurred in recent years have created problems of a structural nature with serious implications for the family unit and its members.

Although there are no studies that completely elucidate the cause of family problems, the socio-economic characteristics previously mentioned tend toward family disintegration. The consequences include the abandonment of children, prostitution, delinquency, etc., phenomena that are much more common in urban zones.

(2) Objective

The program proposes to give adequate treatment to abandoned children and delinquent minors.

(3) Plan of Operation

Based on the ideas expressed in the justification, the Family Welfare Institute, in carrying out the objectives established by Law 75 of 1968, has developed a strategy of action which will provide clear solutions to the problems of the family. This strategy can be defined in three aspects:

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- Orientation and treatment of minors
- "Promotion" of the family
- Improvement of nutrition

Within the first are included those actions for protection, treatment and rehabilitation of minor children. The program is differentiated according to the age and condition of the minor. In general, for minors under 16 years, the plans are to use legal instruments to increase parental responsibility toward their children. These actions include: investigation of paternity, the instigation of specific legal actions in cases of protection, and legal and social consultation. For children of 6 years and under, the program will offer necessary facilities for the care of children who require state assistance because of total abandonment or the work of their mothers. This activity includes child care centers and kindergartens in urban zones and nutrition rehabilitation centers.

For groups between 6 and 16 years who, because of family characteristics, are obligated to stay in institutions, the plan calls for treatment, orientation, education, and occupational training which will enable them to become useful members of the society.

Public training institutions will be expected to assist in this aspect of the program.

Minors from 16 to 18 years who have demonstrated delinquent or criminal tendencies will be treated in special institutions to be built for this purpose. At the same time, efforts will be made to support, strengthen, and improve the attention of this kind being provided by private institutions.

(4) Activities to be Carried Out by the Family Welfare Institute

(a) Defense of Minors

Establishment and recognition of paternity, and other judicial matters related to minors, are to be handled by professional personnel contracted by ICBF for this purpose (including lawyers, psychologists, and social workers). Before resort to legal means, solutions will first be sought within the family.

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(b) Transfer to Institutions

In cases where the only solution to protect and reeducate the minor is institutionalization, the Family Welfare Institute will contract for institutional care. It will also provide technical assistance and supervision to the Institution.

(c) Protection and Reeducation Through Institutions Directly Related to ICBF

The ICBF directly administers the centers of research, observation, and reeducation of minors in the cities of Cali and Bogota, as well as some institutions of child care and protection. Of the 2,200 personnel of ICBF, 600 (including teaching, technical, and administrative personnel) work in these institutions.

Experience has demonstrated, however, that the institutionalization of the minor has a negative influence on his later adaption to society. Thus, more and more emphasis has been given to projects that provide for the care of the minor in family units (adoptions and substitute home programs).

Important components of this program are research and training. Research is being carried out to ascertain major causes of family disintegration and abandonment and delinquency of minors. This research is being carried out in universities or research centers. Training will be given to technical and administrative personnel of child care institutions. Training is also contemplated for judges and lawyers in psycho-social techniques for dealing with minors.

(5) Levels of Activities in 1972-73 and 74

During 1971 and 1972 the institute expects to have served 343,100 persons. During 1974 it will provide the legal and social assistance described above to an estimated 429,000 persons.

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c. "Promotion" of the Family and Children

This program is primarily the responsibility of ICBF and is designed to provide family life education, and to carry out educational campaigns to alert communities to family problems.

In this program area, the GOC will carry out various nutrition intervention activities (education, supplementary feeding, and nutrition rehabilitation) complementary to the intersectoral plans and policies being developed which seek longer-term solutions through joint action in a number of sectors. (The nutrition program is described in greater detail in Chapter VI. )

The "Family Promotion" element is presented as follows:

(1) Justification

The basic unit of the society is the family. It is where children are socialized and receive the cultural patterns of their community. Any effort to introduce changes into the society or raise the general level of life must include actions to develop and improve families.

(2) Goal

To provide the necessary elements to assist the family to fulfill functions within the society in the "highest tradition of Colombian culture.

(3) Objectives

Contribute to the decrease of mother/child mortality by supporting the integrated actions of the Ministry of Health in maternal/child care.

Contribute to the process of education so that the family and school will supplement and complement each other.

family life. Provide the family the objective information necessary for

Facilitate participation of women in economic activities.

Contribute to the definition and implementation of a food and nutrition policy with the objective of:

- Solving the problems of malnutrition.
- Developing intersectoral programs that do not depend exclusively on external aid, but rather develop local production and adequate consumption of nutrients.

(4) Plan of Operations

The "Family Promotion" program is oriented basically to education in family life to provide the community with better knowledge of family relations, sexual relations, family responsibility, and the nutritional education of children. It should stimulate other public agencies to develop a multi-disciplinary response to the community expectations and needs.

The program also seeks to awaken community awareness of family problems.

The strategy of improving nutrition is not viewed merely as food distribution efforts. A multi-disciplinary approach will be required to stimulate production and accelerate socio-economic development to expand effective economic demand.

(5) The Current "State of the Art" in Colombian Nutrition Policy

As noted in the special section on nutrition in Chapter VI , the Government, during the last stages of preparation of this analysis, issued a massive document entitled "Bases for a Food and Nutrition Policy in Colombia." The policy guidance contained therein is not definitive, as it must be assessed and decided upon by the National Committee for Food and Nutrition Policy. Nevertheless, it represents the most careful and authoritative statement of policy recommendations ever produced by the Government. Accordingly, we are including it in this section as the most probable tendency in the evolution of nutrition policy.

Although an English paraphrase of this material would be less stilted, we again have chosen not to put our words in Colombian mouths. Therefore, the "conclusions" of the study, and its "policy" recommendations are almost literal translations.

"Conclusions

The basic concern of the study is to determine the relations between supply and demand of foodstuffs. The results of the analysis indicate the following:

Given the present structure of demand, food production both in the agricultural and processing sectors can meet present and future demand requirements.

Estimates of the present income structure of the Colombian population clearly demonstrate its highly inequitable distribution. The principle sources of information indicate the following:

In 1964, 80% of the urban population received 36.6% of the income; 89% had income less than 1,500 pesos per month (US\$165 at the 1964 exchange rate).

Of the total economically active population, 95.5% of agricultural workers had an income of less than 1,500 pesos monthly, while 87.4% of the non-agricultural workers received this income in 1970.

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This income situation reflects an inadequate purchasing power of the population, and consequently an insufficient demand for foodstuffs.

An additional element which significantly aggravates the problem of insufficient demand for foodstuffs is the high margins taken by marketing. Data available indicates that the marketing process raises the price of foodstuffs by 50% in the national market. This situation is even worse in the urban centers; for example, in Bogota where marketing costs average 180% and are as high as 350% for some food products.

In the light of the economic policy set forth in the Development Plan, one of whose strategies is income redistribution, it is assumed that some increases will occur in demand for basic consumer goods. If this becomes significant, there will be supply constraint in almost all items of the family market basket. Essentially, food production is based in the small farm with its problems of low productivity, shortage of credit, low-level technology, and marketing difficulties which cause low prices to the producer.

Supply constraints are not expected in the food processing capacity of the industrial sector. Here, there is under-utilization of installed capacity which is basically due to lack of demand.

Whatever method of estimation is used, however, the relations between different income levels and the cost of a minimum basic diet are frankly alarming. The following are some of the more systematic estimates:

With reference to a "least cost ideal diet" developed by the Institute of Technologic Research (with a cost 70% cheaper than the diet which follows present food patterns), 41% of the Colombian population would have serious financial problems in obtaining an adequate nutritional level.

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Using a diet similar to the food habits of the country, almost 70% of the homes will have food shortages because of its cost.

The analysis also shows the importance of cultural factors, particularly those related to nutritional education. The importance of these factors is evidenced in the fact that it is not possible to establish an automatic relationship between income and malnutrition, i. e. , to show that an increase in income signifies an immediate decrease in malnutrition. The study, in fact, cites specific cases of diet deficiencies in high-income urban homes due as much to traditional food habits as to lack of understanding of the nutritional value of different foods.

### Policy

From the findings of the present study, certain policy guidelines can be developed and an order of priority established for the various alternatives that could be chosen in seeking a solution to the country's nutritional problem.

First, it should be emphasized that, for a global solution, the complexity of the problem requires interinstitutional, interdisciplinary, and intersectoral cooperation: Given the interaction of factors which create the problem, the solution will be found in an integrated plan of action by all the appropriate organizations and sectors. In addition, it will require the marshalling and dynamic use of all the necessary resources to obtain the required results over the short and long term.

The general nature of the study permits development of the basic policies which can serve as a guide for the operational decisions of each of the sectors and national institutions which directly or indirectly are able to contribute to the solution of the problem. Specifically, these are the institutions which presently constitute the National Nutrition Committee.

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According to the basic findings of the analysis, the phenomenon of malnutrition is related, in the first place, to the concentration of wealth which precludes an adequate diet for an extremely high percentage of the population. Secondly, it is related to the high cost -- in terms of nutrients -- of the foods most commonly eaten.

Thus, we recognize two alternatives: the first is to increase significantly the level of income of the population. The second is to reduce the cost of the diet. Obviously, both are essential.

With respect to income, the National Development Plan already provides for increases through higher employment and occupational mobility. It is difficult to identify precise policies of income distribution related specifically to nutrition, since the problem of income is related to all aspects of economic activity. Thus, these actions are related to the more general development strategies of the country. Nevertheless, some of the more generally accepted mechanisms for the purpose have been identified:

- a progressive tax structure
- control of monopoly price abuse
- direct intervention in the establishment of prices, particularly of foodstuffs.

The second alternative, i. e., reduction of cost of the basic diet, can be achieved through other complementary strategies:

As a short-term policy, devise a different combination of the basic diet, in such a manner as to secure an acceptable level of nutrition at the minimum cost possible, but still compatible with common food habits.

Given the magnitude of the problem of malnutrition in the country, the long-term solution to the dual phenomena of low-income and high costs of diet, must be to effect a

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drastic reduction in the basic cost of the diet. Presently a nutrition model is being refined which will provide an optimum combination of nutrients at minimum cost, including synthetic foods and vegetable protein mixtures. The two alternatives require a series of actions of different order and intensity.

In the first place, they will require a massive educational program. This must supply information about the nutritional value of the foods and encourage the people to consume new food products such as the vegetable mixes with which the Institute of Nutrition is presently experimenting, e.g. the corn bread being demonstrated by IIT, etc. The educational campaign is essential to achieve, on the one hand, a better combination of traditional foods and, on the other hand, to encourage the consumption of new foods. (Those developed especially to cause a significant reduction in the cost of the diet.)

This campaign will require the inclusion of nutrition education at all school levels by the Ministry of Education.

In the second place, measures must be taken to reduce the cost of marketing. These must involve not only governmental organizations, but also make more efficient use of the present commercial channels of food distribution. In this respect, the government initiated in the last months of 1972 a massive program of food distribution through popular markets. Ninety-five thousand tons of food were purchased, and it is expected that the cost of the family market basket will be reduced by 30% through this massive and continuous supply and a significant by-passing of middlemen.

In the third place, emphasis must be given to efforts to reduce the cost of diet by the production of high nutritional level foods using low-cost raw materials of high protein/calorie content

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with taste and texture characteristics compatible with Colombian food habits. Several agencies have been experimenting with synthetic foods principally based on vegetable mixtures, such as those developed by the Nutrition Division of ICBF which are now in the stages of feasibility studies for industrial processing. The industrialization process is easier because the raw materials (cottonseed, sesame, soybeans, etc.) are produced in Colombia. Naturally, in the beginning these products will meet with resistance due to the traditional food habits of the people. However, it appears that adequate merchandising and a massive educational campaign will tend to overcome these problems.

Even if strong action is taken along the general lines described above, the solution will be a long-term one. It will also be necessary to develop operational policy for the short and medium term. Those groups of the population most vulnerable and those in which nutritional problems have the most serious effects must be identified. These groups are infants and pregnant and nursing mothers. In terms of immediate action, the principal alternative is to develop a means of access of these groups to certain food products basic to their nutrition, such as milk, porridges based on opaque-two corn, etc. The most appropriate channels will be the schools, school restaurants, and health posts. Given the economic conditions of the Colombian population, the objective can only be achieved through a government subsidy, either distributing these foods directly or through their sale at very low prices. One example of this would be the program "proleche" which is carried out in the department of Antioquia. This consists of the sale at very low prices of a combination of powdered milk with whole milk.

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The existence of foreign food aid (WFP, CARE, etc.) can strengthen the efforts of the government to aid the groups mentioned. It will be important to channel the various sources of external aid toward those groups most vulnerable to nutritional deficiency.

Finally, all policies tending to strengthen a selective production of food in the agricultural sector, such as credit, technical assistance, etc., are an integral part of the policy guidelines set forth above."

(6) Activities to be Carried out by the Family Welfare Institute

ICBF is developing activities necessary to encourage the family unit to fulfill its functions in Colombian society. Nevertheless, it is evident that the size of the task requires participation of other institutions. The activities to be developed in this program must be coordinated with those of other public and private organizations.

Currently the program promotes the following endeavors:

Food supplements and nutrition education directed to the most vulnerable groups (primary children, preschool children, and pregnant and lactant mothers) through schools and health posts.

Small agricultural projects for rural families. Through PINA, the ICBF, in coordination with other governmental entities, develops projects which seek to improve income and nutritional level of rural families through credit, technical assistance, and programs of health education.

Community services for children and families: These services are developed in the principal urban centers of the country in child care centers and kindergartens. Low-income working mothers will be assisted and given information and training in all aspects of family life.

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These activities assist the training and research program of the Institute by providing case studies.

Levels of activities 1972-73-74: The Institute plans to increase coverage of the programs of supplementary feeding and nutrition education, small agricultural projects, and improvement of the services of child care centers and kindergartens in urban areas (some of the specific goals are included in the section on nutrition, Chapter VII).

d. Program of Construction of Geriatric Institutions

In recognition of the expected growth in proportion of older people in the population, and the inadequacy of present institutions and/or programs to adequately provide for them, the GOC has included a modest proposal for improving these services in 1973-1975.

The program is as follows:

(1) Justification

Population calculations for 1974 indicate an increase of persons over 65 years, or 35,000 over that in 1972. Attention for these persons requires not only the improvement of the 173 institutions already available, but also expansion consonant with growth in numbers of the elderly.

Previous neglect of these groups has created an "urgent" situation.

(2) Objectives

Long term: Provide adequate institutional facilities to assure complete geriatric care for all persons needing assistance over 65 years of age.

Short-term: Improve, repair, remodel the buildings presently providing geriatric attention to persons of limited resources.

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(3) Targets

In 1973 repair and remodel 25 homes for the aged, according to the priorities of need in the different regions of the country.

In 1974 repair and remodel 52 homes for the aged in the different areas of the country according to priorities of need.

e. Control of Drug Abuse

A complete and specific program of action has not been developed as yet. Funds are not allocated for 1973.

2. Health Protection

This category encompasses the direct campaign of sector control, vaccination and immunization to be carried out for control of malaria, yaws, yellow fever, smallpox, tuberculosis, diphtheria, whooping cough, polio, and measles. Port sanitation, control of venereal disease, chronic diseases, and accidents are also contemplated.

The responsibility for these programs will rest with the Ministry, its affiliated service of malaria control, and sectional health services, and regional hospitals in the integrated health system.

Currently established targets include:

- Control of malaria in areas containing 9,700,000 inhabitants and direct treatment and eradication measures benefitting 2,000,000 persons.
- Control and eradication of yaws in areas containing 430,000 persons.
- Control of aegypti (yellow fever) through mosquito eradication in 450,000 households.
- Smallpox and tuberculosis vaccination of 80% of the nation's infants.

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- DPT vaccination of 60% of new-born infants.
- A massive campaign to vaccinate 80% of children one to four years old against measles and polio during 1973.

The specific campaigns are:

a. Anti-Malaria Campaign

(1) Justification

Malaria, with its high rate of mortality and morbidity, is showing a tendency to become chronic, with consequent detriment to work capacity and productivity.

Extensive geographic areas become marginal in national economic development due to the incidence of malaria.

Techniques of eliminating the disease from Colombia are believed feasible.

Commitments exist to international organizations to eradicate the disease.

The anti-malaria campaign in Colombia contributes to the development of the rural low-tropic areas in which malaria is the most prevalent disease and drastically affects the labor force.

The investment per inhabitant directly protected is 29.68 pesos (US\$1.50) in 1973.

(2) Objectives

Long-term: Eradication of malaria from Colombia.

Short-term: In areas of consolidation, and by the application of the appropriate methods of control, to stop the transmission of malaria, and eliminate the risk of reestablishment of endemic levels of the disease.

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In areas of attack: To control morbidity and mortality of the disease by the application of insecticides in homes, and the administration of anti-malaria medicine to the sick.

(3) Activities

Vigilance and epidemiological evaluation:

Area of consolidation: 151,561 Km.2; 1,689,446 homes; and 9,715,321 inhabitants.

Population under observation: 5,149,120 inhabitants; 4,566,201 rural inhabitants.

Blood samples from fever victims: 100,000 samples in the urban population (2%), 500,000 from the rural population (10%).

Area of attack: 819,288 Km2; 771,263 homes' 4,064,645 inhabitants.

Population under observation: 823,002 urban inhabitants; 3,241,643 rural inhabitants.

Blood samples from fever victims: 32,900 samples in the urban population (4%); 226,940 in the rural population (7%).

In total, 800,000 blood samples will be taken in rural and urban areas. The samples will be obtained through the system of information manned by persons who work in the campaign. Ten thousand posts of information function with a productivity of 60%. In dispersed rural localities, samples will be taken by a house-to-house search for fever victims.

The information post will require monthly visits. This work and that of looking for active cases will require in one year 1,402,104 visits to 292,105 homes in order to get epidemiological samples. Visits will be made at the rate of 12 visits per person per day.

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The Ministry of Health's policy is that persons involved in this activity will also apply immunizations.

Distribution of Anti-Malaria Tablets: To eliminate the infection or reduce the disease, reserve anti-malaria tablets will be applied by program of collective treatment in areas of high incidence. In areas of consolidation, where the disease has appeared, radical treatment will be given to the sick and their families to eliminate completely the infection.

Annual distribution will include 2,500,000 chloroquina tablets, 1,500,000 primaquina tablets, and one million tablets of pirimetamina.

Application of DDT: The main method to interrupt the transmission is the application of DDT within the home. No other insecticide has proved superior in their efficacy, broad spectrum, applicability, and price.

DDT will be applied semestrally at 2 grms. per m<sup>2</sup>. In the areas where the transmission of the disease persists, it will be applied to 540,209 homes. This will provide direct protection to 1,932,325 inhabitants in the area of attack, and 843,542 inhabitants in the area of consolidation. Consumption will be 1,450,000 pounds of DDT (75%).

The production of the sprayer will vary according to the method of access to the area, but the average will be

Motorized sprayer	5.9 homes per day
Water transport	4.8 homes per day
Horse or mule back	4.0 homes per day

The attack measures will improve the epidemiological situation. For this reason, a large number of homes in the attack area will pass to the consolidation area. The change of homes from one phase to another will permit the coverage of new homes in development or colonization areas, maintaining an average of about 550,000 homes to be sprayed each year.

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Units of Measure: Activities will be measured in terms of the number of surveillance visits and the number of sprayings in the attack phase. In the next four years an annual average of 1,000,000 sprayings will be done.

b. Yaws Campaign

(1) Justification

- It is a disease confined to one geographic area of the country, and an effective campaign can be relatively easily carried out due to the efficacy of the treatment and the need for few follow-up controls.

- The benefits are quick and readily appreciated by the people who enthusiastically support this campaign.

- Yaws produces invalids and ugly deformities; the control activities up to 1964 were relatively effective; lack of surveillance caused the resurgence of the disease, and in 1967 it was necessary to reinitiate activities. During this period there was an incidence of 25.8 cases per 1,000 inhabitants; in 1969 the incidence was 4.9 cases per 1,000 inhabitants; and in 1971 it was 1.7.

- In the period 1973-75 it is expected that this disease can be eliminated as a public health problem.

(2) Objectives

- Long term: Eliminate the disease

- Short-term: Maintain control, apply therapeutic measures, intensify the search for cases of the sick and their contacts.

(3) Activities

The anti-yaws campaign will be carried out on the Pacific Coast and integrated with the anti-malaria campaign. It will cover 70,956 km. 2,

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with 26 municipalities, 4,463 communities, 75,674 homes, and 434,908 inhabitants.

Epidemiologic surveillance will consist of four visits per year to homes to treat suspected cases and contacts. Adults will receive intramuscular injections of 1,200,000 U of penicilin, and each of the contacts half this dose; minors of 15 years or less will receive a dose in proportion to their age.

Research will be carried out by the National Health Institute on cases particularly difficult to cure.

c. Anti-aegypti (Yellow Fever) Mosquito Campaign

(1) Justification

- The potential danger to urban areas of the yellow fever virus, with the attendant economic consequences; the losses to working capacity caused by epidemic of dengue; the seriousness of hemorrhagic fever, and damage to the tourist potential in Atlantic Coast cities.

- The potential danger of the presence of the mosquito in urban areas susceptible to the development of yellow fever. This is a particular problem because of low immunity levels due to the recent absence of this illness.

(2) Activities

The area covered will be the Venezuelan/Colombian frontier, and the region of the Caribbean with an area of 152,600 kms. with 149 communities and 456,157 homes.

The homes that require inspection will be grouped in work areas of 1,000 homes per visitor, with visits made three consecutive times in a period of two months; in the second semester the visits will be made once each two months to 33% of the homes in the area.

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During the first visits, ABATE/Aruacide and Baytex will be applied to the deposits of water or potential deposits.

In total, in the various phases, 1,286,228 visits will be made to 456,157 homes, and 40 tons of insecticides will be used.

In 1972, the average number of home visits will be 6,000 per year; for 1973 and following years home visits will be made at a rate of 8,000 visits per year.

d. Maintenance of the Level of Immunity (BCG, DPT, and Smallpox Vaccines)

(1) Justification

It is essential to maintain the level of acquired defenses of the population, which were obtained through heavy investments made in the past. It is necessary to vaccinate the recently born and previously immunized whose immunity period has passed.

(2) Objectives

Long-term: Eradicate preventable diseases by vaccination.

Short-term: Immunize against smallpox, whooping cough, tetanus, diphtheria, tuberculosis 80% of the population under one year of age born during the period 1972-73 and, then, meet the demand of other age groups, especially those needing first vaccinations.

(3) Plan of Operation

Vaccinate the recently born utilizing regular personnel in local health organizations for the vaccination of children residing in urban zones. Malaria personnel will be used to vaccinate residents in rural malaria areas and special teams will work in rural zones without malaria teams.

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(4) Activities

(a) In Urban Zones

Provide protection to 816,868 children under one year against smallpox, diphtheria, whooping cough, tetanus, and tuberculosis.

(b) In Rural Zones

The work area in rural zones includes 474,847 homes with 2,849,235 inhabitants. This includes 484,370 children under 5, and 1,410,371 under 15.

The vaccination activities in these zones will be integrated with the immunization operations programmed by health centers in urban zones.

On the average, homes in rural areas will receive 3 visits per year. During the first visit, the first dose of DPT will be applied; in the second, the second dose of DPT and the anti-smallpox vaccine, and in the third BCG will be given.

In 1972 the attack phase will be completed in the rural zones for immunization against smallpox, DPT, and BCG. In 1973 the operation fundamentally will be maintenance, with the following goals:

<u>Smallpox:</u>	85,500 children under 1 year of age 96,876 children under 5 (20% not vaccinated)
<u>DPT:</u>	85,500 children under 1 year of age 193,748 children under 5 (40% not vaccinated) 290,000 repeat doses
<u>BCG:</u>	85,500 children under 1 year of age 423,111 children under 15 (30% not vaccinated)

In the following years, these targets will be modified according to birth rates and levels accomplished in previous years.

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It should be noted that the cost of the immunization in the dispersed rural areas is related to the number of homes that it is possible to visit and the number of visits that can be made.

e. Massive Vaccination for Polio and Measles

(1) Justification:

- Measles is one of the major causes of child mortality, and polio is a significant cause of invalidism and death.

- There is a great popular demand for the government to initiate a nation-wide program to control these two diseases. Publicity about the effectiveness of these vaccines has contributed greatly to this demand.

(2) Massive Anti-Polio Vaccination Campaign

(a) Objectives

Long-term: Eliminate polio in the country

Short-term: Vaccinate at least 80% of the children above two months and under 5 years of age. This will include 3,210,000 children.

Establish a program of maintenance and epidemiological surveillance through the sectional health services.

(b) Plan of Operations

The vaccination campaign will be carried out in urban zones (localities of more than 1,500 inhabitants), utilizing a system of vaccination posts with the collaboration of community volunteers under the direct supervision of the sectional health services.

In the second stage, the vaccination campaign will be carried out in the rural zone.

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(3) Massive Vaccination Against Measles

(a) Objectives

Long-term: Eradicate measles from Colombia

Short-term: Vaccinate in one year at least 80% of the children over 9 months and under 5 years of age. This will include 3,210,000 children.

Establish a program to maintain this vaccination level through the health services.

(b) Plan of Operations

The plan of action for this campaign includes the following phases:

The preparation phase will be four months during which personnel will be selected and trained. The campaign will include six doctors, 6 assistants in health education, 24 inspectors, 240 vaccinators, and 30 drivers.

During this stage, the country will be divided into six areas with a vaccination population approximately equal, and a calendar of activities will be prepared for each area.

Finally, an information campaign will be launched in each area, and the purchase of necessary equipment and supplies will be accomplished.

(c) Attack Phase

During this phase, which is scheduled for one year, the following activities will be carried out:

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- Eighty percent of the children from nine months to under five years of age will be vaccinated, an estimated number of 3,210,000.

- To make this number of vaccinations in one year, a team of 240 vaccinators will be required, who will give an average of 54 vaccinations per-day-vaccinators.

- The 240 vaccinators will be divided into 24 brigades, each under the control of an inspector. Each brigade will have a vehicle and a driver.

- The country will be divided into six areas of work, each with a population to be vaccinated of about 535,000 children.

(d) Maintenance Phase

The maintenance phase will be in the charge of the regular health services and will start at the end of the attack phase.

During this phase, vaccinations will be routinely performed on at least 80% of children between 9 months and 1 year of age.

To assure the completion of these activities, the epidemiology section of the division of direct campaigns will develop a program in each department and will provide the technical assistance and supervision necessary:

f. Control of Venereal Diseases

(1) Justification

- Improved therapy recently discovered has improved prospects for eventual elimination or containment to minimum levels of these diseases. Certain counties have had noticeable success in the control and reduction of venereal diseases. Nevertheless, in the last two years there

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has been a significant increase in the known cases (which represents only a small part of the total problem). Moreover, auto-medication by unqualified persons is not reliable.

- In different social groups, especially the young, the influence of pseudo-scientific propaganda creates the belief that the danger of this problem has been minimized. As a result, the ill do not consider the first signs of the disease to be important and continue to infect other persons, causing a multiplier effect which makes control almost impossible.

- Presence of these diseases in incipient, chronic, or latent forms represents a real danger to the health of the new-born.

- Adequate therapeutic facilities exist for effective treatment, prevention, and control of these diseases. The feasibility of control is primarily limited by the availability of financial resources and trained personnel, and the difficulties of finding cases.

(2) Objectives

- Reduce the morbidity and mortality caused by venereal diseases.

- Reduce the cases of congenital syphilis

- Develop an epidemiological control over cases of venereal diseases.

(3) Plan of Operations

- Meet the current demand for anti-venereal services and the increment in demand which will result from searching for cases.

- Equip clinical laboratories in the districts and hospital centers with sufficient equipment to provide for accurate venereal disease diagnosis.

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- Provide the necessary drugs which will be donated to patients for the treatment of venereal cases.

- Provide blood tests to persons utilizing other health programs, such as pre-natal, family planning, cancer diagnosis, general medical services, special group, etc.

3. Health Recuperation

This important component of the health sector plan, largely to be implemented by the National Hospital Fund, is primarily concerned with the construction, remodelling, or expansion of hospitals and health posts as part of the regionalized system of integrated health care. Minor elements include the improvement of facilities of the Cancer Institute in Bogota and those of regional diagnostic centers.

The salient features of this program area are as follows:

- Projects for remodelling or constructing 122 hospitals are to be completed during 1973 and 1974.

- 1,528 additional beds will be added to public hospitals during 1973, and 804 additional beds during 1974.

- The additional hospital capacity is expected to generate an increase in annual hospitalizations of approximately 48,000 persons in 1973 and 28,000 persons in 1974.

- The public hospitals will be incorporated into regionalized systems of stratified health care functions.

The GOC Plan States its Objectives as Follows:

Basis

"Before describing specific elements of the program of health recuperation, the meaning of recuperation within the global concept of integrated actions of health should be

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defined. This is the mix of specific and direct actions destined to give the largest number of individuals and their families access to the resources of early and timely complete diagnosis and effective treatment. These actions in Colombia are provided by the institutions connected to the Ministry of Health, the Colombian Institute of Social Security, the National Welfare Funds, and other agencies connected to other Ministries and private institutions.

Within the concept of basic services of an integrated health program, recuperation is a complementary part of the program contributing indirectly to promotion and protection of health. These actions, as one unified program, are carried out both within and beyond the hospital.

For this reason, the hospital is understood as ' . . . an integral part of a medical and social service whose mission consists in providing to the population a complete medical and health assistance, not only curative but preventive, and whose services radiate to the family unit. The hospital is also a center for the training of medical and public health personnel and for bio-social research. '

The hospital is considered today as the center of all health actions. A few years ago, hospitals were limited to provision of hospitalization, out-patient service, referral of patients to other specialized establishments, provision of medical care, emergency attention and, in certain occasions, home care. Today it is impossible to conceive of a hospital without all the activities of integrated attention, activities which are not carried out independently, but all in an interrelated fashion. The hospital can be described as a 'system' whose parts or components are closely interrelated and which respond to the stimulus of

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the community it serves. At the same time, this 'system' is part of a more complex system of health institutions which, correctly organized or 'regionalized' should respond to the necessities of a larger area of the department or the country.

The concept of the hospital is not complete without emphasis on the importance it has as the center of training and research. Training programs in the health area must include the preparation of specialized doctors, nurses, administrative assistants, statistical personnel, maintenance personnel; in fact all the personnel that have to do with the functioning of the hospital. The preparation of personnel of different levels and different disciplines has the advantage of teaching the principle of working as a group which is the fundamental concept of the administration of the modern hospital.

Research is the means not only to learn and apply new methods and procedures in diagnosis of illness to individuals but also to the community. For this reason, research must be carried out in such a fashion that its results cover the largest number of the population and benefit the largest number of people."

a. Plan of Operations

(1) Regionalization of Health in Colombia

"The recuperation of health is a very important aspect of the hospital activities. Nevertheless, within the present concept of the hospital, one cannot conceive of these activities as separated from the other components of integrated health attention such as promotion, protection, and rehabilitation. Nor can the hospital be considered as an isolated cell; it must be made part of the technically structured system of regionalized services.

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The development of the system of regionalization of services of medical and hospital attention has been initiated in the country. Nevertheless, this process must be accelerated by increasing these resources. The program presented here is developed to accomplish these objectives.

The health planners in the country have been working on the design and development of the system of regionalization of health services.

In this design, the hospital occupies a key position within the levels of medical attention.

There exists a system with a pyramidal structure having a large peripheral base in the rural zones and the top located in the major cities where there are faculties of medicine or health districts.

The mechanism of patient referral, delegation of functions, technical assistance and supervision, and education in health sciences and research operate within this structure."

(2) National Hospital Plan

The National Government, through Law 39 of 1969, established the National Hospital Plan in order to rationalize and execute the policy designating the hospital as a center of all health activities as a part of system of regionalization of health services. This Plan was oriented to achieve the termination, construction and equipping of hospitals distributed throughout the national territory. It initially contemplated 54 projects which were considered to have priority because they were key elements at the base of the regionalized systems to be created. The initial cost of the Plan was calculated at 580 million pesos, distributed between 296 million pesos for construction and 284 million pesos in equipment. The management of these funds is the responsibility of the National Hospital Fund.

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Since 1970, the GOC has invested 258 million pesos in the execution of the Plan. However, new projects have been added as a result of continuing study of requirements; these new projects include the replacement of obsolete hospitals, and the building of small hospitals in localities of less than 50,000 inhabitants. Presently, the inventory of projects for construction and remodelling has grown to 141; these are scheduled for completion in the period 1972-1975, and preliminary cost estimates have increased to 1,494,905,000 pesos. The plan includes university, regional, local hospitals, and health centers. The regional hospitals and health centers are destined for those intermediate cities contemplated in the plan of urban and regional development and the plan of rural development concentrations.

(a) Financing Mechanisms

Institutional Aspects

For the development and implementation of this program, the Ministry of Health utilizes the National Hospital Fund, which has responsibility for the execution of the National Hospital Plan (Law 39/69). The resources assigned to the Fund have been derived principally from two sources: ordinary resources allocated in the budget law and proceeds from internal credit, and 10% of the constant value bonds of which ICSS is beneficiary. These resources have been allocated as follows:

	<u>Pesos .</u>
1970	95,538,000
1971	163,280,000
1972	152,000,000

As noted in Chapter III (and repeated here for convenience), the Fund is directed by an Administrative Committee which includes the Minister of Health, the Director of ICSS, and a delegate of the President of the Republic. There are also advisory and control committees on which the Ministry and ICSS are equally represented. The Fund has an executive secretary who is responsible for carrying out decisions of the Administrative Committee. The mandate of these mechanisms is to assure rational application of resources available for hospital investment in support of the criteria and priorities of the National Hospital Plan.

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There are three modus operandi for investment and construction which vary according to which is most favorable in the particular circumstances. The first is to effect the investment through the sectional health services under general supervision of the Fund. The second is to execute the work directly by the Fund utilizing a specialized firm. The most important is that utilized for hospital projects developed jointly with ICSS, the beneficiencias, the lotteries, and the departmental governments. In this instance, a non-profit association is formed which includes the pertinent members (Ministry of Health, ICSS, and department). It serves as a construction committee for the hospital and establishes its own rules and regulations. Its specific functions are controlling construction, equipping the hospital, training of personnel, and the initiation of operations.

The Hospital Fund, with the technical assistance of the Ministry of Health, transfers funds to CORPAL which is responsible for the purchase, quality control, and distribution of equipment for the hospitals.

Besides the technical assistance of the Ministry of Health, the National Fund of Development (FONADE) provides assistance for specific studies especially for large hospital construction. 1/

The programs for administrative improvement of the sector and for human resources development contemplate sub-programs to strengthen the programming methods for investment, and to promote the maturation of the National Center for Maintenance of Hospital Equipment.

Financial Aspects

The health recuperation component, especially as it relates to the National Hospital Plan, includes two kinds of financial requirements:

- Investment: Construction and Equipment
- Financing of Operations

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1/ See the document "Hospital Development - Terms of Reference" prepared by the Ministry of Health, the National Planning Department, and FONADE. This term of reference should be used in all the hospital projects that are developed in the country.

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For investment in construction and equipment, Colombia has utilized 410,818,000 pesos in 1970 and 1972. However, the total execution of the Plan will require some 1,500 million pesos between 1972 and 1975, a sum which, it is estimated, will make operational the 141 projects and will benefit some 12 million people.

The hospitals receive operational funds from three principal sources:

- National Government contributions;
- Departmental and beneficiencia funds; and
- Taxes on entertainment (soccer betting pools and 8% on beer).

For 1973, the magnitude of operating funds will be enlarged about 58% by Law 46 of 1971, "Law of the 'Situado Fiscal' " through which revenue-sharing will provide additional financing to the departments for health and education.

It should be noted that the major element of the National Hospital Plan is replacement of obsolete buildings; a small part is for new construction. Thus, the increased need for operational funds will be covered by the additional resources channeled through the "Situado Fiscal."

(b) Goals

Accelerate the National Hospital Plan

Although the Government has built up considerable experience in carrying out the hospital construction plan and has invested its own resources for this purpose, it sees a requirement to supplement internal funds with external resources to accelerate the process in the 1973-75 period.

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In estimating external requirements, the Government has taken into account available national resources, absorption capacity, and the value of external resources as a stimulus to effective implementation of plan and the general sectoral strategy.

- Strengthen the System of Regionalization: By strengthening the hospitals, the system of regionalization will be fortified at all levels.

- Mutual Support Between the Health Sector and Urban/Regional Development: One of the most important aspects of the general development plan is that of urban/regional development. A major criteria or the urban/regional strategy is the equitable distribution of services among communities, so as to decentralize economic activity and opportunity. Health services are essential to provide an improved quality of life, and thus stimulate development of outlying communities. Urban planning must provide for adequate health services in cities and towns in which decentralization of developmental effort is envisaged.

(c) Objectives

The major objectives of the National Hospital Plan are:

Construction

Construction, remodelling, expansion, and renovation in 141 projects throughout the country is planned for the period of 1972-75. Completion of these projects will benefit more than 12 million inhabitants.

Equipment

Equipment will be acquired to permit efficient operation of hospitals previously constructed, or to be completed, and for the renovation of inadequate equipment of hospitals in operation.

(i) Description of Sub-Programs

Hospital Construction: As noted, the program for hospital construction includes 141 projects programmed for completion in the period 1972-75. Of this total, 112 projects are scheduled for completion

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in 1973-75. Charts included as Annex A provide information on the 112 projects, such as location, type of hospital, number of beds, number of beneficiaries, necessity for the projects, status of project planning, financial data, and estimated completion date. Please see Annex A.

This sub-program will form part of the "concentration of services" in defined rural zones which have potential for development. These zones require adequate infra-structure to provide education, health, agricultural, and other essential services. Levels of activity for 1973-75 will be defined specifically in the context of the integrated rural development program which is being formulated jointly by the Ministries of Agriculture, Government, and Education. The investment in health centers and posts, contemplated in this sub-program, will be made in these priority rural development areas.

- Hospital Equipment: As an indispensable complement to the construction programs, plans have been made to purchase hospital equipment for new hospitals to be built, hospitals to be finished, and replacement of old equipment.

The total cost for the 51 projects of the first phase is expected to be 373,695,000 pesos, divided in 48,230,635 for local purchase, and 325,465,000 for imports. It is understood that negotiations with the United Kingdom Government for a loan for equipment procurement are in an advanced stage.

- National Cancer Institute: Advances in medical technology in the field of early diagnosis and treatment of cancer has produced a greater demand for service. The Cancer Institute, which was created recently as an independent institution, has recognized the necessity of broadening its responsibility, serving as the center for programs of diagnosis and treatment.

The physical facilities of the Institute in Bogota will be expanded and certain diagnostic and treatment centers through the country will be developed. Due to the high cost of this kind of service, the program must be based on careful study of regional needs. It has already been initiated with cobalt therapy units available in Manizales, Medellin, the Atlantic Coast, and Cali.

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4. Training of Health Personnel

The availability of adequately trained human resources is fundamental to the execution of the National Health Plan. Studies of the needs in various areas of health activities have been carried out, and plans have been made to accelerate training to meet at least the most critical of these needs. Most training will be carried out in the faculties of medicine, nursing, auxiliary nursing, dentistry, and the School of Public Health. The sectional health services will organize additional short courses, and SENA will be contacted to provide some of the training.

The following numbers and types of health sector personnel should complete training by 1974:

<u>Type</u>	<u>Number to be Trained</u>
Health Planners	65
Medical Doctors	1,549
Public Health Doctors	60
Public Health Nurses	60
Professional Nurses	630
Auxiliary Nurses	6,012
Health Promoters "Promotoras"	7,000
Sanitary Engineers	75
Sanitary Promoters	1,200
Dentists	824
Public Health Dentists	90
Dental Assistants	607
Equipment Maintenance Personnel	150

Institutions and Mechanism of Coordination and Evaluations

With the administrative reforms of 1963 and 1968, the Government created within the Ministry of Health the Office of Administration of Human Resources. Its responsibility is to "develop standards, coordinate, and supervise the preparation and utilization of the personnel necessary for the health

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service." It also is charged with "making the diagnosis of human resources for health and of the resources available to be trained."

Thus, the Office of Administration of Human Resources is the fundamental agency to develop the instruments and activities which will assure adequate program planning, satisfactory implementation, and periodic evaluations.

To assist the Office, the Government also has created the National Council for the Preparation and Training of Health Personnel. The Council is attached to the Ministry for the purpose of coordinating the various training resources and efforts of all the institutions in the health sector.

Among the responsibilities of the Council is that of studying and approving the health training plan prepared annually by the Office of Human Resources.

The Council is made up of the following representatives:

- Chief of the Planning Office of the M OH
- Chief of the Office of Administration of Human Resources, M O
- Director of INPES or representatives
- Representatives of the National Planning Department
- Director or representative of ICBF
- Director or representative of ICSS
- Director or representative of INSFOPAL
- Director or representative of ASCOFAME
- Director or representative of the Association of Nursing Schools
- Director or representative of ICETEX

The Office of Human Resources also has an advisory committee which orients the training and use of health personnel in the specialized fields of medical/clinical sciences. ASCOFAME also participates in an advisory capacity.

The training plans are carried out by the various departments of health science of the universities, the university hospitals, the schools of auxiliary nursing, the School of Public Health, and SENA.

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### Training of Professional Personnel in Public Health

Post-graduate training in various aspects of public health is a basic priority. This type of human resource will strengthen the technical groups which are developing the innovative process at the national, sectional and regional levels. It will also assist the operational units to carry out, productively and efficiently, the strategies, policies, and programs. Under this program, doctors, nurses, dentists, veterinarians, and engineers will be trained through formal courses, short courses, and seminars. They will become members of multi-disciplinary teams which will facilitate intra- and inter-sectoral coordination.

The institutions responsible for the training of this personnel will be the School of Public Health of the University of Antioquia, the Department of Preventive Medicine of the National and Valle Universities, and the regional center of the San Juan de Dios Hospital. Contracts and agreements will be established between these institutions and the Ministry of Public Health to assure the successful development of these programs.

### Specialists in Clinical Sciences

Colombia requires a number of specialists who will orient and carry out activities primarily at the regional hospital level. These hospitals, together with the university hospitals, are responsible for developing the innovative systems and spreading them to the periphery. They should be self-sufficient in making the system of patient referral functional and in providing the necessary technical assistance to solve specific medical problems. Specialized personnel will be required to serve the "outreach" responsibility, as well as meet the usual needs of the hospitals. While in specialized training, this personnel (residents) will also provide medical attention. Upon finishing their training, they will be employed by the Ministry of Health and used in positions appropriate to their specialties in the regional hospitals. The institutions responsible for the training will be the medical faculties and the university hospitals, in coordination with regional hospitals. Contracts between these institutions, the Ministry of Health, and the students will serve to assure fulfillment of these programs.

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### Training of Faculty in Basic Sciences

A study of the departments of health sciences in the universities revealed a shortage of human resources in the basic sciences. The personnel who are presently working in this field must be trained sufficiently so that changes planned within the teaching programs can be accomplished. The Ministry of Health will sign contracts and agreements with the Colombian Association of Medical Faculties and academic departments of health sciences to develop this program.

### Training of Technical and Auxiliary Personnel

Within the regionalized system of health services, "levels of medical attention" have been established which encourage delegation of functions to auxiliary personnel and technical personnel. This will achieve broader coverage and outreach of health services to areas which have been marginal to date. In addition, the system of patient referral requires personnel who understand the system. They must be able to exert a favorable influence upon the community to achieve this objective. Thus, the base of the pyramid in the regionalized structure must be strengthened by the training of technical and auxiliary personnel in nursing, dentistry, basic sanitation, statistical work, and administration. At the same time, due to the current shortage of professional nurses, experimental work is necessary for developing a type of personnel who can be prepared in shorter time. Thus, an experimental project for the training of nursing technicians is included in this sub-program.

Equipment and improved facilities will also be provided for the schools of nursing auxiliaries.

The schools of nursing auxiliaries, the faculties of nursing, the sectional health services, the faculties of dentistry, departments of preventive medicine, the School of Public Health of the University of Antioquia, the regional center of the San Juan de Dios Hospital, and SENA (the National Training Institute) will be the institutions responsible for preparing this personnel.

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### Training of Maintenance and General Service Personnel

The proper care and maintenance of hospital equipment are essential to the proper functioning of medical institutions. The cost of equipment, and its potential productivity, requires the fullest possible use over a long period of time. In Colombia there is critical shortage of technical personnel in equipment maintenance. Therefore, much equipment is out of service much of the time. For training of the essential personnel, a national maintenance center is being developed, the basic purpose of which will be to train technicians and, later, formulate a national maintenance program.

CORPAL will provide the facilities for this project, and the Ministry of Health will finance the operation of the center and the development of the program.

SENA will provide the training of technical personnel in general services.

### In-Service Training of Professionals, Administrators, Technical and Auxiliary Personnel

It is essential that health personnel be current in their knowledge of the advances of technology in their respective fields, and of program changes. This program will require that specialized personnel at regional level visit outlying facilities to provide orientation and guidance, while those at the local and rural level receive periodic training on new technology at the regional centers. The latter, generally, are persons who have been working with the Ministry of Health for some years. These programs of continuing education and in-service training of health personnel will be carried out by the universities and the sectional health services, with the coordination of the Ministry of Public Health and the Association of Medical Faculties.

The creation of libraries is also important. There must be well-supplied libraries at the national level and also in the sectional health services in order to bring personnel up to date, stimulate self-training, and provide a cultural and scientific incentive to health personnel.

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### Improvement of Dental Practice

Dental resources at the professional level are scarce and excessively concentrated in the urban areas. Of a total of 895 counties, only 396 or 44.2% have oral health services. Of the 2,743 dentists in the country, 78.3% are located in the departmental capitals and 21.7% in the rest of the country. Therefore, various programs have been devised to alleviate the pressure upon scarce dental resources and to increase coverage, i. e. :

- New systems of professional practice with emphasis on increasing productivity. Time-motion studies are being made in hospital dental sections.

- Delegation of functions to auxiliary personnel, thus freeing time of dentists for additional patients. (Auxiliary personnel must be trained to carry out the delegated functions.)

- Special courses to integrate dental schools more closely with sectional health services. These are carried out by agreements between dental schools and the Ministry.

### Regional Training Centers for Health Personnel

The administrative systems of hospitals must be modernized to accomplish maximum utilization of hospital resources. Management must also take the lead in planning to improve the innovative processes in hospitals. Decentralization of the training functions in regional centers will facilitate training in hospital administration by providing easy access to personnel in different areas of the country.

### The National School of Public Health

The National School of Public Health of the University of Antioquia educates professional and auxiliary health personnel for Colombia and other countries. The School carries out research in public health, provides assistance to various institutions, and advises the Ministry on health planning. Presently, a five-year development plan is being implemented to strengthen and expand the School's capacity to train personnel in the philosophy, methods, and skills required to carry forward the Government's new health policy.

### Incentives to Improve Distribution and Productivity of Health Personnel

The training program, as summarized above, must be complemented by carefully devised incentives to assure better distribution and productivity of health personnel. The Government is studying means of effectuating an incentive program based on the following principles:

- Improvement of salaries with periodic readjustment, merit, promotion, etc.
- Special stimuli for work in particular areas.
- Management systems which evoke better performance and improve the distribution and utilization of human resources.
- Systematic flow of information on health technology, and continuing education programs;
- Better transportation and communications;
- Greater facility for importation of scientific equipment;
- Increased opportunity for post-graduate training.

#### 5. Research

Much research on health problems is currently under way in Colombia. The specific studies outlined below constitute the Government-sponsored research in support of general health planning.

##### a. Basic Research

The Colombian health authorities recognize the more immediate value of "applied research" but note that the distinction between "applied" and "basic" is not clear-cut, as the product of basic research at any moment can have important practical applications. Moreover, the encouragement of basic

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research is essential to raising the standards of medical science in Colombia. The principle basic research projects of the National Health Laboratory during the period 1971-74 are in genetics, cellular biology, microbiology, and biochemistry.

b. Epidemiological Research

This category of research is essential to current understanding of the characteristics of communicable diseases, their distribution, and particular symptoms over time.

(1) Status of the Research Through 1971

During 1971 emphasis was given to research on the epidemiology of "chagas disease." This research is directed by the National Health Laboratory. In general, it seeks to identify the epidemiological characteristics of the disease in the eastern region of Colombia where studies have shown the greatest prevalence. Research has been concentrated in an experimental area and the results obtained will be the basis for research at the national level.

(2) Activities for 1973 and 1974

The final report on the experimental area will be completed. The sample will be drawn, the programming and collection of data necessary to a nation-wide study will be accomplished in 1973, and the national research will be done in 1974.

Also in 1974, research related to environmental sanitation will be intensified, i. e., water and atmospheric contamination, food and drug control, etc.

c. Applied Research

The results of applied research make available a range of alternatives on which decisions for use of health resources may be based. Basically, applied research will be concentrated in the fields of biometry, human resources, demography, and health services.

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(1) Status of Research Through 1971

Study of Dental Resources

This study was carried out by the Division of Special Research and financed by INPES and PAHO. It sought to ascertain the characteristics of dental professionals, technicians, and auxiliary personnel. The study also surveyed dental educational resources, including the faculties of dentistry in the country and the School of Public Health. In these institutions the characteristics of the teaching staff, students, physical facilities, program of studies, and budgets were examined.

The study quantified dental services available in medical facilities and provided analytical data on the type of services, equipment, and human resources. The National Dental Directory and a preliminary report have been published.

Study of Institutions of Medical Attention

This study has been done jointly by the Division of Special Research of INPES and the Colombian Association of Medical Faculties. It quantifies the institutions of medical attention in the country, identifying them by size, geographical location, and administrative organization. Characteristics of physical plant, personnel employed, services provided, equipment, record-keeping systems, and some general measures of productivity were studied. Measures of utilization of capacity, average days of stay, and number of discharges per year were also included. From this study, the "National List" was published. It includes all the hospitals and out-patient clinics in Colombia, discriminated according to their financial support, size, level of regionalization, and location.

Experimental Study of Health Services

This study was carried out jointly by the MOH through INPES and ASCOFAME. Its general objective was to evaluate the changes in coverage of medical attention brought about by the delegation of functions from professional

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personnel to auxiliary personnel. Three areas were selected from the study: one in the central part of the country, one on the Atlantic Coast, and one in the southwest region. The programming and collection of data have been completed, processing of data is 50% complete, and 30% of the analysis has been done. In the second half of 1971, a preliminary report was made of the first two areas. This information will help identify the type of functions which can be delegated without prejudicing the quality of health care.

Investigation of the Human Resources of Health Institutions

This study, financed by the MOH, is being carried out jointly by the Division of Special Research and the Office of Administration of Human Resources of the Ministry of Public Health. It seeks to identify the professional, technical, auxiliary, and administrative personnel in the health sector. It will be used to establish a central computerized file of the numbers, qualifications, and locations of all health personnel in Colombia.

Basic Sanitation Study of Rural Communities

INPES and ASCOFAME are carrying out this study financed by INPES through a FONADE loan.

It surveys communities of between 50 and 2,500 inhabitants to determine the conditions of basic sanitation (water/sewerage). The communities will be discriminated in terms of criteria, such as accessibility, population, number of homes, existence of community councils, government or private agencies at work, or other aspects which will assist INPES in establishing a priority list of communities in which to develop basic sanitation projects. The programming stages are completed and the collection of data will begin soon.

(2) Activities for 1972

General Study of Dental Resources

The following documents will be published on dentistry in Colombia: "Human Resources in Dentistry" and "Institutional Resources in Dentistry."

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Study of Institutions of Medical Attention

A conference on the subject was held in July and the following documents will be published: "National Directory, Methods and Results," "Institutional Resources," and "Equipment."

Experimental Study of Health Services

The following publications will be issued: Five training manuals, "Methods," and "Results."

Inventory of Human Resources in Health Institutions

The computerized file will be established, listing all the personnel of the Ministry of Public Health, the semi-autonomous institutions related to the Ministry and the sectional health services. A general report, "Institutional Human Resources," will be published.

Study of Sanitation of Rural Communities

The data will be collected, processed, and finalized, and the preliminary report will be published the first part of December.

(3) Goals for 1973-74

The Division of Special Research now has a large quantity of information from the study of institutions of medical attention, the study of dental resources, and the study of institutional resources which must be rapidly analyzed. The group responsible for the analysis and presentation of results (professionals, technicians, and auxiliaries) must be strengthened.

Three other studies have been initiated: "Study of Needs of Odontological Specialists in Public Health," "Study of Health in the Textile Industry of Colombia," and "Programming of Human Resources."

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The programming of the second stage of the national morbidity study has also been projected for 1973-74 as well as studies of the financing of the health sector.

d. Drug Research

Research will be done on the physical-chemical analysis and biological analysis of drugs and pharmaceutical products for licensing purposes. Studies to identify and evaluate the biological efficacy or noxious effects of products for public consumption will also be made.

(1) Status of Research Through 1971

Investigation of Smoking in Latin America

In the beginning of 1971, PAHO initiated a research project related to smoking in eight countries: Mexico, Guatemala, Colombia, Venezuela, Peru, Argentina, Chile, and Brazil. This study seeks to identify the characteristics and activities of those of the population who have smoked and presently are smoking.

(2) Activities for 1972

Two documents will be published from the research on smoking: "Smoking Habits in Latin America" and "Smoking Habits in Bogota."

(3) Goals for 1973-1974

Drug research is a new area which has not yet been highly developed, although it has fundamental implications for the control and quality of medical products. The study of "Smoking Habits of Latin America" provided the beginning for this type of study. In 1973-1974 additional drug research will be planned.

e. Other Research

The above summary of specific Government-sponsored research efforts does not provide a comprehensive understanding of all research being conducted, or planned, in the health sector. Much of the work being done by

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ASCOFAME and the various medical faculties, for example, is not covered because it is not directly financed through the investment budget. Moreover, the above material does not sufficiently illustrate the increasing priority to be assigned to research on operational aspects of the health system. Since the plan was written, serious consideration is being given to adding two more significant research activities of this type. The Planning Department is considering assistance to the efforts of the University of Valle, the municipality of Cali, and the sectional health services in studying the effects of a regionalized system of health care delivery in rural and urban areas near Cali.

Another important possibility is a proposal for a comprehensive analysis of the health system, and the evaluation of various alternative methods and actions in delivering of health care to the nation. The essence of this proposal is described in Annex B.

Finally, and as discussed previously in this analysis, the Government has prepared a massive study of food and nutrition problems, together with recommendations for a national nutrition policy. Those recommendations are now under consideration.

6. Production, Distribution and Purchase of "Complementary Inputs"

This part of the plan covers the provision of "complementary inputs" needed to assure maximum productivity of the human resources and physical facilities to be utilized in the execution of the National Health Plan. Examples of such inputs are:

- Equipment will be provided for tuberculosis detection, rabies control, and pure food inspection.
- Flouridation will be provided in 140 communities containing 9 million inhabitants.
- Home water filters for 1,500,000 persons are to be produced locally.
- Biological materials sufficient for most of the nation's vaccination programs will be produced at the National Health Laboratory.

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a. The "Complementary Inputs" Program is as follows:

(1) Acquisition and Maintenance of Tuberculosis Control Equipment

(a) Justification

Tuberculosis continues to be a serious problem for the Colombian population, but a new strategy for its control has been initiated through the integration of programs with all the health institutions in the country. The control measures for this disease have been carried out "vertically" from the Ministry of Health. This has made the extension of the program more difficult. In future, a "horizontal" program of control will be implemented. This requires equipment so that the centers and health posts can carry out the new responsibility. This same responsibility must be carried out by the regional hospitals and recuperation hospitals which will also need such equipment.

(b) Objectives

To provide equipment to all general health institutions to carry out the program of tuberculosis control. The search for, and diagnosis, control, and treatment of tubercular persons will be intensified.

(c) Goals for 1973-1974

To increase by at least 10% the coverages in the rural area; equipment will be destined particularly for the health centers and hospitals of the small communities. Some equipment is destined for the regional hospital centers to treat persons referred to these institutions from the local and rural area.

(2) Acquisition of Equipment for Rabies Control

(a) Justification

Colombia is the country of the hemisphere which has the greatest incidence of human and animal rabies.

(b) Long-Term Objectives

To eradicate human and animal rabies in populated areas of Colombia, control rabies in wilderness areas, provide adequate observation of

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100% of all animals which have bitten persons, and laboratory diagnosis for all inspected animals.

(c) Objectives 1973-1974

- Adequate attention to 100% of the persons exposed.
- Construction and equipment of 37 anti-rabies centers in populations with more than 50,000 inhabitants.
- Vaccination of 80% of the canine and feline population in the national territory.
- Equip and improve 23 laboratories for rabies diagnosis, and provide 31 sectional health services with material and equipment to develop a program of rabies control.

(d) Plan of Operations

- Construct and equip 23 anti-rabies centers in 1973, 14 in 1974.
- Maintenance and repair during 1973-1976
- Equip and improve 23 diagnostic laboratories
- Acquire equipment for the control of rabies for 31 sectional health services.

(3) Acquisition of Equipment for Food Control(Milk)

(a) Justification

Milk is easily contaminated in all stages of production, transportation, processing, and sales.

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(b) Long-Term Objectives

- Decrease the risks of food-originated illness
- Control the taste/texture, physical-chemical and bacteriological characteristics of the milk and milk products.

(c) Short-Term Objectives

- Improve and expand the national bromatological laboratory.
- Improve and expand sectional bromatological laboratories.
- Equip the sectional health services with material and equipment adequate to develop programs of food control (milk).

(d) Goals 1973-1974

- Acquisition of laboratory equipment for the national food control laboratory.
- Acquisition of laboratory equipment for the 31 sectional health services.
- Acquisition of field equipment for health personnel of the sectional health services.

(4) Fluoridation of Water for Public Consumption

(a) Justification

According to the "Study of Human Resources," 99% of the Colombian population suffer from dental cavities, 32% of Colombians, upon completing 19 years of age, have had cavities in 20 or more teeth.

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The dental resources of the country are not sufficient to cover more than 15% of the demand. Preventive measures, therefore, are essential.

(b) Objectives

Long-Term

- To reduce by up to 65% the incidence of dental cavities of the infant population (to which fluorine can be administered through the water supply).
- To expand the coverage to areas without public water supplies by utilizing other system of fluorine administration.

Short-Term

- To provide by 1976 applications of fluorine to a population of 9 million inhabitants using public water supplies.
- To investigate the possibilities of utilizing kitchen salt as a carrier to administer fluorine to the population which does not have public water supply systems.
- To carry out dental evaluation to measure the effect of the fluoridation.

(c) Goals

- The application of fluorine in 140 aqueducts of the country serving a population of 9 million inhabitants.
- Distribution of the fluoride, equipment, and laboratories for each of the 140 aqueducts.

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- Daily analysis in each of the water supply systems where this is administered.

- Training of personnel to administer the fluoride and operate the water supply systems.

(5) Construction of Domestic Water Filters

(a) Justification

Diseases of water-origin are highly significant causes of death and sickness and the group most affected is children, especially in rural communities which do not have water supply systems.

(b) Objectives

Long-Term

- To improve the physical, chemical, and bacteriological quality of the water consumed by the dispersed Colombian population which does not have access to public service of potable water.

Short-Term

- To benefit a total of 1,500,000 people of the dispersed population, providing domestic filters by the promoters of health.

(c) Targets

A yearly increase in the provision of domestic filters as follows:

<u>Year</u>	<u>No. of People Benefitted</u>
1973	200,000
1974	300,000
1975	400,000
1976	600,000

(6) Production of Biologics -- National Laboratory of Health

(a) Justification

The National Laboratory of Health is capable of efficient and low-cost production of biological products essential to implementation of the National Health Plan.

(b) Objectives

- To meet the demand for biological products for the prevention and treatment of diseases.

- To produce by 1973-74 sufficient biologicals to meet the demand of the Ministry of Health for the following vaccines:

Virus:       yellow fever  
                  smallpox  
                  human and canine rabies

Bacterial:   BCG  
                  tetanus and diphtheria  
                  anti-typhoid  
                  DPT  
                  cholera

Serums:      typhoid  
                  rabies  
                  tetanus  
                  diphtheria

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TARGETS FOR PRODUCTION  
OF BIOLOGICAL PRODUCTS

<u>Product</u>	<u>Programmed Doses Year 1973</u>	<u>Programmed Doses Year 1974</u>	<u>1975</u>
Smallpox	4,000,000	4,000,000	4,800,000
Yellow Fever	2,000,000	2,000,000	2,400,000
Anti-Rabies (Human)	90,000	130,000	156,000
Anti-Rabies (Canine)	1,000,000	1,200,000	1,240,000
BCG (Liquid)	1,000,000	5,000,000	600,000
BCG (other)	500,000	1,000,000	1,200,000
Anti-Typhoid	500,000	500,000	600,000
Anti-Cholera	500,000	?	?
Tetanus	500,000	500,000	600,000
Diphtheria	200,000	200,000	240,000
DPT	1,200,000	1,500,000	1,800,000
Tuberculine	1,200,000	1,500,000	1,800,000
Shick Test	50,000	75,000	90,000
Anti-Rabies Serum	5,000	7,000	8,140
Anti-Typhoid Serum	2,000	7,000	8,400
Anti-Tetanus Serum	3,000	5,000	6,000
Anti-Diphtheria Serum	3,000	5,000	6,100

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(7) Maintenance of Equipment of the National Laboratory of Health

The National Health Laboratory, in addition to its responsibilities for the production of biologicals, also carries out important activities in basic and epidemiological research as well as the basic program of chemical analysis.

High-value equipment is required for the development of these activities. The investment budget contains provision for the maintenance of such equipment of the National Health Laboratory.

7. Improvement of Systems of Planning, Administration and Information in the Health Sector

This component of the plan is among the most important (though not the most clearly articulated) in seeking the objectives of expanding coverage and improving the quality of the health service.

Fundamental weaknesses must be corrected in the system of planning and supervision and in the process of basic data collection. The provision of health services is complex and involves many institutions within the sector, as well as important intersectoral relationships. The creation and use of resources in the health sector has been improvised and disorderly, as the Government's own analysis shows. There are, however, sub-systems which have been characterized by effective planning, and the results are encouraging. The work accomplished to date forms the basis for significant improvement in the decision-making process for the total sector.

The Government's program for improved planning, administration and information is as follows:

a. Redesign of the Health Sector Information System

Serious deficiencies in statistical information on health are found at institutional, local, and national levels. Collection, utilization,

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and analysis of data by national agencies are impeded by the incompleteness, incomparability, and unreliability of statistics originating at lower levels.

The program for improving data collection places short-term emphasis on training of statistical personnel of the hospitals and the provision of basic equipment for various levels of the system. The immediate goal is to train some 50 hospital record keepers each year, to provide basic statistical equipment to all the sectional health services, and to provide vehicles for 24 of the sectional services to aid in the process of in-service training and supervision.

The long-term objectives are to improve the system itself through broader, more permanent changes in policy and procedure.

The basis for these changes is being developed through several research efforts aimed toward improved health planning, such as PLAN SAN and COCINPLAS, which are supported by PAHO and the World Health Organization. The improved capacity of the Planning Office of the Ministry, the yearly evaluation cycle carried out by the Ministry and the sectional health services, the availability of better-trained personnel are the instruments to be used to develop and implement the desired changes in the system.

b. Development of Health Administration

(1) Justification

The present administrative system for public health requires substantial improvement to meet the goals of expansion, increased productivity, and innovation set forth in the new health policy, especially in the fields of personnel, supply, and transportation management.

(2) Characteristics of the Programs

(a) Long-Term Objectives

The present administrative system is an obstacle in expanding coverage; therefore, changes in the administrative area will improve the efficiency and coordination of all sector activities.

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(b) Immediate Objectives

(i) Achieve by December 31, 1976, efficient management systems with trained personnel for all of the institutions of the public health sector in each of the following areas:

- Acquisition, production, warehousing, and distribution of supplies and equipment in a standardized timely fashion.

- Selection and contracting of health personnel by category, level, function, and location at a salary appropriate for the level of work.

- Quality, quantity, and cost control.

(ii) Continue and refine the process already initiated of identification of all of the health institutions in the public sector, assessment of sources, and problems of financing of the sector, and maintenance of a computerized inventory of buildings, equipment, and supplies. A program will be developed for new investments and renovation of buildings and equipment for the following five-year period, a system of investment programming, and sufficient personnel to maintain control of and improve the investment program will be provided.

c. Planning, Evaluation and Technical Assistance

(1) Justification

Planning must be done in advisory offices connected directly to the highest decision-making authorities of the health sector. The importance and magnitude of Planning Office responsibility demands operational, technical, function, and leadership capacity. The MOH Planning Office should be able to diagnose the situation, and evaluate alternative policy proposals, develop

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plans in accordance with policies, follow-up implementation, evaluate actions taken, and provide expert consultation and technical assistance.

(2) Goals

To implement a series of political and administrative measures to promote and extend efficient health services to marginal groups by unification of health services within policy guidelines and directives of a internally consistent national health policy which will be compatible with other sectors.

The Ministry must assume the leading role in the formulation and adoption of policies and the implementation, evaluation, and re-formulation.

(3) Short-Term Objectives

(a) To obtain in 1973-1974 the approval, financing, and implementation of a project to improve the present systems of M.OH evaluation of the health sector.

(b) To provide adequate financing for the creation of a technical unit in M.OH Office of Planning which will integrate investment projects and sector programming.

(c) In 1973-1974 to achieve the expansion, coordination, integration, and unification of all Ministry planning units and assure that the Planning Office has adequate furnishings, personnel, facilities, and administrative equipment.

(4) Description of the Projects

(a) Creation of a Unit Responsible for Integration of Programs and Investment Projects

- Target: Creation and institutionalization of this integration unit.

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- Location and Supervision: Office of Planning, Ministry of Public Health.

- Field of Action: The Office will be concerned with financing, programming, and implementation of the investment projects such as: construction, remodelling, and equipping of hospitals, personnel training, and research.

- Lines of Coordination: The activities of this unit shall be coordinated with the sectional health services, the Institute of Social Security, the decentralized institutes connected with the Ministry, the associations of university faculties related to health, and some international organizations.

- Functions: To coordinate and integrate the projects carried out in the sector.

- To evaluate the priority of each project within the national health policy framework.

- To provide technical assistance to the institutions, organizations, work groups, and Ministry divisions.

- Time Schedule: This unit should begin its activities in January, 1973.

(b) Development of Planning in the Health Sector

This consists primarily in increasing the capacity of the present planning units by selecting and contracting appropriate personnel and providing equipment, materials, and proper physical facilities.

(c) Construction of the Building for the Ministry of Health

(i) Justification

The Ministry does not have its own buildings and that which it occupies is inadequate and not functional. The central head-

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quarters of the Ministry should be in the same area as the complex of buildings of the majority of decentralized health institutes. The architectural plans are being developed.

8. Rural Environmental Sanitation

The 1973-75 program of potable water and waste disposal for rural communities of under 2,500 inhabitants is an extension of the activities already initiated in the 1968-78 plan of action. In 1973, the plan calls for 135 projects for the construction of water and sewage system to provide services to an additional 400,000 people. INPES has had success, in the best Title IX tradition, in evoking the participation of the community in planning, building, and managing these systems.

a. Description and Location

The program is to provide water and adequate sewage disposal in communities of less than 2,500 inhabitants by construction of water systems, sewage systems, school sanitary facilities, and rural sanitary units.

b. Goals of the Program

The implementation plan 1972-1980 seeks to provide services to 50% of the rural population by 1980. The investment requirement to accomplish this goal is 250 million pesos per year (1972 prices).

c. Organization of the Program

(1) Institutional Aspects

The planning, organization, administration, and implementation of the program will be the responsibility of INPES through its division of basic rural sanitation. At the regional level, the program operates through INPES sectional offices in all the departments and intendencias.

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(2) Programming

Current projects have been programmed according to a 10-year plan, 1968-1978. INPES has initiated the study of "rural communities" to be completed in 1972, on which to base future programming.

Plans for 1973 will serve 400,000 people, with 175 water supply and 60 sewage projects.

(3) Recovery of the Investment

Before construction, a study is made of the economic condition of the community and a monthly quota is established which each family will pay for financing the project. Part of these payments cover the administrative cost of the local system and the rest is used to amortize about 50% of the total cost. These charges are independent of the communities' contributions toward the construction, which usually are 20% of the total investment.

d. Human Resources

The operational capacity of the program and its organization is considered generally adequate to carry out the projected investment. It will be necessary to strengthen some areas. Presently, the program has a central office with eight sanitary engineers, one economist, one sociologist, and 22 auxiliary and administrative personnel. The operation level has 32 engineers, 118 sanitary promoters, and 224 auxiliary and administrative personnel.

C. Summary Assessment of the National Health Plan

We now address the question of whether the program (National Health Plan) is consistent with and effectively serves the general health policy.

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As will be recalled, the policy places strong emphasis on broadening coverage, maternal and child care, regionalization and integration of public health services, preventive health measures, operations research to assess performance and reveal alternative approaches, and improved planning, management and information systems.

These being the objectives of policy, the question can be answered quite simply: the program is highly compatible with policy and, if efficiently executed, will eventually achieve policy goals.

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CHAPTER III - SUMMARY RECAPITULATION OF REQUIREMENTS FOR  
IMPLEMENTATION OF THE NATIONAL HEALTH PLAN

A. Financial

The proposed expansion of health services will require increased total expenditures, which the National Planning Department has projected through 1976. Health expenditures in the public sector<sup>1/</sup> rose from 4,179 million pesos in 1970 to 5,003 million in 1971, an increase of 20% in current pesos. Additional rises are envisaged for 1972, 1973, 1974, and 1975 of 13%, 15%, 9%, and 11%, respectively. Health investment also is receiving a greater share of the GOC investment budget, from 8% in 1966 to 13% in 1972, and 18% projected for 1975. The most significant increase to become available to the health sector is through the "Situado Fiscal," a revenue-sharing device which is expected to make an additional 500 million pesos available for local health expenditures in 1973. Table 45, page 155, summarizes the National Government investment outlays for health in 1966-71, and projected investment of 1972-1975.

B. Legal

1. The major legal bases for executing the new health policy have been established in the legislation that instituted the reorganization of the health system. (Described in Chapter II.)

2. As noted in Chapter VI, which describes the regional system, it is our opinion that present legal authority is sufficient to allow development of the system in pace with the development of organizational and human resource capacity of health institutions. Convinced leadership using present legal authority, ministerial policy guidelines, contractual relationships, and the power of the purse can achieve substantially all of what is presently contemplated in the approach to a regional system.

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<sup>1/</sup> Excluding INSFOPAL investment in urban water and sewerage for larger cities.

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3. A major exception is the relation of the general public health system to that of the ICSS, and of less importance, to that of the small health programs sponsored by other ministries, and the "social security" program of government employees. The present law in Congress to establish the unified system (sistema unico) would be facilitative but not essential in establishing the regional system. It, or something like it, will probably be necessary to achieve more than token integration and limited coordination with these other autonomous systems. Although we see future benefits to be gained by improving this coordination, we do not consider it as essential for achieving the objectives designated in the GOC's health plan for 1973-1975.

C. Institutional

1. The institutional requirements to carry out this program are substantial. Fortunately, however, no major new institutions are required, nor significant changes in their structure or interrelationships. Of course, the entire complex of institutions needs improved planning, managerial, and technical capability, especially the National Hospital Fund.

2. Training facilities exist for virtually all levels of health personnel; facilities to produce necessary health supplies are available or importation is relatively easy; a large network of basic medical care facilities (good, average, and bad) are in place; ministerial and departmental health services are all organized; there is an effective institute to deal with environmental sanitation, and one to deal with basic social problems and nutrition.

3. The health planning unit of the National Planning Department, the National Hospital Fund as it presently exists, CORPAL, and ICBF have several years of operational experience behind them. The other agencies and ICBF's Division of Nutrition (formally the Institute of Nutrition) have a long history of reasonably effective action in the fields of activity contemplated for them in the health plan.

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4. Although there are many important innovative aspects of the health strategy, they are largely built on institutional orientations that already exist. The health strategy for 1973-1975 is basically designed to expand and consolidate these past efforts, spread them to other areas, and broaden their influence throughout the system.

5. There will be additional requirements placed on the Ministry staff, particularly in the area of planning, supervision, and evaluation.

6. INPES can essentially carry out its requirements with little additional staffing.

7. The ICBF responsibilities will place additional requirements on its planning staff, particularly in the area of program budgeting. Internal reorganization and closer integration of social welfare program areas with those of nutrition are needed and are already planned. Significant additional research capacity in nutrition beyond that which could be achieved by closer working relations with IIT is not necessary to carry out the purpose of this program. However, to improve the nutrition supplementation program, additional management specialists and systems analysts are needed.

8. The special service for campaigns of malaria, yaws, and yellow fever control has been carrying out these kinds of campaigns for over ten years with relatively good results. The increase in their activity contemplated by the program can be achieved with the present institutional structure with essentially the same personnel.

D. Technical Requirements

1. The Government of Colombia has had a long-standing and cordial relationship with the Pan American Health Organization which has provided a broad and continuing base of technical assistance. Colombia has taken good advantage of this assistance to build up its own competence in most areas of health programming. Colombia also has a sizeable cadre of health professionals who have had advanced training in Latin America, the United States, and Europe.

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2. Colombian competence in socio-medical research, as demonstrated by the Human Resource Study, has caused several international and academic institutions to look to Colombia for collaborative relationships in studies of similar magnitude.

3. Health planning is coming of age in Colombia with well-trained people spread through the system from the National Planning Office through the Ministry of Health and its decentralized institutes to the sectional health services and the university medical faculties.

4. INPES has demonstrated respectable competence in the design and construction of local water and sewer systems. It has also demonstrated skill in the techniques of securing community cooperation and participation in this construction.

5. The biological laboratory Samper Martinez has proven its capability in the production of vaccines and serums over a decade of production for the country and the region.

6. Certain technical requirements have been created by the expanded health sector program, however, to which the system cannot fully respond with "in-house" capacity. The most visible need is in the area of hospital design, construction planning, and supervision. The National Hospital Fund faces a substantially increased workload in implementing the Hospital Plan. It requires some reorganization (presumably along the lines recommended by an as yet unpublished study by PAHO), and especially, long-term technical assistance and the contracted services of private consultants on architectural planning, design, and supervision.

The development of the cost/benefit model of alternative approaches within the health system will require technical skills that are presently not available in necessary depth to the Government. Opportunities for technical assistance in this field should be sought and utilized.

The limited needs for technical skills of the ICBF can be served by planned post-graduate training of Colombian personnel as well as short-term advisors.

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Additional expertise in methods of innovative training, particularly of auxiliary health personnel, also will be largely met by those presently in post-graduate training abroad. However, additional short-term technical assistance may be needed.

E. Manpower

As noted in the section of this analysis on human resources, manpower limitations place significant constraints on the system. The limitations in number and in institutional and geographical distribution are serious. Programs designed to improve the quality and quantity of health manpower at all levels will have to be carried out vigorously if there is to be significant progress in attaining the goals of expanded coverage and improved quality of medical attention to the Colombian population. The most critical area, which must be closely monitored and evaluated, is the need for expanding and improving the training of auxiliary personnel. Although partial solutions can be achieved by intensification of short-course programs, long-term institutional improvements must be effected to provide an adequate supply of health manpower on a continuing basis for the future.

Fortunately, Colombia has impressive leadership in the Association of Medical Faculties, the School of Public Health, and the several medical faculties. They can be expected to give valuable guidance in developing these programs.

F. Planning and Analysis

The quality and completeness of the documents developed by the Government of Colombia, as well as the coherence of the strategy and its consistency with reality in the essential points, is good evidence of the planning and analytical capability of at least the top-level personnel responsible for this function. We have seen good evidence of this planning capacity in several of the sectional health services we have visited and, to a degree, at the regional hospital level. This capacity has been developed through PAHO assistance, post-graduate training abroad, and a growing competence in these fields at the School of Public Health in Medellin and the Medical Faculty at the University of Valle.

Nevertheless, existing planning capability will be heavily burdened by the requirements of this health sector program. There is quality but not sufficient depth in the National Planning Department, the Ministry, and in most of the sectional levels. The Government has requested, and doubtless will obtain, additional technical assistance in this area from various international agencies.

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SUMMARY AND EXPLANATION OF THE CHARTS CONCERNING  
THE NATIONAL HOSPITAL PLAN

Charts summarizing the National Hospital Plan for hospital construction have been formulated by the Ministry of Health and the National Hospital Fund. These include information about the 112 projects in the Plan, 21 of which are hospitals to be constructed, 30 are partially constructed hospitals to be finished, and 61 are hospitals to be remodeled or enlarged.

Hospital construction has been planned according to the criteria described by the N OH and mentioned in previous chapters of this document. Following is a brief explanation of how these criteria are being applied in the National Hospital Plan:

1. Thirty-one of the 112 projects are planned for the six most heavily populated departments (Atlantico, Cundinamarca, Caldas, Risaralda, Quindio, and Valle). The number of beds per 1,000 inhabitants is low throughout the country, especially in large cities; construction or enlargement of city hospitals has been included for all of the major cities of Colombia. However, even with the addition of 3,945 new beds in Colombia by 1975, the number of beds per 1,000 inhabitants will decrease.

2. Because the regional and university hospitals are the crux of the regionalization system, emphasis has been placed on construction for these hospitals. More than one-half (75) of the projects planned are regional and university level institutions, and will account for 3,751 of the 3,945 new beds to be available in 1975.

3. Priority has been given to 30 partially constructed hospitals to be terminated as soon as possible. Their termination will depend on the present state of construction and the availability of funds for equipment.

4. The condition of the physical plant of an institution is another criteria for selection of a hospital for construction or remodelling plans. The most common reasons given for choice of a hospital included in the National Hospital Plan are poor condition and evidence of demand for better services by a community. Many buildings are very old and have no space available for out-patient services or health and sanitation education offices. These are essential elements in the integrated health plan of the regionalization system; health services for the region should be improved by enlarging or rationalizing the facilities of these poorly designed institutions.

5. Hospitals collaborating with university medical schools also receive priority; fourteen university level projects are included in the Hospital Plan so that medical teaching facilities can be improved, and so this most complete element for patient care at the apex of the regionalized patient referral system can adequately serve this function.

6. Limited construction has also been planned for moderately populated areas where access to larger regional medical centers is difficult, such as the jungle area of Bahi Solano, Choco, or the isolated valley of Mocoa, Putumayo.

It appears that the criteria as described by the MOH have been followed in the selection of sites for hospital construction; special emphasis clearly has been placed on the improvement of larger, better utilized regional level institutions as compared to poorly utilized local hospitals. Better medical facilities will improve and encourage implementation of the regionalized system of health care in Colombia.

NUMBER OF HOSPITALS AND INCREASED NUMBER OF BEDS  
ACCORDING TO LEVEL OF REGIONALIZATION IN NATIONAL HOSPITAL PLAN

	<u>New Institution</u>		<u>Institutions to be Terminated</u>		<u>Institutions to be remodeled</u>		<u>Total</u>	
	<u># Hospitals</u>	<u># Beds</u>	<u>#Hospitals</u>	<u># Beds</u>	<u>#Hospitals</u>	<u># Beds</u>	<u>#Hospitals</u>	<u># Beds</u>
University	1	300	1	40	12	581	14	921
Regional B	7	481	9	1,533	7	365	23	2,379
Regional A	6	186	10	195	22	90	38	471
Local B	5	10	8	41	10	63	23	114
Local A	2	10	2	22	10	48	14	80
	<u>21</u>	<u>987</u>	<u>30</u>	<u>1,831</u>	<u>61</u>	<u>1,147</u>	<u>112</u>	<u>3,965</u>
	=====	=====	=====	=====	=====	=====	=====	=====

AVAILABILITY OF BEDS 1970 AND 1975 (ESTIMATED) ACCORDING TO DEPARTMENTS

<u>Department</u> <u>1970</u>	<u>Population</u> <u>1970</u>	<u>Total No.</u> <u>Beds</u> <u>1970</u>	<u>No. Beds</u> <u>Needed</u> <u>1970 <math>\frac{1}{2}</math></u>	<u>No. Beds</u> <u>Per 1000</u> <u>1970</u>	<u>(Estimated)</u> <u>Population</u> <u>1975</u>	<u>No. New</u> <u>Beds</u> <u>Planned</u>	<u>(Estimated)</u> <u>Total beds</u> <u>1975</u>	<u>(Estimated)</u> <u>No. Beds</u> <u>Needed</u> <u>1975 <math>\frac{1}{2}</math></u>	<u>(Estimated)</u> <u>No. Beds Per</u> <u>1000 - 1975</u>
ANTIOQUIA	3,011,882	6,443	9,638	2.13	3,548,600	643	7,086	11,356	1.99
ATLANTICO	896,202	1,507	2,867	1.68	1,073,000	163	1,670	3,434	1.55
BOLIVAR	843,275	1,402	2,698	1.66	993,200	175	1,577	3,178	1.58
BOYACA	1,186,320	1,581	3,795	1.33	1,338,100	177	1,758	3,641	1.31
CALDAS	806,106	2,233	2,579	2.77	913,100	17	2,250	2,922	2.46
CAUCA	692,141	730	2,214	1.05	787,300	80	810	2,518	1.02
CESAR	377,764	387	1,210	1.02	620,300	16	403	1,984	.64
CORDOBA	755,207	689	2,416	0.91	922,200	109	798	2,950	0.86
BOGOTA D.E.	2,434,218	9,246	7,788	3.79	3,313,000	611	9,857	10,601	2.97
CUNDINAMARCA	1,195,576	4,320	3,826	3.61	1,356,400	51	4,371	4,339	3.22
CHOCO	208,535	295	665	1.41	2,237,900	42	337	761	1.41
GUAJIRA	234,058	186	748	0.79	329,100		186	1,052	0.56
HUILA	482,034	676	1,542	1.40	552,800	210	886	1,770	1.66
MAGDALENA	680,736	841	2,179	1.23	704,000	186	1,027	2,253	1.45
META	246,009	184	787	1.96	331,400		484	1,059	1.46

Continuation. . . . .

Department 1970	Population 1970	Total No. Beds 1970	No. Beds Needed 1970 <sup>1/</sup>	No. Beds Per 1000 1970	(Estimated) Population 1975	No. New Beds Planned	(Estimated) Total Beds 1975	(Estimated) No. Beds Needed 1975 <sup>1/</sup>	(Estimated) No. Beds Per 1000 - 1975
NARIÑO	782,520	1,988	2,502	2.54	878,100	267	2,255	2,810	2.56
N. SANTANDER	611,306	1,363	1,955	2.22	696,500	86	1,449	2,227	1.64
QUINDIO	343,546	1,003	1,098	2.91	387,900	95	1,098	1,242	2.83
RISARALDA	506,760	1,339	1,622	2.64	581,400		1,339	1,859	2.30
SANTANDER	1,129,701	4,124	3,616	3.65	1,278,400	(39)	4,094	4,090	3.20
SUCRE	358,493	1,551	1,146	4.32	409,100	52	1,603	1,309	3.91
TOLIMA	896,676	1,649	2,870	1.83	987,500	420	2,069	3,158	2.09
VALLE	2,099,716	3,956	6,720	1.88	2,468,800	585	4,541	7,900	1.83
INTENDENCIA Y COMISARIAS	338,140	555	1,081	1.64		19	574		

<sup>1/</sup> Calculated on the national average of 3.2 beds/1000 inhabitants.

SOURCE: Ministry of Health (Architectural Section)

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CLARIFYING NOTES FOR THE CHARTS PERTAINING TO  
HOSPITALS PROGRAMMED FOR TERMINATION, NEW CONSTRUCTION,  
AND REMODELLING OR ENLARGEMENT OF EXISTING BUILDINGS

"Type of Hospital According to Level in Regionalization Plan"

This comprises the level of regionalization of each of the hospitals included in the National Hospital Plan as described in the National Institution List written by INPES. Symbols mean the following:

U - University  
RB - Regional B  
RA - Regional A  
LB - Local B  
LA - Local A

"Number of Beds (Existing and Additional)"

Those beds presently in use are listed under "Existing."

The number of beds to be increased or decreased in the new or remodelled hospitals are noted under "Additional Beds." The numbers to be decreased are listed in parenthesis.

"Number of People Directly Benefitted (000s)"

This includes the population of the municipality where the institution is located; it is considered to be the potential number of people who can directly solicit health services of the hospital.

In areas where Social Security is operating, the number of affiliates was deducted from the population of the municipality, as these people do not directly solicit services of the government medical institutions.

In Bogota, where the area of direct and indirect influence of each hospital cannot be established, the director of each hospital was consulted by telephone about the number of admissions of each institution in 1971. The directors were

also asked the percentage of admissions of patients originally attended in areas other than the Special District of Bogota.

"Number of Subordinate Hospitals in the Regional System"

To establish the number and type of hospitals in this column, the Annex, including all of the hospitals in the regionalization system, was consulted.

"Number of People Directly and Indirectly Benefitted (000s)"

In addition to the direct population, as stated in Column 3, the population corresponding to the area of influence of the subordinate institutions (Column 4) was considered. This was based on the calculation of population for 1972 by the Ministry of Public Health.

"Reason for Construction"

This is the justification by the Ministry of Public Health for the construction or remodelling of each institution mentioned.

"Total Cost"

This is an estimate of construction costs and cost of stationary equipment (boilers, elevators, laundry equipment) needed for construction of each new institution, and the termination of those already begun. For institutions to be remodelled, it is an estimate of the enlargement or remodelling project.

"Quantity Invested (Until December, 1971) and Amount Available in 1972"

This corresponds to the resources invested into the project until the indicated date, allocations in the 1972 National Budget and contributions provided by separate sources.

"Amount Necessary"

This presents the difference between the total cost and that which is available or has been invested already. It is the amount which is lacking for the completion of the project (including stationary equipment).

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ANNEX A  
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NATIONAL HOSPITAL PLAN  
HOSPITALS TO BE ENLARGED OR REMODELED--SECOND REVISION

Type	No. Beds		No. People Directly Benefitted (000)	No. Subordinate Hospitals in System Regionalization					No. People Bene- fitted Dir. & Indir.	Reasons for Construction	Amount Invested to 12/71 & Total Available Cost		Amount Neces- sary (000)	% Lack-	FINANCING			Approx. Date Initia- tion Constr-	Approx. Date Ter- mi- nation	
	Existing	Additional		Reg	Reg	Loc	Loc	Health Centers			(000)	(000)			(000)	1973	1974			1975
Hosp. San Vicente Medellin(Antioquia)	U	831	-	230	2	-	-	-	1985	--	10900	4500	6400	59	4000	2400		X/71		
Hosp. LuzCastro Medellin(Antioquia)	RB	175	225	230	-	11	-	4	30	1985	Change from maternity to General	27200	4300	22900	84	9900	10000	3000	VII/62	VI/75
PuertoBerrio(Ant) Urrao	RA	72	-	38	-	-	-	-	2	38	Poor condition,	7450	2160	5290	71	1000	4290	-	XII/69	VII/74
(Antioquia)	RA	32	12	35	-	-	-	-	1	35	enlargement	4000	-	4000	100	1000	3000	-	XII/69	VI/74
Apartado (Ant.)	LB	22	30	10	-	-	-	-	10		Enlargement	4810	3340	1470	38	250	1200	-	VII/71	VI/74
Sonson(Antioquia)	RA	48	-	48	-	-	-	3	1	117	Poor condition	1100	560	540	40	540	-	-	X/70	VI/73
Turbo(Antioquia)	RA	36	-	109	-	-	1	-	5	109	Poor condition	500	400	900	20	100	-	-	II/71	IV/73
Barranquilla(Atlan) Campo de la Cruz	RB	220	-	476	-	-	1	6	8	740	Poor condition,	900	-	900	100	900	-	-	I/73	IX/73
(Atlan)	LB	32	13	25	-	-	-	-	3	41	enlargement	1480	1000	480	32	48	-	-	IX/72	IV/73
Univ. Hosp. (Atlan)	U	120	-	355	-	4	-	3	14	904	Poor condition	1000	300	700	70	700	-	-	VII/73	I/74
Univ. Mental Hosp. Cartagena(Bolivar)	U	-	50	355	-	4	-	3	14	904	Lack of beds	1800	1200	600	33	600	-	-	V/73	I/74
Simiti(Bolivar)	RA	26	-	45	-	-	-	-	4	83	Poor condition	340	170	170	50	170	-	-	III/73	V/73
Armen(Bolivar)	RA	79	-	51	-	-	-	2	2	117	Poor condition	450	450	500	34	500	-	-	III/73	XI/73
Mompos(Bolivar)	RA	69	-	49	-	-	-	-	6	94	Poor condition	2050	1355	695	24	695	-	-	I/73	XI/73
Manizales Caldas)	U	521	-	312	-	3	-	-	23	843	Enlarge emer- gency room	4000	1000	3000	75	3000	-	-	VI/73	IV/74
Popayan(Cauca)	U	360	40	106	-	4	2	4	10	726	Poor condition	40000	4000	36000	90	3000	15000	18000	VI/73	XII/75
Santander(Cauca)	RA	45	-	42	-	-	-	-	4	100	Poor condition	2200	580	1620	74	1620	-	-	X/71	XII/73
Godazzi (Cesar)	LB	37	16	32	-	-	-	1	2	32	Lack of beds	1200	200	1000	83	800	200	-	II/73	VIII/73
Valledupar(Cesar)	RB	117	-	137	-	-	-	-	-	379	Poor condition	2500	500	2000	80	2000	-	-	II/73	XII/73

(continued on next page)

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NATIONAL HOSPITALS

HOSPITAL CONSTRUCTION TO BE IMPLEMENTED

Locality and Department	Type	No. of Beds		No. of People Directly Benefited (000s)	No. Subordinate Hosp. in System Regionalization					No. of People Benefited Directly & Indirectly (000s)	Reasons for Construction	Occupation Rate	Total Cost	Amount Invested to Dec. 1972 (000s)
		Existing	Additional		Reg. B	Reg. A	Local B	Local A	Health Centers					
Medellin (Antioquia)	RB	120	330	250	-	11	7	4	30	1,985	Lack of beds	-	33,200	17,070
Yarumal (Antioquia)	RA	51	16	46	-	-	-	6	7	353	Poor condition	-	9,000	3,030
Marinilla (Antioquia)	LA	15	22	20	-	-	-	-	-	20	Poor condition	-	1,690	640
La Ceja (Antioquia)	LB	30	-	22	-	-	-	-	-	22	Poor condition	-	1,800	170
Heliconia (Antioquia)	LA	15	-	7	-	-	-	-	-	7	Poor condition	-	1,490	790
Barranquilla (Aisan)	RB	360	150	476	-	-	1	6	8	740	Poor condition, lack of beds	-	44,000	21,500
Cartagena (Bolívar)	U	510	40	355	-	4	-	3	14	904	Poor condition, lack of beds	-	62,000	26,800
Cartagena (Bolívar)	RB	35	85	-	-	-	-	-	-	81	Poor condition, lack of beds	-	20,000	(-)
Chinchina (Caldas)	RA	89	14	34	-	-	1	1	5	81	Poor condition, lack of beds	66.5	6,300	1,000
Anserma (Caldas)	LB	54	11	37	-	-	-	-	2	37	Poor condition	-	2,700	600
Pensilvania (Caldas)	LB	44	(12)	33	-	-	-	-	6	33	Poor condition	76.0	5,000	4,800
Coloto (Cauca)	LB	50	-	21	-	-	-	-	2	21	Poor condition	39.5	3,900	580
Pto Trjada (Cauca)	LB	-	40	24	-	-	-	-	1	24	Lack of beds	-	4,600	1,000
Pacho (Cundinamarca)	LB	91	9	35	-	-	-	-	12	97	Poor condition	74.4	6,000	1,000
Bogota	RB	-	120	-	-	-	-	-	-	97	Poor condition	74.4	6,000	1,000
Neiva (Huila)	RB	174	196	89	-	2	3	5	11	470	Poor condition and enlargement	62.6	31,000	25,000
Carzon (Huila)	RA	67	-	34	-	-	2	2	2	105	Poor condition	57.9	2,500	1,400
Pasto (Nariño)	RB	71	129	138	-	5	-	-	5	813	Lack of beds	-	26,000	22,000
Montenegro (Quindío)	LB	51	-	23	-	-	-	-	2	23	Poor condition	-	250	-
Armenia (Quindío)	RB	305	95	209	-	1	2	7	4	359	Poor condition, enlargement	-	60,000	58,500
Santa Rosa de Cabal (R)	RA	95	-	95	-	-	-	-	10	95	Poor condition	-	6,460	1,060
Socorro (Santander)	RA	160	(28)	26	-	-	1	5	1	80	Poor condition and enlargement	-	8,200	2,000
San Vicente (Sant.)	LB	87	(7)	45	-	-	-	-	4	54	Poor condition	-	7,200	3,700
Sincelejo (Sucre)	RB	102	48	76	-	1	1	1	11	177	Poor condition and enlargement	-	31,000	19,700
Ibague (Tolima)	RB	-	380	222	-	4	5	2	24	919	Lack of beds	-	51,000	7,000
Libano (Tolima)	RA	133	7	63	-	-	1	-	5	80	Poor condition and enlargement	52	18,900	4,700
Chaparral (Tolima)	RA	49	23	45	-	-	-	2	7	87	Complete renewal	55	4,800	2,600
Buenaventura (Valle)	RA	111	98	87	-	-	-	1	-	75	Poor condition and enlargement	50	48,100	31,000
Tulua (Valle)	RA	132	68	88	-	-	-	4	5	125	Poor condition and enlargement	53.1	14,800	12,000
Cartago (Valle)	RA	163	3	64	-	-	-	2	4	154	Poor condition	72.9	9,200	6,700
<b>TOTAL</b>		<b>3,219</b>	<b>1,831</b>										<b>522,898</b>	<b>289,218</b>

SOURCE: Ministerio de Salud, Fondo Nacional Hospitalario, September, 1972.

People Benefited Directly & Indirectly (000s)	Reasons for Construction	Occupation Rate	Total Cost	Amount Invested to Dec. 1971 (000s)	Amount Available 1972 (000s)	Amount Necessary (000s)	% Lacking	(000s)			Approximate Date of Initiation of Construction	Approximate Date of Termination	Estimated Yearly Operational Cost (000s)	Observations
								1973	1974	1975				
1,985	Lack of beds	-	35,208	17,070	1,208	15,000	11.5	6,000	9,000	-	Oct., 1957	-	8,800	-
353	Poor condition	-	9,000	3,030	4,000	2,050	7	2,000	-	-	Nov., 1969	-	1,085	-
20	Poor condition	-	1,590	640	750	300	7	300	-	-	July, 1971	-	641	-
22	Poor condition	-	1,800	170	800	300	11	830	-	-	Nov., 1971	-	616	-
9	Poor condition	-	1,490	790	200	500	34	500	-	-	Jan., 1970	-	166	-
740	Poor condition, lack of beds	-	44,000	21,500	10,500	12,000	23	12,000	-	-	June, 1963	-	33,564	-
904	Poor condition, lack of beds	-	60,000	26,800	12,700	20,500	34	20,500	-	-	March, 1968	-	17,438	-
		-	20,000	(-)	(-)	20,000	100	3,600	10,000	6,400	-	-	-	-
81	Poor condition, lack of beds	-	6,300	1,000	600	4,700	75	3,000	1,700	-	Dec., 1970	-	2,202	-
37	Poor condition	66.5	2,700	600	-	21,100	78	1,000	1,100	-	Jan., 1971	-	954	-
33	Poor condition	76.2	5,000	4,800	-	200	2	200	-	-	Oct., 1969	-	592	-
21	Poor condition	39.6	3,900	580	2,500	820	21	820	-	-	Nov., 1971	-	1,227	-
24	Lack of beds	-	4,600	1,000	1,600	2,000	43	1,000	1,000	-	Oct., 1971	-	47	Suspended Const./1970
97	Poor condition	74.4	6,000	1,000	-	5,000	83	900	4,100	-	July, 1969	-	-	Partly financed World Bank Fund of Guatemala
470	Poor condition and enlargement	62.6	31,000	25,000	4,000	2,000	6	2,000	-	-	April, 1958	-	6,715	-
105	Poor condition	57.9	2,500	1,400	1,600	500	16	500	-	-	April, 1967	July, 1973	1,500	-
813	Lack of beds	-	26,000	22,000	-	4,000	15	4,000	-	-	Jan., 1970	Feb., 1973	2,675	-
23	Poor condition	-	250	-	-	250	100	250	-	-	April, 1971	-	910	Beginning phase proj.
359	Poor condition, enlargement	-	60,000	58,500	-	1,500	3	1,500	-	-	Sept., 1957	-	13,000	-
95	Poor condition	-	6,460	1,060	4,200	1,200	18	1,200	-	-	June, 1966	-	2,608	-
80	Poor condition and enlargement	-	8,200	2,000	1,000	5,200	63	3,200	2,000	-	August, 1972	-	3,243	-
54	Poor condition	-	7,200	3,700	2,000	1,500	21	1,000	500	-	June, 1970	-	1,000	-
177	Poor condition and enlargement	-	33,000	19,700	4,000	9,300	28	9,300	-	-	Oct., 1964	-	3,846	-
919	Lack of beds	-	51,000	47,000	-	4,000	8	4,000	-	-	Feb., 1962	-	4,500	Advanced stage/ construction
80	Poor condition and enlargement	52	18,900	4,700	3,000	9,300	51	5,000	4,130	-	Feb., 1967	-	637	-
75	Complete renewal	55	4,800	2,600	1,500	700	14	700	-	-	Jan., 1969	-	1,666	-
87	Poor condition and enlargement	50	48,100	31,000	18,000	27,000	56	2,500	18,527	5,973	Nov., 1971	-	9,483	-
125	Poor condition and enlargement	53.1	14,800	12,800	1,000	1,000	7	1,000	-	-	April, 1960	-	8,495	-
154	Poor condition	72.9	9,200	6,700	500	2,000	24	1,740	200	-	Sept., 1960	-	8,150	-
			<u>522,898</u>	<u>289,210</u>	<u>77,658</u>	<u>155,230</u>		<u>939,500</u>	<u>52,317</u>	<u>12,073</u>				

"Percentage Lacking"

This corresponds to the percentage of resources necessary for completing the project, including those programmed for disbursement in 1973-74-75.

"Financing"

The amount presented is that which is to be financed during the years of the program, keeping in mind the development of the project, the priority it has, the capacity for investment, and the availability of resources which support it.

"Approximate Date of Initiation"

This is self-explanatory.

"Estimated Yearly Cost of Operation"

This corresponds to the estimated operational budget of each establishment. Because construction is destined to replace functioning hospitals in the majority of the projects, the budget of these existing institutions was considered. This same budget will be used for the new institutions, as the hospitals being replaced will no longer function. Funds for acquisition of complementation of equipment necessary for proper functioning of the institution once the construction is completed probably will be available through a loan in negotiation with the British Government for a total sum of approximately 220 million pesos.

"New Hospitals, Hospitals to be Terminated, Hospitals to be Enlarged or Remodelled"

These titles designate the type of construction activity. A "New Hospital" does not necessarily imply a new institution; most often it means a substitute building for one which has become obsolete or is too small. "Termination" means finishing the construction of a building which was started before the beginning of this plan. This, like "New Hospitals," does not necessarily imply the establishment of a new institution. "Hospitals to be Enlarged or Remodelled" is self-explanatory.

NATIONAL HOSPITAL PLAN - NEW HOSPITALS

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Locality & Department	Type	No. of beds		No. of people directly benefitted (000s)	No. Subordinate Hospitals in System Regionalization					No. of people benefitted directly & indirectly (000s)	Reason for Construction	Occupation Rate	Total Cost	Amount Available 1972 (000's)
		Existing	Additional		Reg	Com	Com	Com	HC					
BOLIVAR (Antioquia)	LB	65	5	28					1	28	Poor Condition	67.6%		
TUNJA (Boy.)	RB	183	117	90	4	5	1	6		1,238	Poor Condition	68.5%	8,900	3,250
DUITAMA (Boy.)	RA	75	45	99		3	1	5		163	Poor Condition	71.6%	65,000	23,000
MIRAFLORES (Boy.)	LB	35	15	12					5	49	Poor Condition	71.6%	9,270	500
RIOSUCIO (Cald.)	RA	54	14	55		3	3	8		171	Poor Condition	51.9%	9,270	500
SUFIA (Cald.)	LB	21	4	21					2	21	Poor Condition	58.4%	8,500	900
ARANZAZU (Cald.)	LB	44	(-14)	21					2	21	Poor Condition	39.5%	1,400	-
SAMANA (Cald.)	LA	31		40					6	40	Poor Condition	41.8%	3,000	-
SALAMINA (Cald.)	RA	106		46					3	46	Poor Condition	58.3%	3,000	800
MONTERIA (Cordoba)	RB	191	109	170		2	2	15		826	Poor Condition-enlargement	76	20,000	-
QUIBDO (Choco)	RB	88	32	51		1	3	5		219	Poor Condition		65,000	3,000
BAHIA SOLANO (Choco)	LA	10	10	3					3	24	Completely destroyed		27,300	4,800
PITALITO (Huila)	RA	86	14	44				2	8	72	Poor Condition & enlargement	70	1,500	700
SANTA MARTA (Magd.)	RB	273	127	122				5	14	695	Poor Condition & enlargement		20,000	10,000
PLATO (Magd.)	RA	25	35	72				1	6	106	Poor Condition & enlargement		65,000	17,000
IPIALES (Nariño)	RA	42	78	48					9	197	Poor Condition & enlargement	38.5	12,000	500
CUCUTA (N.Santander)	RB	330	86	223		2	3	3	13	598	Poor Condition & enlargement	88.2	23,000	
CONVENCION (NSant)	LB	24	-	31					1	31	Poor Condition	78.3	83,100	17,600
CALI (Valle)	U	-	300	625	3	8		5	34	1,546	Lack of beds		1,200	750
SAN ANDRES (San Adr.)	RB	50	10	33				1	2	35	Poor Condition & enlargement		6,500	-
MOCOA (Putumayo)	RB	40	-	17		3			4	85	Poor Condition		15,000	8,000
		1,713	987							529,070			7,500	2,000
		=====	=====							=====			529,070	92,800
													=====	=====

SOURCE: Ministerio de Salud/Fondo Hospitalario, Septiembre 1972.

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Reason for Construction	Occupation Rate	Total Cost	Amount Available 1972 (000's)	Amount Necessary (000's)	% Leaking	Financing (000's)			Approx. Date of Initiation	Approx. Date of Termination
						1973	1974	1975		
Poor Condition	67.6%	8,900	3,250	5,650	63%	1,000	4,650	-	I/73	VI/74
Poor Condition	68.5%	65,000	23,000	42,000	58%	2,000	17,000	23,000	XI/73	XII/75
Poor Condition	71.6%	9,270	500	24,500	100%	1,000	13,500	10,000	XI/73	XII/75
Poor Condition	71.6%	9,270	500	8,770	92%	1,500	7,250	-	III/73	VI/74
Poor Condition	51.9%	8,500	900	7,600	89%	2,000	5,600	-	VIII/72	VI/74
Poor Condition	58.4%	1,400	-	1,400	100%	200	1,200	-	IV/73	I/74
Poor Condition	39.5%	3,000	-	3,000	100%	200	2,800	-	IX/73	VI/74
Poor Condition	41.8%	3,000	800	2,200	73%	1,080	1,120	-	IX/73	I/74
Poor Condition-enlargement	58.3%	20,000	-	20,000	100%	500	10,000	9,500	XI/73	VII/75
Poor Condition	76	65,000	3,000	62,000	95%	2,000	30,000	30,000	XI/73	VI/76
Completely destroyed		27,300	4,800	22,500	82%	5,000	17,500	-	VI/73	I/75
Poor Condition & enlargement	70	1,500	700	800	53%	800	-	-	VI/73	I/74
Poor Condition & enlargement		20,000	10,000	10,000	50%	1,000	9,000	-	VII/73	II/75
Poor Condition & enlargement		65,000	17,000	48,000	74%	5,000	20,000	23,000	XI/72	III/75
Poor Condition & enlargement	38.5	12,000	500	11,500	96%	4,000	7,500	-	III/73	V/74
Poor Condition & enlargement		23,000		23,000	100%	1,000	12,000	10,000	XI/73	VI/76
Poor Condition & enlargement	88.2	83,100	17,600	65,400	79%	9,665	24,965	30,770	XII/72	VIII/75
Poor Condition	78.3	1,200	750	450	37%	200	250	-	X/72	I/74
Lack of beds		6,500	-	65,000	100%	5,000	25,000	35,000	V/73	VI/76
Poor Condition & enlargement		15,000	8,000	7,000	47%	6,000	1,000	-	XII/72	VII/74
Poor Condition		7,500	2,000	5,500	73%	2,000	3,500	-	VI/73	VI/74
		<u>529,070</u>	<u>92,800</u>	<u>436,270</u>		<u>51,145</u>	<u>213,855</u>	<u>171,270</u>		
		=====	=====	=====		=====	=====	=====		

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ANNEX A  
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**NATIONAL HOSPITAL PLAN**  
**HOSPITALS TO BE ENLARGED OR REMODELED--SECOND REVISION**

Type	Existing	Additional	No. People Directly Benefitted (000)	No. Subordinate Hospitals in System					No. Peop. benefited dir. & indir. (000)	Reasons for Construction	Amount Invested to 12/'71 & Amount Necessary			FINANCING			Approx. Date initiation constr- uction	Approx. Date Ter- mi- nation		
				Reg B	Reg A	Loc B	Loc A	Health Centers			Total Available Cost (000)	in 1972 (000)	% Lack- ing	1973	1974	1975				
Agua de Dios (Cund.)	LA	36	20	10					16	Poor condition	400									
Zipaquira (Cund)	RA	130	22	33			7	5	203	Lack of beds	2500	1300	1200	48	400	-	-	VII/73	VII/73	
LaPalma (Cund)	LB	82	--	18					18	Poor Condition	2620	2020	600	23	600	-	-	XII/72	VI/73	
Hosp. San Ignacio (Bogota)	U	230	167	7					47	7	Termination	9100	1500	7600	84	5000	2600	-	II/73	VII/74
Hosp. San Jose (Bogota)	U	546	17	14					47	18	Poor condition	27000	2000	2500	93	6000	10000	9000	III/68	X/75
Infantil Norte (Bogota)	U	280	120	8		4			47	8	Lack of beds	26500	1050	25450	96	8000	10000	7450	IV/73	X/75
La Misericordia (Bogota)	U	238	62	6					47	7	Termination	6300	3000	3300	52	3300	-	-	II/68	XII/75
Samaritana (Bogota)	U	271	50	7		4			8	8	Poor condition & enlargement	14000	2000	12000	86	9600	2400		X/73	VIII/74
Hosp. Sn Juan (B.)	U	1470	75	30	4	4	1	47	42	Poor cond & En	66000	5000	61000	92	10000	25000	26000	-	-	
Condoto (Choco)	LA	30	-	15					15	15	Prov. better Serv	330	130	200	61	200	-	-	II/73	VI/73
Uribia (Guajira)	LB	43	-	87			1	10	87	" " "	500	-	500	100	500	-	-	II/73	VI/73	
Sn Juan (Guajira)	LB	23	-								Termination	100	-	100	100	100	-	-	II/72	II/73
Agrada (Huila)	LA	28	-	5					5	5	Poor condition	300	30	270	90	270	-	-	II/69	III/73
Palermo (Huila)	LA	39	-								Prov. better serv	400	200	200	50	200	-	-	XII/72	IV/73
Cienaga (Magdal)	RA	150	-	172				10	187	Poor condition	6700	5400	1300	19	1300	-	-	V/72	V/73	
El Banco (Magdal)	RA	73	24	40				12	96	Poor cond & Enl	3700	1350	2350	64	2350	-	-	IX/71	XII/73	
Hosp. Inf. Pasto (Narino)	RB	79	31	138	3	5		5	813	Termination	5000	-	5000	100	3000	2000	-	V/73	VII/74	
La Union (Narino)	RA	36	-	16			1	1	6	124	Poor condition	1300	300	1000	77	1000	-	-	IV/73	II/74
Triquerres (" )	RA	71	-	29					9	118	Improve serv.	530	-	530	100	530	-	-	I/73	V/75
Tumaco (Narino)	RA	53	29	97			2	6	161	Poor con. & Enl.	5400	3500	1900	35	1900	-	-	L/73	X/74	

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(continued on next page)

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ANNEX A  
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HOSPITALS TO BE ENLARGED OR REMODELED--SECOND REVISION

Type	Existing	Additional	No. People Directly Benefitted (000)	No. Subordinate Hospitals in System Regionalization					No. Peop. benefitted dir. & indir. (000)	Reasons for Construction	Amount Invested to 12/'71 & Amount Necessary (000)	%	FINANCING			Approx Date initiation	Approx Date Termination				
				Reg B	Reg A	Loc B	Loc A	Health Centers					Total Cost (000)	Available 1972 (000)	Necessary (000)			Lack-ing	1973	1974	1975
																			1973	1974	1975
Ocana(N. Sant)	RA	106	-	49			1	2	12	144	Poor condition	4450	-	4450	100	1000	2450	1000	IX/73	IX/74	
Pereira(Risar)	RB	324	-	203			3		22	537	Improve Services	500	-	500	100	500	-	-	III/73	IX/73	
Barranca(Sant)	RA	174	-	108					3	108	" "	1200	330	870	73	870	-	-	V/73	XII/75	
Velez(Santander)	LA	15	5	9					4	9	" "	579	191	388	67	388	-	-	VII/72	V/73	
SanGil( " )	RA	255	-	33					2	170	" "	8000	2500	5500	69	4000	1500	-	VII/71	IX/74	
PuenteNal( " )	LB	65	-	16					2	32	" "	448	148	300	67	300	-	-	VIII/72	IV/75	
Corozal(Sucre)	RA	99	-	54					4	1	" "	600	500	100	67	100	-	-	XI/71	II/73	
San Marcos( " )	LA	35	4	11					1	1	" "	730	550	180	25	180	-	-	VI/72	IV/73	
Natagaima(Tol)	LB	35	-	21					1	1	" "	1500	-	1500	100	500	1000	-	IV/73	X/73	
Saldana(Tolima)	LA	33	-	13							" "	1300	300	1000	100	1000	-	-	VII/72	X/73	
Purificacion( " )	LB	33	-	33					3		" "	1000	-	1000	100	1000	-	-	IV/73	II/74	
ElGuano( " )	LA	45	10	35					2		Poor Cond., Enlg.	1190	690	500	42	500	-	-	VI/70	V/73	
Armero( " )	RA	110	-	31					2	2	Improve Services	1565	565	1000	64	1000	-	-	VI/72	VII/73	
Espinal( " )	RA	123	-	63					2	2	Poor condition	1100	100	1000	91	1000	-	-	VI/72	VII/73	
Melgar( " )	LA	28	-	10							Improve service	500	-	500	100	500	-	-	VI/73	XII/73	
Cali(Valle)(Car)	U	372	-	625	3	8			5	33	Termination	15500	7000	8500	55	6100	2400	-	I/69	X/74	
Cali, SanJuan	RB	202	100	625	3	8			5	33	Poor cond & Enl	7400	1000	6400	-	6400	-	-	I/72	XII/73	
Palmira(Valle)	RA	197	-	97					1	3	Improve service	2820	1520	1300	46	1300	-	-	VIII/70	XII/73	
Zarzal( " )	RA	47	3	39					4	3	Improve service	2642	700	1942	73	1942	-	-	II/72	XI/73	
Caicedonia( " )	LB	51	4	32						2	Poor cond., Enlg	2750	300	2450	70	270	2180	-	II/70	X/73	
Riofrio (Valle)	LA	6	9	20					2		Improve services	200	-	200	100	200	-	-	III/73	IV/73	
Florencia (Caqueta)	RB	101	9	34					1	2	Enlargement, Poor condition	2400	2100	300	13	300	-	-	VI/71	VI/73	
TOTALS										351434	73289	278145	79	116055	97640	64450					

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ANALYSIS OF BUDGET IMPLICATIONS INCLUDING INVESTMENT BUDGET PROGRAMS OF THE NATIONAL HOSPITAL PLAN 1973-74

Level of Hospital in Regionalization System	No. of Projects	Year of Availability and Number of New Beds			Additional Discharges Possible			Costs (thousands of pesos)					
		1973	1974	Total	1973	1974	Total	Buildings			Operations		
								1973	1974	Total	1973	1974	Total
University	5	152	217	369	3,998	6,658	10,656	39,100	5,000	44,100	15,062	21,503	36,569
% of Total	10.4%	9.9%	27.0%	15.8%	8.4%	23.8%	14.1%	28.4%	5.5%	19.5%	13.2%	34.0%	20.7%
Regional B	12	1,107	403	1,510	33,382	12,385	45,767	59,500	29,500	89,000	80,990	29,309	110,299
% of Total	25.0%	72.4%	50.1%	64.8%	70.0%	44.4%	60.6%	43.5%	33.3%	39.4%	71.3%	46.3%	62.3%
Regional A	14	188	71	259	7,102	3,283	10,385	28,832	31,190	60,022	13,758	7,058	20,816
% of Total	29.2%	12.4%	8.8%	11.1%	14.9%	11.7%	13.7%	20.9%	35.2%	26.5%	12.1%	11.2%	11.8%
Local B	10	1	113	114	541	5,623	6,164	7,400	22,920	30,320	517	5,363	5,880
% of Total	20.8%	0.1%	14.1%	4.9%	1.1%	20.1%	8.1%	5.4%	25.9%	13.4%	0.5%	8.5%	3.3%
Local A	7	80	--	80	2,681	--	2,681	2,768	--	2,768	3,289	--	3,289
% of Total	14.6%	5.2%	--	3.4%	5.0%	--	3.5%	2.0%	--	1.2%	2.9%	--	1.9%
<b>TOTAL</b>	<b>48</b>	<b>1,528</b>	<b>804</b>	<b>2,332</b>	<b>47,704</b>	<b>27,949</b>	<b>75,653</b>	<b>137,600</b>	<b>88,610</b>	<b>226,210</b>	<b>113,616</b>	<b>63,233</b>	<b>176,849</b>
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

SOURCE: Ministry of Public Health September 20, 1972

STATEMENTS ABOUT THE CHART "GOALS FOR HOSPITAL COVERAGE  
ACCORDING TO INSTITUTION IN THE NATIONAL HOSPITAL PLAN"

"Population"

The population is the estimated number of people living in the municipality where the hospital is located.

"Discharge"

The number of discharges in 1971 is the number of people of the municipality who used the hospital; estimates are made for 1974 or 1975 calculated on the number of additional beds which will be available.

"Referrals"

The number of referrals is the number of patients from other communities utilizing the services of the hospital mentioned.

"Percentage of Referrals to Total Discharges"

The percentage is calculated as the number of patients referred from subordinate hospitals in the regionalization system to the total number of discharges of the institutions.

"Total Discharges"

Total discharges includes the number of residents of the municipalities who used the hospital plus the number of patients referred from subordinate institutions.

"Number of Beds"

This includes the number of beds available in 1971, and the number of beds which will be available in 1973 and 1974 when construction is terminated. A decreased number of beds in an institution is shown in parenthesis.

"Percentage of Coverage"

The percentage of coverage of an institution is the total number of discharges as compared to the population of the municipality where the hospital is located. This percentage is misleading because the total number of discharges includes patients referred from other communities, in addition to patients resident in each particular municipality. Exact information about home communities of referred patients was not available.

"The Hospitals Referred to"

This Chart (page 16 of the Annex) refers only to the results in coverage of the 52 projects to have been finished in time to be operational in 1974 and 1975.



CLARIFYING NOTES ON THE RESUME OF  
FINANCIAL RESOURCES OF THE NATIONAL HOSPITAL PLAN

"Number of Additional Beds and the Date of Availability"

The number of beds to be increased or decreased are noted for the estimated year, with the number of beds to be decreased listed in parenthesis.

"Additional Capacity for Discharges"

The additional capacity for discharges of a hospital has been calculated using the average numbers of days of hospitalization per bed per classification of medical institution. Average time of hospitalization in a university or regional hospital is longer than that of the local hospitals because of the more serious medical problems encountered in the larger institutions.

"Building and Operating Expenses - 1973 and 1974"

The estimated expenses for construction and operation are listed in thousands of pesos. Operating expenses are calculated from information of expenses of the existing hospitals; services will be discontinued in these hospitals when the new buildings are terminated. Building expenses include the cost of fixed equipment.

"Expenses for Human Resources - 1973 and 1974"

Estimated expenses for necessary additional hospital personnel were taken from a study of salaries by the Administrative Office of the Human Resources Section of the MOH:

	<u>(Col. Pesos)</u>
	<u>Yearly</u>
General Practitioners	156,800
Medical Specialists	190,000
Dentists	156,800
Nurses	49,000
Auxiliary Nurses	15,400
Auxiliary Technicians	15,400

"Total Operating Costs - 1973-1974"

Total operating costs of the various projects is the sum of building and operating expenses, and the expenses of additional human resources. This has been calculated for the first year that termination is planned, and includes expenses of the hospital to be replaced for the part of the year that the new hospital is not functioning.

"The Hospitals Referred to"

This Chart (page 16 of the Annex) refers only to the results in coverage of the 52 projects to have been finished in time to be operational in 1974 and 1975.

PRELIMINARY PROPOSAL FOR A METHODOLOGY  
FOR LONG-TERM HEALTH SECTOR ANALYSIS

Although the methodology has not been finalized, it probably would involve a model of the general type described below.

An optimizing model, probably linear programming, would be used to determine the optimum or "best" combination of health activities subject to resource constraints. Each health activity would be defined as the provision of specified health service, e. g. one activity might be defined as the provision of 1,000 hospital beds of a certain type, while another activity could be the immunization of 1,000 people for a certain disease. The solution of the model would specify the level of each activity which optimizes the objective of the health sector. Of course, the various activities compete for limited resources, with the result that the program solution may call for the operation of some activities at relatively low levels and others at high levels.

Information on available resources and the use of resources by the various activities would be used to construct the resource constraints. For example, certain activities require a certain amount of time from a specific type of medical doctor; thus, there may be a restraint which states mathematically that the number of hours of work by doctors of this type cannot exceed the number of hours available. Similarly, there may be constraints on other types of professional time, hospital space, hospital budgets, etc.

For a given objective, the solution of the model specifies the level of each activity that optimizes that objective. It is likely that more than one objective would be used in the analysis. One objective could be to minimize the overall death rate, while another could be to minimize the amount of sick time in the labor force. The model will be solved separately for each objective. The solution (in terms of activity levels) would be somewhat different for each objective.

The results of the analysis would be useful to the Government and the medical profession in the allocation of time and money. For example, how many and what types of hospitals should be built? How many doctors and nurses should be trained? How should the existing medical professionals allocate their time among various activities? The model would provide quantitative answers to

these types of questions. The answers, of course, will depend upon the resources available to the health sector and the objective of the sector. The model, among other things, can be used to measure the benefits of additional resources and the trade-off among competing objectives.