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**9. ABSTRACT**

Zaire is rich in resources, poor in productivity, and with a hot, tropical climate provides a vast incubator for numerous debilitating diseases. High morbidity and mortality in Zaire, notably in the under-five years of age population, largely could be eliminated or substantially reduced through preventive health measures, including mass immunization campaigns, health education, extension of potable water and sewerage systems, coupled with improved availability of food and a general upgrading of the basic quality of living conditions. Malnutrition, chiefly a protein deficiency, is widespread and actually may be increasing. The development of a national nutrition strategy to identify both the problem and possible approaches to resolving malnutrition is urgent. Several different approaches may be needed to remedy health and health-related problems, given the diverse problem-resource mixes of the various geographic areas. Because of the synergistic relationship among health, nutrition, environmental sanitation, and population growth, development of an integrated public health delivery system promises the most cost-effective method to extend coverage rapidly, particularly for the largely unattended rural population. To support such programs, substantial changes will have to be made in the health system infrastructure, including better training, greater fiscal allocations, and more equitable distribution of services.

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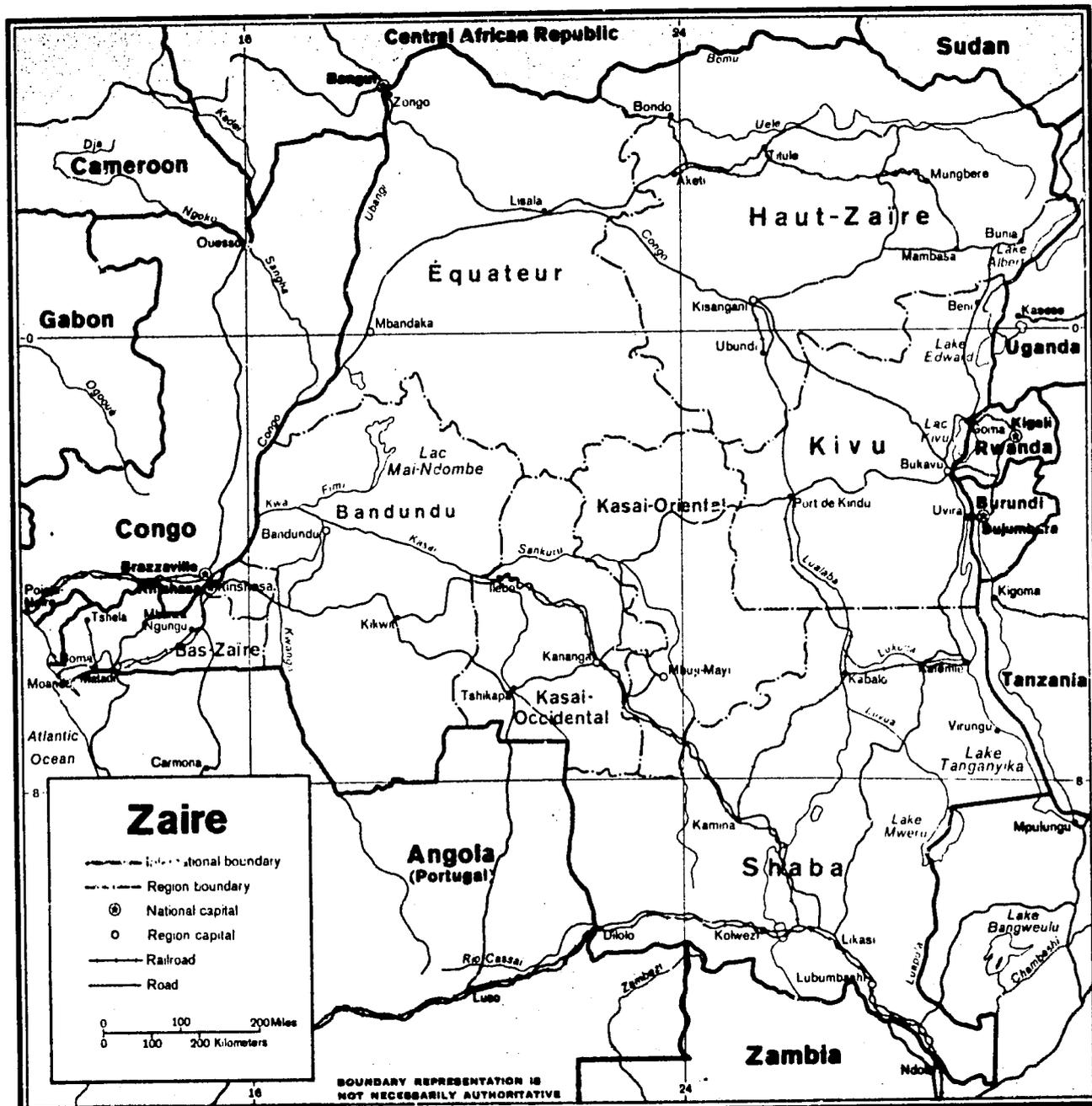
**SYNCRISIS:**  
**THE DYNAMICS OF HEALTH**

*An Analytic Series on the Interactions  
of Health and Socioeconomic Development*

**XIV: ZAIRE**

**U.S. DEPARTMENT OF  
HEALTH, EDUCATION, AND WELFARE**

**OFFICE OF INTERNATIONAL HEALTH  
DIVISION OF PROGRAM ANALYSIS**



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**Karen E. Lashman**

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Health programs can serve to challenge previously accepted patterns of inevitability, revealing to man that he is in charge, that he has a new power of self.

John H. Bryant  
From "International Trends toward the  
Humanization of Health Services," Speech  
International Health Conference  
Washington, D.C., April 1973

## PREFACE

This study was prepared within the Division of Program Analysis of the Office of International Health, Department of Health, Education and Welfare, at the request and with the support of the United States Agency for International Development. It represents one of a series of profiles which describe and analyze health conditions of a country and their impact on socioeconomic development. The primary purpose of these studies is to provide a concise, organized, and up-to-date introduction to the health situation in a country for use by AID as well as by the international health community as a whole. While these studies do not include recommendations for action, they provide a useful background for further analysis and program development.

Specifically, Syncrisis studies are intended to acquaint the generalist in development administration with (1) interventions in the health system of the country which will contribute to socioeconomic development, and (2) the effects of other developmental activities in health. To the specialist in comprehensive health planning, they will provide both a preliminary document for his work, and an indication of the sources of information available for health planning in that country. For the specialist in a specific aspect of health care, Syncrisis studies are intended to provide insight into the relationship of the subsystem with which he is concerned to the comprehensive health system and the larger society. For each of these professionals, Syncrisis studies are intended not as a final definitive document, but rather as a point of departure from which their own professional skills can be applied to develop activities that will benefit the country.

In addition to the principal target audience, which will probably include a few dozen persons for a specific country, it has been demonstrated that Syncrisis studies are useful to others. For this reason the studies are published and made available for sale to the public. Some consideration is given in the preparation of the documents to their possible use in health science education in the subject country, in international health education, and by scholars concerned with more general aspects of the country or with closely related sectors.

Syncrisis studies form an unusual resource for the student of comparative health systems. They present, in a uniform format, parallel descriptions of health systems in countries with widely varying cultural, social, economic, and government systems. It is hoped that in the future this aspect of the Syncrisis series can be of increasing value.

The methodology for development of the Zaire Syncrisis consisted primarily in the utilization of existing resource materials, e.g. books, journal articles, releases of international organizations, etc. available within the United States, supplemented by various publications on health and related areas by the formal institutions of the Government of Zaire. The initial data gathering and analysis phase was complemented by a one-month field visit to Zaire in November 1974. The country visit permitted verification and expansion of my original draft and importantly, the opportunity to obtain new information and insights, thus filling in important gaps in the study through an extensive in-country literature review and personal interviews with key personnel involved in health and health-related activities in both the public and private sectors.

Every attempt has been made to obtain the most accurate and comprehensive picture of the health situation in Zaire. Nevertheless, in the absence of a national health data collection system it was necessary to synthesize data which was often incomplete, dated, contradictory and/or of questionable reliability. Estimates of such important health indicators as morbidity and mor-

tality, health facilities and manpower levels, budgetary allocations, etc. were significantly conflicting. Therefore, the reader should be constantly aware that the analysis and judgments expressed herein are tentative and must be interpreted and applied with caution. More importantly, it should be noted that the varying lengths of sections of this study more accurately reflect the availability of information on the given topic than any conscious attempt to assess the relative importance of the diverse health problems of the country.

### Acknowledgements

I am personally indebted to the USAID Mission in Zaire directed by Mr. Fermino Spencer for its constant support of my research activities in-country. Special appreciation is due Mr. Joe Guardiano, Program Officer, and Ms. Carol Adelman, Assistant Program Officer, of the Mission for their careful and thoughtful review of the preliminary drafts of this paper and for their scheduling of interviews and personal introductions to many knowledgeable people in the health sector. Their insights provided me with invaluable information which added immeasurably to the overall content of this study. Thanks also go to the many other staff of AID/STATE in Kinshasa who took time to comment on various sections of the early drafts.

Very sincere and warm thanks are due to the missionaries and families of the Baptist Mission at Vanga for providing me with an opportunity to learn first-hand about rural Zaire. I am especially grateful to Dr. Daniel Fountain, Director of Vanga Mission, for sharing a wealth of insights and thoughts on rural life personally acquired while working in the "bush" for more than a decade and a half, which form the very core of this study's discussions on health attitudes and traditional medicine in the rural setting.

Sincere appreciation is due to AID, particularly the Zaire Desk Officer, Mr. Gary Mansavage, and Assistant Desk Officer Mr. Theodor Bratrud for their thoughtful comments on my drafts; and, to the Technical Assistance Bureau/Health staff for their review of the final draft of the document. Thanks are also due to the World Bank population sector survey team for sharing information with me gleaned from their March 1975 trip, and for their useful suggestions on format for presentation of large quantities of data which are incorporated into this study.

I would like to take this opportunity to formally thank Dr. Joseph Davis and Ms. Martha Anderson of the Office of International Health for their assistance in the preparation of this study, and Ms. Jessica Auerbach for her diligent and always patient deciphering of my drafts to produce the excellently typed final copy for publication.

## LIST OF ABBREVIATIONS AND TERMS

AID	Agency for International Development
AKU	Action Kusaida (parastatal organization involved in community development)
APHA	American Public Health Association
CERNA	Centre d'Education Recherche et de Nutrition du Zaire (national center for nutrition research in the National Office of Research and Development [ONRD])
CNECI	Caisse Nationale d'Epargne (national housing bank)
CREN	Centre Régional d'Etudes Nucleaires (Regional Center for Nuclear Studies), research body of the National University of Zaire
CRS	Catholic Relief Services
DCMP	Depot Central Medicament et Pharmaceutique (Central Pharmaceutical Supply)
ECZ	Eglise du Christ du Zaire (Church of Christ of Zaire)
ENC	Enterprise Nationale de Construction Immobilière et Routière, public corporation which controls all national construction activities
FAO	Food and Agriculture Organization of the United Nations
FOMEKO	Fonds Médical de Coordination
FOMETRO	Fonds Médical Tropical Belge (a Belgian non-profit organization providing major inputs to the trypanosomiasis control program)
IBRD	International Bank for Reconstruction and Development (World Bank)
MCH	maternal child health
MPR	Mouvement Populaire de la Revolution (Popular Movement of the Revolution, Zaire's national political party)
MYH	Mama Yemo Hospital, Kinshasa
ONL	Office National du Logement (National Housing Office)
ONRD	Office National de Recherche et Developpement (National Office of Research and Development)
ORT	Organization for Rehabilitation through Training, a Geneva-based organization contracted by AID and FOMEKO to set up the initial MCH/desired births programs in Kinshasa

<b>OXFAM</b>	<b>Oxford Committee for Famine Relief</b>
<b>REGIDESO</b>	<b>Régie de Distribution d'Eau et d'Electricité (National Water and Electricity Distribution Corporation)</b>
<b>UNAZA</b>	<b>National University of Zaire</b>
<b>UNDP</b>	<b>United Nations Development Program</b>
<b>UNICEF</b>	<b>United Nations International Children's Emergency Fund</b>
<b>WHO</b>	<b>World Health Organization</b>
<b>K</b>	<b>Makuta (100 Makuta = 1 Zaire [Z])</b>
<b>Z</b>	<b>Zaires (at current rate of exchange Z1 = US\$2)</b>
<b>animateur</b>	<b>rural health educator</b>
<b>guérisseur</b>	<b>local practitioner or healer</b>

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## I. SUMMARY

The Republic of Zaire is a country of striking diversity. Its 22 million inhabitants, encompassing over 200 tribes and speaking more than 200 distinct languages, represent a rich and varied and often conflicting ethnic, religious, and cultural heritage. The topography ranges from mountains, marshes and savannahs to a dense equatorial rain forest covering more than half the total land area which sprawls across 2.3 million square kilometers -- an area roughly equivalent to the size of the United States east of the Mississippi River. Straddling the equator in the heart of Africa, the nation has a synthesis of tropical climates which provides a vast incubator for numerous debilitating diseases. The national economy is marked by a sharp dichotomy between resources and economic productivity: potentially vast fertile agricultural lands, extensive forest and fish reserves and among the world's richest deposits of minerals amidst widespread poverty with an average per capita income of only \$112 and a current fiscal and balance of payments crisis.

Despite Zaire's basic heterogeneity, examining the nation as a whole, crucial similarities in health problems of regions and rural and urban areas emerge. Morbidity and mortality, particularly among children under five years of age, are excessively high due largely to parasitic and infectious diseases and malnutrition. Housing and environmental sanitation systems are inadequate. Rapid population growth is placing a substantial strain on existing health services. Variations in health status between geographic areas of the country are more of degree than kind.

The absence of an effective national health data collection system precludes the availability of reliable information on the exact extent and nature of morbidity and mortality in Zaire. Official health statistics compiled from diverse regional reports and studies, however, paint a bleak picture. Disease has been almost accepted as the norm in Zaire, so pervasive is its impact. It is commonly accepted that nearly all Zairians have at least one intestinal or skin disease and especially in the rural areas, multiple diseases are common.

Nationwide the crude death rate is estimated to be between 20 and 23 per 1,000 population with significantly higher rates among young children, particularly infants. While precise data on infant mortality is not available, it is estimated to range between 150 and 200 per 1,000 live births. Overall it is estimated that cumulative child mortality for the 0 to 5 years of age sub-group of the population may be as high as 500 per 1,000. Maternal mortality is assumed to be about one per 1,000 live births in the urban areas and two per 1,000 live births in the rural areas of the country. The high child mortality effects a substantial upward pressure on national fertility rates. Traditionally, women who have wanted to have five living children have had to have between 10 and 15 pregnancies. The negative effect of excessive pregnancies on the health of the typical Zairian woman is clear.

High morbidity and mortality in Zaire, notably in the under-5 years of age population, could be largely eliminated or substantially reduced through the institution of preventive health measures, including mass immunization campaigns, health education, extension of potable water and sewerage systems, coupled with improved availability of food and a general upgrading in the basic quality of living conditions.

Malnutrition is widespread and may actually be increasing throughout Zaire. Protein deficiency is the principal nutritional problem, with average daily protein intake estimated to be between 33 and 43 grams or just half the United Nations Food and Agriculture Organization recommended daily allowance for the country. This is a national average, with the severity of malnutrition definitely varying between specific geographic areas. Overall, however, malnutrition is considered to be a primary or associated cause of approximately 60 percent of Zaire's high morbidity and mortality.

As with other health problems, malnutrition most severely affects children under five years of age and pregnant and lactating mothers. The substantial level of malnutrition is especially serious because of its synergistic effects, both exacerbating existing illnesses, and increasing susceptibility to new infection. At the same time, malnutrition is compounded by the high incidence of diseases leading to malabsorption of nutrients which in turn significantly raises the nutritional requirements of an already malnourished population.

The principal causes of malnutrition in Zaire are complex and interwoven. They include inadequate food, quantitatively and qualitatively, for consumption; poor knowledge of nutrient needs; continuation of traditional dietary and societal patterns which limit nutrient intake, particularly among the most vulnerable sub-groups; the generally low socioeconomic status; widespread morbidity; the lack of national nutrition planning activities and rapid population growth. The absence of viable subsystems such as health services, environmental sanitation, agricultural production and transportation -- all of which are critically linked to food requirements and availability -- have also impeded the attainment of an adequate nutritional status for the typical Zairian.

Ongoing nutrition programs have generally been highly fragmented and uncoordinated efforts concentrated only on a small-scale regional basis. Research activities are still extremely limited. Supplementary feeding programs, now terminated, have had only a small impact on the total nutrition problem and have proven to be costly alternatives to a nation with severely limited financial resources. The development of a national nutrition strategy to clearly delineate the problem and identify alternative approaches to resolving malnutrition is a pressing national need. The strategy will most importantly have to focus on increasing the availability of nutritious foods, with specific attention to mothers and young children, while at the same time decreasing the overall nutrient requirements of the rapidly expanding population through a significant reduction in morbidity.

The absence of an adequate potable water and sewerage system has also contributed to high morbidity and mortality throughout Zaire. A March 1974 study of water-supply and sewerage undertaken jointly by the World Health Organization (WHO) and World Bank (IBRD) showed that while in terms of availability of potable water, urban areas fared better than rural, overall basic environmental sanitation was seriously lacking. As of early 1974, only an estimated 1.6 million persons or approximately one-fourth of the total urban population of the country had access to a piped water-supply system. Of these, there were only about 125,000 private house connections, or less than three connections per 100 dwelling units. Importantly, due to rapid population increases and rising costs of water service, the ratio of piped water connections to population has actually been decreasing in recent years. Overall, piped water service is only intermittent in populated areas and is completely nonexistent in many newly-developed urban areas so that residents continue to rely on wells and natural sources of water.

The vast majority of the rural areas of the country remain completely unserved by potable water systems. With the exception of small sewerage systems in the major urban centers, there is no national sewerage system. Further, even in larger cities, the system generally covers only the heart of the urbanized area. Maintenance is inadequate and the few sewage treatment plants in existence are not currently operational.

Rapid population growth has severely hampered the Government's ability to establish or maintain a viable health infrastructure essential to carrying out national health programs. The exact level of fertility at the present time is not known but official estimates place the crude birth rate at about 47.8 per 1,000 population. Given the estimated crude death rate of between 20 and 23 per 1,000 population, the dynamic nature of population growth in Zaire at the present time is strikingly clear. At the current estimated growth rate of over 2.5 percent annually, population could double in just 28 years. Translated into national health needs, this high growth rate implies that public services will have to double capacity every 28 years simply to "hold the line" in terms of present service levels at current prices, with the exception of possible gains in productivity of the health system. The problem of extending the health system is compounded by highly inflationary trends in the cost of health care provision, coupled with relatively limited financial resources available to the health sector. Thus, the achievement of substantive improvements in national health status at any time in the near future will be intricately tied to the ability of the Government to stabilize population growth so that greater per capita inputs to the health system can be achieved.

The lack of a viable national health infrastructure remains a major impediment to improving health status, at least in the short term. The pattern of development of Zaire's health sector was severely interrupted during the rebellious immediate post-independence period. The colonial legacy of one of the most extensive health systems in Africa was virtually destroyed with the massive exodus of Belgian health personnel, coupled with the almost complete lack of Zairian trained health professionals to replace them. Thus, rather than achieving significant advances over the last decade and a half, the health sector has been slowly rebuilding and is only now approaching its pre-independence level of service or importantly, effecting any reductions in morbidity and mortality.

In Zaire, as in most developing countries, numerous factors hamper the operation of an effective and efficient health delivery system. Throughout the health sector the lack of accurate and timely statistics impedes assessment of the current health situation or the planning of programs to ameliorate the generally poor health status. The institution of a national health data collection system under the supervision of one central health authority is urgently needed.

The critical lack of national, regional and local mechanisms to coordinate or integrate the programs of the numerous health organizations have resulted in severe fragmentation of the health sector and concomitantly the failure to optimize scarce resources. Leadership throughout the health sector has been noticeably absent. In the absence of a National Health Plan to define national priorities and policies in the health sector, each organization developed its own initiatives. In such a setting, pressing national health needs remained unmet.

Health resources in Zaire are seriously maldistributed. Existing facilities and manpower are highly skewed to Kinshasa and the regional capitals, to the relative exclusion of the rural areas of the nation in which approximately 74 percent of Zairians reside. Severe shortages of basic medical supplies and health personnel at all levels, even in urban areas, effectively preclude rapid extension of the health care delivery system. Disincentives for working in public health are great and include extremely low salaries relative to the private sector.

Health manpower training facilities have not, to date, adopted uniform curricula relevant to national health needs; as a result, health personnel are generally poorly prepared. This has effectively precluded the optimum use of already limited health personnel. National health manpower training programs are essentially Western-oriented, theoretically based, with serious deficiencies in practical training or course work in areas such as public health and parasitology, which are critical to basic health care delivery requirements. Emphasis continues to be placed on costly curative health services with preventive health measures still a relatively low Government priority.

Catholic and Protestant missionary groups active in Zaire throughout this century continue to be major health care providers. In fact, it is estimated that mission groups presently account for 75 percent of total health care delivery to rural residents. Recent political changes in support of the "Zairianization" process of the nation place the role of the church in the health sector over the long term in question.

Overall, an estimated 75 percent of the population remain outside the formal health care delivery system. For many, traditional medicine dispensed by local practitioners is the only type of health care available.

Total national health expenditures are difficult to ascertain. Official figures for public health expenditures for the Department of Health and Office of the President represent only a small portion of the total national budget -- six percent -- but are largely underreported given the substantial health and health-related activities of other Governmental agencies which are not included in these totals. Overall, however, it can be said that Government of Zaire allocations to the health sector have been low relative to rapid population growth rates, and increasing inflationary trends in the cost of health care provision. The problem of insufficient monetary allocations to the sector has been compounded by the highly inequitable distribution of financial resources for health care between Kinshasa and the balance of the nation. The public health sector is significantly complemented by services provided by the private organizations including church mission groups, industries, etc. Their exact resource input is not known, but is conceded to represent the vast majority of rural health care delivery.

The fixing of fees charged for health services nationwide by category of recipient has had a positive effect on the Government's attempt to assure that all Zairians are not denied health care because of income. Inequality of access to health care is nevertheless great, given the serious maldistribution of not only financial but also physical and human resources between the capital and the eight regions, as well as intraregionally between urban and rural areas.

Several programs initiated during the 1970's in the priority areas of maternal/child health, desired births, endemic disease control, occupational health and social welfare augur an improvement in national health status. The vast majority of these programs, however, have covered only a small percentage and often not the most vulnerable sub-groups of the total population. Large-scale Government financial and human resource inputs are critically needed to not only maintain but rapidly expand national health program coverage both quantitatively and qualitatively. The health sector demands a larger share of the national budget. At the same time, given the sheer requirements and complexity of extending the health delivery system, Zaire will continue to need complementary technical and financial assistance in the health sector from public and private domestic and international organizations.

Recent health developments indicate that the country may be at the "take-off" point in terms of health sector development. The announcement by President Mobutu in his November 1973 policy speech of the assignment of health as one of the key national development priorities can be viewed as a critically needed catalyst to effect significant changes in the health status of Zairians, if complemented by substantial financial and human resource inputs from the Government of Zaire.

The creation of the National Council of Health and Welfare in November 1974 signifies probably the most important development in the health sector in the post-independence period in terms of its potential for reorienting the national health delivery system. While it is still in the formulative stage, the Council has already displayed much promise in serving as a forum for dialogue between the numerous health organizations. The Council has identified three immediate objectives: the development of a national integrated public health delivery system focused on maternal/child health, desired births and nutrition; the reorganization of the national medical and paramedical education programs; and, the implementation of public health programs for the rural and vulnerable urban sub-groups of the population. The importance of these objectives lies not only in a formal recognition by the Government of Zaire of the most pressing national health needs, but more importantly, in terms of their potential, if implemented, of effecting significant improvements in national health status.

In overview, serious health problems pervade Zaire. While children under five years of age and mothers are most vulnerable to high morbidity and mortality, virtually the entire population is affected. Despite significant steps toward improving national health status through the implementation of several key health programs in the 1970's, the basic health needs of the vast majority of the population are still largely unmet.

The size and enormous heterogeneity of Zaire make it virtually impossible to identify a simple or single solution for the complex health problems facing the nation. Clearly, extensive studies are needed to examine the principal causes of morbidity and mortality in each area of Zaire and, importantly, inventory the resources available to deal with them. Several alternative approaches may be needed for ameliorating health and health-related problems, given the diverse problem-resource mixes of given geographic areas. Because of the synergistic relationship between health, nutrition, environmental sanitation and population growth, development of an integrated public health delivery system promises the most cost-effective method to rapidly extend coverage, particularly for the largely unattended rural population. Such a system will have to include at the minimum maternal child health, "desired births," and nutrition elements. Environmental sanitation projects to extend the potable water and sewerage systems will be necessary components.

The encouragement of new initiatives and implementation of integrated health programs will not by themselves, however, resolve the poor national health situation. Significant internal constraints exist, as mentioned earlier, which hinder the achievement of effective solutions to the diverse health problems.

Thus, in order to support nationwide health programs, substantial changes will have to be effected in the health infrastructure. Existing facilities will have to be upgraded and new facilities constructed to assure a network of hospitals and dispensaries distributed so that health care is accessible to all Zairians. All health centers must be fully operational with adequate supplies and staff to deliver care to the surrounding community. National health manpower requirements will have to be clearly ascertained and then current training programs revised

to meet these needs quantitatively and qualitatively. Government health allocations will have to be substantially increased, while at the same time their distribution made more equitable across the various regions. Increased Governmental attention is needed on the negative impact of a 2.5 percent growth rate on the nation's socioeconomic development. Clearly, the challenge to national leaders of providing comprehensive health care coverage to 22 million Zairians is great. But the promise in terms of the positive impact of improved national health status on the development process as a whole demands that they do.

## II. POPULATION PERSPECTIVE

### Population Characteristics

The mid-1974 population of Zaire is estimated to be about 21.8 million persons. Exact population size and characteristics are not known, and existing estimates are varied and contradictory. With independence, the Government of Zaire attached relatively low priority to the collection of demographic and social data.

The official source of current national population data is an administrative census conducted by the Political Affairs Division of the Department of the Interior in 1970. The data obtained, however, must be used cautiously, particularly for planning purposes, because of the serious deficiencies in the collection process. Since the primary purpose of the census was legislative, only whether the person was an adult or under 18 years of age was recorded. In the case of women with children, all mothers were considered to be 18 or older. Further, generally reliable sources indicate that at least two regions significantly overreported population in an attempt to secure larger government budgetary appropriations. Further, the administrative census did not collect such important demographic, economic and social indicators as age within specific age categories; tribal or ethnic affiliation; principal language spoken; literacy level; educational attainment; primary occupation; annual income level; births or deaths within the household during the prior year; parity; family size; etc. -- all of which information is essential for effective health planning. Further, the population figure obtained would imply an overall annual population growth rate of 4.2 percent over the 1955-57 to 1970 period. Such explosive growth is highly unlikely, even among developing nations.

Data obtained in a demographic survey by the Belgian Government over the 1955-57 period, therefore, remain the most definite and accurate population information collected to date, and are the main source from which current estimates of population structure and dynamics are modeled.

The salient population features are outlined in the box below:

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NATIONALITY: <u>1/</u>	Zairian: 95.7 percent	Foreigners: 4.3 percent
AGE (1970): <u>2/</u>	Females	Males
	0-14 : 42.8 percent	0-14 : 44.3 percent
	15-49: 45.9	15-49 : 45.7
	50+ : 11.3	50+ : 10.0
SEX (1970): <u>1/</u>	Female: 51.2 percent	Male: 48.8 percent
GEOGRAPHIC DISTRIBUTION: <u>2/</u>		
(1970)	Urban: 21.6 percent	Rural: 78.4 percent
(estimated 1974)	Urban: 26.3 percent	Rural: 73.7 percent
DENSITY (1970): <u>2/</u>	8.4 persons/km <sup>2</sup>	

ETHNIC COMPOSITION: <sup>3/</sup>  
(1970)

Bantu: 60+ percent  
Sudanese: 20 percent  
Hamite  
Nilote balance  
Pygmy

RACIAL MIX: <sup>3/</sup>  
(1970)

Africans: 99 percent  
Mixed Caucasian European and Near Easterners;  
and Orientals from South Asia: 1 percent

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- Sources: <sup>1/</sup> 1970 Administrative Census, Ministry of the Interior  
<sup>2/</sup> Calculations by the U.S. Bureau of the Census, International  
Statistical Programs Center, in an unpublished report of  
Dr. Bill Duncan for USAID Population Sector Assessment,  
December, 1974.  
<sup>3/</sup> American University, Area Handbook of the Democratic Republic  
of the Congo (Kinshasa), 1971.
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The most striking feature of the Zairian population is its young age structure. Currently about 44 percent of the population is under 15 years of age. This means not only a high dependency ratio, with its inherent problems, as the proportion of persons under 15 increases, but highly expansive demands on the Government of Zaire for educational facilities, jobs and social services. Examining the median variant of population projections, increased population will require the creation of approximately 9 million new jobs by the year 2000, and educational infrastructure capacity will have to expand by one-third by 1980 alone just to maintain current enrollment rates. Most importantly, this young population holds much momentum in terms of fertility. Even if the average number of children born per woman remained constant, excessive population growth would occur as a result of the increased number of women of reproductive age within the population as a whole.

Zaire remains an essentially rural country with approximately 74 percent of its population living in areas with 5,000 or less population. Urbanization is increasing rapidly, however, due both to high fertility and rural-urban migration, and currently averages about 8.1 percent. Ten cities are increasing at 11 percent annually, 14 between 8-10 percent annually, and 13 growing at 5-7 percent annually. The capital city of Kinshasa, currently estimated to have 1.7 million residents, is expected to double in size to an estimated 3.4 million by 1980. Given these high urban growth rates, it is estimated that the ratio of urban to rural residents will change from 22:78 in 1970 to 36:64 per hundred residents by 1980.

Note: All statistical data in this section reflect estimates by the U.S. Bureau of the Census, except as otherwise indicated.

Perceived opportunities of employment and demand for social services are expected to result in continued strong currents of urban-rural migration over the present century. This rapid urbanization is a potentially serious problem when viewed on the national level. Overall, it is estimated that Zaire will have 5.5 million new urban dwellers over the 1970-1980 decade alone. These persons will require levels of health care, housing, environmental sanitation and other social services for a population roughly equivalent to a city the size of Kinshasa every four years. At the same time, to the extent that the urban areas will be unable to fully absorb the rapid anticipated population increase, it is unlikely that the rural population will decrease in absolute numbers in the near future. Thus, planners will have to deal with expansive growth rates in formulation of rural as well as urban development schemes.

Currently the Zairian population is rather unevenly distributed across the eight national regions and Kinshasa. The pattern of Zairian settlement has been greatly influenced by geographic and climatic conditions. The generally adverse conditions in the swamplands and dense equatorial rainforest of the central Zaire River basin system including torrential rains, high temperatures and humidity and the prevalence of poisonous snakes and numerous vectors of disease have severely limited settlement in these areas. Vast barren plateau and savannah areas which extend beyond the basin are also sparsely populated; wide grasslands cover the northwest. In contrast, the eastern peripheral highlands with their relatively temperate climate and fertile soil have the largest population clusters.

The average population density of 8.4 persons per square kilometer in 1970 is expected to increase only to 17.7 persons by the year 2000. While the nation does not, therefore, have a population density problem *per se*, rapidly increasing population will place significant pressure on the agricultural sector in meeting national food needs. The potentially productive land area is great given the fertile soil of river areas and the vast potential for irrigation from the numerous natural water sources. Currently, however, less than 1 percent of total land area is under agricultural production, or about 0.6 acres of productive land per person. Expansion of current productivity will require large investments in roads, fertilizer, and the introduction of intermediate technologies to upgrade skills. In such a setting, Zaire will continue to have to import a significant and increasing proportion of foodstuffs unless productive lands are expanded, population growth slows down, or a combination of both occurs in the near future.

Although Zaire has a greatly heterogeneous society encompassing over 200 tribes, the nucleus for development of a national consciousness was apparent as the 1970's began in the growing number of Western-educated bureaucratic elite and the "authenticity" movement.<sup>1</sup> In contrast to many other developing nations where "nationalism" is strong, however, Zairians continue to identify more strongly with their own ethnic group.

The five principal ethnic groups -- Bantu, Hamite, Sudanese, Nilote and Pygmy -- can be identified by their significantly different, racially derived physical characteristics, including stature, musculature, body build, pigmentation and facial features. Traditionally, physical appearance of groups was often distinctively modified by artificially created distinguishing marks such as scarification, teeth filing, and tattooing; these practices have decreased substantially in the twentieth century. Culturally, four groups are distinguishable corresponding generally to the principal natural divisions of the country: the savannahs of the north, the central rainforest, the savannahs of the south and the eastern highlands border of the heavily populated lake region of the country. Each of these groups differs markedly from the others in its social structure, religious, intellectual and artistic life and economic system.

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<sup>1</sup> The move to "authenticate" Zaire, ruling out foreign influences and thus enhancing its heritage, is discussed in Appendix I, subsection on Historical/Political Background.

The Bantu, the largest of all ethnic groups in the country, have five major tribal clusters: Kongo, Mongo, Luba, Ngala and Lunda. The constant contact of the Bantu with and education of them by the Belgians resulted in many entering the mainstream of Zairian life with many, particularly those of the Luba tribe, holding white-collar jobs in government and business. The vast majority of the Sudanese tribes are located in the Haute-Zaire region of the country and are engaged in cattle raising and farming. The tribal clusters of the Hamites and Nilotes are largely pastoralists. While livestock raising is a part of their life, it is practiced more to procure honor and prestige within the tribe than as an economic mainstay. In fact, as is the case with many African pastoral people, the livestock have little economic value. The pygmies, believed to be the original inhabitants of the Congo, have largely intermingled with and been subjugated by the other ethnic groups over the course of time. Nevertheless, their traditionally nomadic life style and jungle culture has survived and even today they live essentially through hunting and gathering flowers and fruits, providing game and services to surrounding Bantu tribes in exchange for cultivated foodcrops, utensils and protection. Only rarely do the pygmies practice agriculture themselves. While some ethnic groups near the Zaire River basin live by fishing, the majority practice slash and burn agriculture. Traditionally the food produced was consumed by the tribes themselves; since independence a growing number of tribes cultivate commercial food for consumption by other national groups and for export.

#### Population Growth and Dynamics

The dynamics of population growth in Zaire are highlighted in Table 1. Overall, population growth has been increasing rapidly over the last two decades due to declining mortality and possibly increasing fertility as expanded health services reduce sterility in the population. In contrast to a relatively slow 2.0 percent average annual growth rate over the 1950-55 period, average growth over the 1965-70 period was estimated to have increased to about 3.2 percent annually.

International migration has had a definite impact on population growth in Zaire. Its proximity to nine other African countries has facilitated the movement of persons into Zaire, especially in periods of civil turmoil in surrounding countries. It is estimated that approximately half a million refugees from nearby countries have settled in Zaire since independence.<sup>1</sup> The substantial in-migration of mostly African nationals over the 1960-70 period resulted in a significant upward push on the national population growth rate.

At the current estimated average annual growth rate of over 2.5 percent, total population could double in just 28 years. This rapid population growth can be translated into an additional 545,000 persons annually. This rapid growth has already severely hampered Government ability to establish and maintain a viable health infrastructure essential to carrying out national health programs. At the current growth rate, public health services will have to double capacity every 28 years just to "hold the line" in terms of level of service at current prices. Given the additional problem of highly inflationary trends in the cost of health care provision, the achievement of substantive improvements in the quantity and quality of health care at any time in the near future will be intricately tied to the ability of the National Government to stabilize the population growth so that greater per capita inputs can be achieved.

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<sup>1</sup> American University Area Handbook, p. 73.

Table 1  
Zaire Population Dynamics

Year	Crude Birth Rate	Crude Death Rate	Rate of Natural Increase	Migrator	Growth Rate - Percent
1950 - 1955	45.2	26.1	19.1	0.9	2.0
1955 - 1960	47.0	24.9	22.1	3.7	2.6
1960 - 1965	46.4	25.1	21.3	9.7	3.1
1965 - 1970	47.8	23.8	24.0	8.4	3.2

Source: U.S. Bureau of the Census, International Statistical Programs Center,  
 Dr. Bill Duncan, Population Sector Assessment, December 1974 for USAID.

The exact level of fertility in Zaire at the present time is not known. The only definitive, documented estimate on birth rates for Zaire is that from the 1955-57 demographic survey which indicated a crude birth rate of 45.2 per 1,000 population. With the political turmoil of the immediate post-independence period, it has been assumed that fertility fluctuated considerably but overall increased significantly. The Government of Zaire accepts 47 per thousand population as the official crude birth rate for 1970; this figure is consistent with estimates by the U.S. Bureau of the Census given in Table 1.

With regard to age-specific fertility, the demographic survey further indicated a pattern of early childbearing with high fertility throughout the 20-29 year age groups (supported by early marriages) and continuing high but tapering off after the age of 30. While this data is almost 20 years old now, it is considered to be fairly representative of the situation in Zaire today.

The crude birth rate is about average for the surrounding African countries, as Table 2 points out, but is high given the availability of resources for providing essential services to the rapidly growing Zairian population. Further, continuing decreases in child mortality so that more females survive to childbearing age and reduced sterility are certain to accrue from extensions and improvements in the national health care delivery system. These dynamic forces augur an increase in births which could accelerate population growth up to a level of as much as 3.3 percent annually, or a potential doubling of population in just 21 years.

Table 2

Crude Birth Rates in Select African Countries, 1972

<u>Country</u>	<u>Births per 1,000 Population</u>
Angola	50
Burundi	48
Central African Republic	46
Congo (Brazzaville)	44
Kenya	49
Rwanda	50
Sudan	49
Tanzania	47
Tunisia	40
Uganda	45
Zaire	47
Zambia	50

Source: U.S. Department of Commerce, Bureau of the Census, International Statistical Programs Center, World Population: 1973.

Clearly, any projection of population growth is highly tenuous. This is especially the case in Zaire, where potential changes in so many of the conditions which are believed to affect fertility are virtually impossible to predict. Nevertheless, the following projections by the U.S. Bureau of the Census can be useful in highlighting the magnitude of the population with which Zairian national leaders, including health planners, may have to deal over the course of the present century.

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Zaire: Population Projections under Varying Assumptions

<u>Variant</u>	<u>Projected Population in Year 2000</u>
Constant <u>a/</u>	46,762,000
Medium <u>b/</u>	41,553,000
Low <u>c/</u>	37,771,000
Instant Replacement <u>d/</u>	26,128,000

NOTE: Assumptions on which projections are based:

a/ Total fertility rate will remain constant to the year 2000

b/ Total fertility rate will fall to 5 by the year 2000

c/ Total fertility rate will fall to 4 by the year 2000

d/ Net reproduction rate will fall to 1.0 by 1975<sup>2</sup>

Source: Estimates by Dr. Bill Duncan, U.S. Bureau of the Census

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Overall, the implications of the population structure and dynamics in Zaire for the development process are great - most notably in the four Government priority areas of agriculture, education, health and transportation - and demand close attention. In terms of national planning, not only will serious deficiencies have to be remedied in the existing infrastructures critical to the development process, but importantly, planned improvements in these areas will succeed only to the extent that they can keep pace with this rapid population growth.

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<sup>2</sup> Net Reproduction Rate (NRR) - The number of female children each woman of reproductive age will have if age-specific rates of reproduction remain constant throughout the cohort's childbearing career, e.g. NRR = 1.0 when each woman replaces herself with one female child.



### III. HEALTH STATUS

#### THE ENVIRONMENT OF HEALTH

The environment in which a population lives, encompassing the spectrum of geographic and climatic conditions, housing and general societal patterns and standards and health attitudes, has a profound effect upon health status. In Zaire, as in many developing countries, this environment has been largely pathogenic, characterized by the lack of adequate infrastructures such as water and sanitation systems to facilitate man's adaption to an already adverse physical milieu. In such a setting, the achievement of optimum health has been seriously hampered.

Straddling the equator, the Republic of Zaire has a diverse topography and a synthesis of tropical climates which provide a vast incubator for numerous debilitating disease vectors. These conditions have largely defined the pattern of population settlement. Large geographic areas remain virtually uninhabited, while explosive population growth is occurring in urban areas. Despite vast unoccupied lands, 74 percent of the population still reside in rural areas. Amidst even more pressing health demands of the urban areas, the large population of rural areas has received only a minimum amount of total national health resources.

#### Societal Structure

The National Government continues to ban foreign influences and consolidate traditionally antagonistic tribes internally toward its goal of complete "Zairianization" of the society. Nevertheless, the family remains the most important social group. The typical Zairian feels primary loyalty, duties and obligations due to the family group, including a large kin group, take precedence over other commitments. In fact, few Zairian groups have words differentiating between the nuclear family and the extended kinship group. And today, as in generations past, traditional patterns largely prevail as the status, role, and security in the community are essentially determined and fulfilled through the family association.

The extended families, formed into clans and lineages, are the basic social unit. Whereas a clan is linked through unilineal descent to an original unknown but named ancestor whether human or mythical; lineage members claimed descent from a known founding ancestor.<sup>2</sup> Traditionally, these social units formed a communal corporate structure in which property was held in common by the group, represented by an elected spokesman. All individual symbols of identity, economic resources, protection against outsiders, and defense of personal rights derived from this communal group. Clearly defined reciprocal obligations existed between an individual and the extended family, including mutual support in times of need such as illness, death, etc.

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<sup>1</sup> See Appendix I, subsection on Historical/Political Background

<sup>2</sup> American University Area Handbook, p. 115.

In the western and southern areas, matrilineal societies in which descent traced from the mother are common; most families in the rest of the former Congo area have been patrilineal. Whether matrilineal or patrilineal, residence was usually in the husband's father's village. Thus, the husband's family exerted considerable influence over the life of an individual family, including their demand for health care and selection of provider.

Marriage created an alliance between different kin groups, and thus brought reciprocal obligations bound by the transfer of bridewealth from the groom's family to that of the bride and by exchange of numerous gifts. Kinship ties formed by marriage have generally been considered immutable and the ensuing familial obligations permanent, even though the marriage itself might be dissolved. Procreation was viewed as the primary objective of marriage, essential to assure continuation of kinship.

There is some evidence that the traditional structure and function of the family are changing, not only in the cities, but in the rural areas as well. The industrialization and urbanization process, and the development of a money economy, are probably primary influences in this transition. Kinship groups are growing smaller, the nuclear family is becoming a recognized entity, new attitudes toward dowries and traditional wedding ceremonies are emerging, and marriage outside the ethnic group is increasing. These new lifestyles have not evolved, however, without social cost. Weakened family structures are considered a major cause of growing divorce, desertion, delinquency and prostitution throughout the country. Especially in the urban areas, both the Government and private organizations have been seeking ways to ease the adaptation of the Zairians from traditional to modern lifestyles.<sup>3</sup>

## Living Patterns

### The Rural Setting

Living patterns vary markedly between the urban and rural segments of the population, as well as within tribes, by environmental conditions and by economic status. The rural people generally live in grouped villages, notably in the north and south savannah regions of the country, or in dispersed hamlets, particularly common in the eastern mountainous regions. Their homes are generally simple huts providing little more than slight protection against rain and wind. Walls are most often constructed of mud, wood or reeds, with dirt floors and thatch or palm roofs. The actual form of the hut varies between tribes and among regions of the country. The Bantu generally have conical roofs but square based huts with four-sided roofs, round or rectangular huts with two or four walls are also common. Along the Zaire River, tribes may build huts on stilts or a pedestal base of clay. Windows, if they exist at all, are few and covered by wooden shutters and never opened, thus creating a major ventilation problem.

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<sup>3</sup> American University Area Handbook, p. 116.

Cooking is generally done outdoors. In the few areas in which kitchens are built, they are most frequently small separate units behind the main residence. Pit latrines, generally located on the periphery of living areas, are commonly shared by several households, if existent at all. The majority of rural villagers, however, have no sanitary facilities and environmental pollution is a major problem. It is not uncommon to find the ground surrounding huts polluted with excrement. Further, improper construction and lack of drainage in pit latrines is common and the resultant flooding creates a serious health hazard. There are few wells in rural areas and water is generally obtained from largely unprotected and often polluted natural water sources such as rivers, streams and lakes located nearby. Such living patterns are most favorable to the spread of insect and rodent-borne diseases. The defecation provides an ideal source of hookworm eggs and larvae, thus spreading incidence of parasites. The generally overcrowded living conditions, coupled with poor ventilation, abet the spread of air-borne infections and respiratory diseases including tuberculosis.

#### The Urban Setting

Housing is a crucial problem in the urban areas of Zaire as construction has not been able to keep pace with the rapid demographic change. Political upheavals, poor administrative services, continual conflicts between ethnic groups, coupled with severe disequilibrium in economic and social development between urban and rural areas, and lack of a transport network led to large-scale rural-urban migration following independence from Belgium. Normal growth patterns were seriously disrupted, especially in the capital city of Kinshasa and a few other larger cities which have been growing at a phenomenal rate of 11 percent annually over the past decade. Thus, while in the peripheral town areas, development was fairly orderly, nonexistent or ineffective urban planning in the major cities resulted in their expansion without adequate provision for extension of basic public services including housing, water, or electricity.

In contrast to huts of rural areas, urban housing is primarily constructed of mud and masonry with sheet metal roofs. While the style of house varies widely in the urban areas, a typical development pattern emerges in the coverage of lots. The main housing structure is generally in the center of the lot, surrounded by smaller, secondary units or additions for storage, servants' quarters, and/or rental units. The inhabitants of a given lot are thus larger than the immediate family group and often include both relatives and tenants. Most lots are encased by a wall. The basic housing pattern is, thus, in effect a parcel of land developed according to each family's individual needs. These housing patterns, which are the result of traditional cultural and economic factors, are not likely to change significantly in the near future. At the same time, they exacerbate the poor environmental sanitation conditions as they result in a higher cost for provision of services such as potable water and sewerage systems, than if homes were more closely grouped or if lot layout were more efficient.

Personnel of the Armed Forces and the National Police and their families are provided public housing through the Government of Zaire. In addition, some of the large corporations provide modest, yet adequate housing for their employees. The special compounds in which they are housed include water, electrical and sanitation facilities, as well as education structures and recreational areas for residents.

The homes and general living conditions of the relatively small proportion of the population who are European or wealthy Zairians contrast sharply with that of the general population. Upper class family homes are better constructed and furnished with permanent fixtures. Higher incomes assure ability to tap into existing water, electrical and sewerage systems. All have bathrooms with running water and many have modern waste disposal systems and modern kitchens equipped with stoves and refrigerators.

In the absence of sufficient housing, squatter communities surfaced in urban areas as people built crude houses on illegally occupied or seriously overcrowded land. These squatter communities are typically built on the old African grid pattern and thus are less densely populated than the typical city pattern. The new squatter communities look much like legal subdivisions with cement block houses approximately 400 square meters apart. The street line is respected, and thereby increases the potential for extending the sanitation system. The typically sandy soil permits absorption of material from cesspools and at the same time extends possibility of construction of wells. Most homes are constructed of handmade hollow cement blocks with roofs of corrugated metal, if available, or fiber-cement compounds with wooden shuttered windows. Generally little attention has been given to uniform building codes or minimum health and safety standards. The typical Zairian squatter house lacks glass windows, plumbing and electricity.

In an attempt to alleviate the urban housing situation, the Department of Social Affairs attempted to define a new housing policy and establish a new organization to execute programs. Two organizations inherited from the former Belgian colonial government - the Office of African Cities and Advance Fund - were merged to form L'Office National du Logement (ONL), charged with the responsibility of providing an estimated 55,000 to 60,000 new homes annually. Several factors, the most important of which was inadequate government funding, however, impeded its effective operation. Virtually no housing was built over the 1959 to 1965 period, and overall, since ONL's inception, a total of only about 450 units have been constructed of which none were for the most vulnerable groups - the low income. Approximately 100 were high income homes, and 350 moderate income homes. Among the latter group, the unavailability of financing for mortgages for middle income families resulted in their being turned over to the Zairian military forces. Currently the ONL is no longer acting as a housing authority, but rather as a construction company.

In August 1972 the Government of Zaire attempted to give another impetus to the national housing situation through the establishment of the Caisse Nationale d'Epargne (CNECI). The backing for the creation of the first national housing bank was provided largely through a USAID sponsored housing guaranty of a \$10 million U.S. bank loan. It signaled the first attempt to provide a source of money for long-term mortgage financing to lower and middle income Zairians. In support of this objective, CNECI launched two major programs: the construction of 1,100 duplex and rowhouses in the Cité Salongo section of Kinshasa (of which 450 are currently completed or under construction); and, provision of loans for house construction or completion financed out of its savings holdings. After two years of operation, CNECI had collected \$4.25 million in savings deposits from 53,000 persons. To date, 320 loans have been given at an average of more than \$10,000 per loan for a total loan commitment of \$4.3 million.

In support of the Zairianization process. President Mobutu, in his November 1973 policy speech, announced the creation of a new public corporation, the Entreprise Nationale de Construction Immobilière et Routière (ENC), which would have a monopoly over the control of all construction in the nation. The corporation has not been organized to date, however, and its role vis-a-vis existing housing organizations including the ONL and CNECI is not clear. Currently the lack of any Government organization to provide leadership in the housing sector precludes improvements in the poor national housing situation at least in the near future.

## Environmental Sanitation

A technical Water Supply and Sewerage Sector Study was conducted under a cooperative program of the World Health Organization and the World Bank (IBRD) in March 1974. Therefore, a substantial amount of timely data does exist on the water and sewerage system. However, as in the case of other components of the health sector, many of the figures available to the IBRD/WHO team were unreliable or estimates and thus must be used cautiously.

### Water Supply

Throughout the pre-independence period, the development of water distribution systems was rapid although surface water served as the principal water source throughout Zaire. In rural areas, rivers, streams, lakes or springs, usually polluted, supplied villages with daily water needs. Rivers were the single source of water for all the major cities, except Kisangani which received its supplies from subterranean galleries.

With the breakdown in the administrative and financial infrastructure accompanying the early years of independence, systems not only were not extended, but serious shortages of funds for operation and maintenance resulted in existing systems falling into a significant state of disrepair.

In the mid-1960's the Ministry of Public Works, with financial assistance from USAID and West Germany, undertook an extensive program of infrastructure development, including the improvement of water installations at Kinshasa, Matadi, Lisala, Lubumbashi and Inongo.

In an attempt to address the many difficulties confronting the Regie de Distribution d'Eau et d'Electricite, the Government signed a five-year contract with the Societe Commerciale et Miniere du Congo (COMINIERE) to temporarily run REGIDESO and at the same time train Zairians to take over the complete operation at the termination of the contract. Despite these major efforts to improve the water situation in Zaire, water distribution continues to be a major problem, as the World Bank study highlights.

The main focus of the March 1974 study was the water supply situation in urban communities since the need and the opportunity for initiating substantial programs in these areas were greatest. A national company, Regie de Distribution d'Eau et d'Electricite (REGIDESO) has the major responsibility for the supply of water to urban areas of the country. Given the scarcity of physical, financial and human resources, it was found that it was doing a fairly good job in servicing the 55 cities across Zaire for which it is responsible. Nevertheless, as of early 1974, only an estimated 1.6 million persons or approximately one-fourth of the total urban population of the country had access to a piped water supply system. Of these, there were only about 125,000 private house connections, or less than three connections per 100 dwelling units. In addition, the ratio of connections to population has actually been decreasing in recent years. This can be attributed to both the fact that new connections did not offset the rapid population increase in urban areas, and that given the high cost of individual connections, a vast majority of families cannot afford them. The urban water supply problem has been compounded by profiteering operations of some individuals in recent years. Numerous Zairians with private house

water connections buy water from REGIDESO at the fixed price and then resell it to poorer individuals at over 10 times the original price.

Outside of the private house connections mentioned above, the only other access to piped water in the urban areas of the country was through an estimated 700 public standpipes, only three of which are in Kinshasa. Piped water service is intermittent in most populous areas and in many newly developed areas of the major urban centers, there is no distribution system at all. In these large numbers of unserved urban areas, residents continue to rely on nearby wells and rivers to meet water needs, thus increasing the possibility of contamination and infections.

The high price of water is a major constraint to provision of piped water to low income families. The average price charged to all consumers in 1971 was 5.6K per cubic meter and is considered low in relation to charges in effect in other African nations' urban areas. Nevertheless, given the average connection charge of Z30 and the minimum connection charge of Z25, both of which are clearly higher than the monthly income of the average Zairian worker's family, it is apparent that lower income families will not be able to afford domestic connections.

While in the short term the expansion of the number of public standpipes appears to be a feasible alternative for increasing urban piped water supply coverage, especially to lower income families, several factors mitigate against it. First, such installations afford little protection against damage and vandalism. More importantly, local authorities who are responsible for payments for water drawn from standpipes have not been paying their bills. Thus, for both practical and economic reasons, REGIDESO has been extremely reluctant to extend the distribution of standpipes and in its overall development plan has clearly proposed that all new consumers continue to be served mainly by private domestic connections.

The substantial spacing out of homes in the urban areas significantly increases the cost of provision of potable water through individual house connections. Since the installation cost of a largely standpipe type water distribution network is significantly lower than private connections, a policy decision will have to be made to determine if the price of water distributed by standpipes can be reasonably recovered. Estimates of the price of water per unit and development of a method for collecting payments for water sold at public standpipes are needed. If, as has been the case to date, local governments will continue to be responsible for water drawn from public standpipes, appropriate budgetary allocations will have to be made to assure that REGIDESO receives payment.

A recently prepared development program drawn up by REGIDESO indicates a need of approximately Z30 million for the rehabilitation and expansion of water facilities in the major urban centers of the country. The proposed program would receive approximately 40 percent of estimated cost from the National Government and the balance through REGIDESO itself through auto-financing or domestic and/or external loans. Despite this ambitious program outlined by REGIDESO, it will be impossible for the nation to meet the target for provision of potable water outlined by the WHO for the Second Development Decade: that 25 percent of the rural population and 100 percent of the urban population (40 percent by domestic connection and 60 percent by standpipe) be served by 1980. Materially it would be impossible for REGIDESO to complete the

necessary preliminary studies and implement programs to meet these targets before 1980. In addition, several institutional constraints to rapid expansion of potable water to urban areas exist within REGIDESO. First, while the management of REGIDESO is generally adequate at the central level, the poor communication system to the other parts of the country impedes the decision-making process for several weeks at a time. Ultimately, decentralization of management will be essential so that each region has more autonomy and programs can move quickly. Second, although REGIDESO has an active rotational program to place professionals alternately in the capital and in the regions, overall it experiences considerable difficulty in staffing regional offices, especially in the area of trained engineers. Supportive staff including foremen, draftsmen, and laboratory specialists are also in extremely limited supply. The projected staffing needs of REGIDESO over the short term significantly exceed output of the various manpower categories graduating annually from the National Institute of Building Construction of UNAZA. Therefore, a major part of the staff will have to be trained in-house at its training centers in Kinshasa, Boma or Matadi, as well as be comprised of a substantial number of foreigners.

The standard of service, especially in the area of maintenance of existing potable water networks, also must be significantly upgraded. Leak detection and repair must become systematic operations. Since 1973, REGIDESO has been required to pay not only for all its own operating costs, but importantly, to make substantial contributions for all new construction of urban water systems formerly financed by the National Government. Since recent Government guidelines indicate that REGIDESO will be expected to pay about 60 percent of its future development out of internal cash or borrowings, tariff adjustments leading to more realistic pricing of water will be essential. Given these significant constraints to extension of potable water, the WHO/IBRD team emphasize that the urban water supply program must be strictly confined to priority projects and the concentration of initial efforts on the major cities is not only justified but the only rational approach to be followed by REGIDESO over the short term.

The provision of water to rural areas of the country is administered by the Bureau du Developpement Rural of the Department of Agriculture. In the pre-independence period, an ambitious rural water program by the former Fond du Bien Etre Indigene (FBI) led to construction of an estimated 1,400 standpipes and 1,600 wells with hand pumps in the rural areas of the country. In the subsequent years, many of these fell into disrepair as inadequate appropriations, understaffing and lack of technical expertise in the Bureau du Developpement Rural severely hampered the institution of an effective rural water supply program. The generally low priority given to rural development by the National Government to date, including the absence of any plans or policies for the extension of rural water supplies has also impeded improvements in this area. Thus, although some work has been done in rural water by the non-profit Brussels-based organization, Association Internationale du Developpement Rural (AIDR) and by UNICEF, the vast majority of the rural areas of the country remain completely unserved. An estimated 74 percent of the Zairians are rural residents and urban migration has only been a relatively recent phenomenon. The lack of access to piped water in these areas is a serious problem and poses a definite health hazard to many such communities, given the fact that surface waters which they must use are often muddy and in those cases in which major population groups are situated along a river, pollution by human excrement is common.

## Sewerage

With the exception of small sewers in the major urban centers, there is no national sewerage system. Even with the large cities, however, the sewer system generally only covers the heart of the urbanized area, and septic tanks are commonly used. Most houses, built originally for Europeans, have underground septic tanks, filters and leaching pits for digestion of waste material. The inadequate maintenance of existing systems in the post-independence period is substantial, and the few treatment plants are no longer operational. In rural villages, the number of pit latrines has been increasing rapidly. Improper construction and lack of drainage, however, often result in flooding of pit latrines, thus creating a serious health hazard. Nevertheless, indiscriminate defecation on the soil was most common, providing ideal breeding sites for parasitic infections.

Until recently, the Office des Routes of the Department of Public Works was responsible for the development of sewerage and drainage systems for the local governments, which were unable to cope with the immense problems in these areas. The failure of the Office des Routes to affect significant changes has resulted in a recent reassignment of institutional responsibility in sewerage to the Department de l'Amenagement du Territoire and drainage to the Service du Voirie et d'Assainissement of the Department of Public Works. In view of the severe technical, institutional and financial restraints under which this Department must work, assignment of functions to different services within this Department will not substantially change operations; and thus, the possibility of significant changes in this area over the short term are highly unlikely.

The World Bank estimated that the per capita cost of providing zones with private sewerage connections would be 250 or US\$100 which is very high. To serve a target population of one million persons would thus cost about 250 million. In light of the very limited resources of the Government of Zaire, the study envisaged that only the satisfaction of the most urgent needs in this area could feasibly be met in the 1975 to 1980 period. Program priorities, therefore, will be concentrated in two key areas: Lubumbashi, where pollution of streams by untreated sewerage is a major health hazard; and, Matadi, in which geographic constraints, namely rocky sub-soil and hilly terrain, preclude the use of septic tanks and create a serious waste disposal problem. Expansion of rural water supply, sewerage and drainage systems is inherently limited by two major constraints: (1) technically, there is a serious shortage of qualified professional staff, especially in the areas of operation, maintenance and sanitary engineering; and, (2) financially, there is no mechanism currently in existence to generate revenue for the construction, operation or maintenance of any of these three systems.

Several new programs in environmental sanitation are encouraging. A new service, the Service de l'environnement, has begun operation in the area of basic sanitation and the control of pollution in the environment generated by increased industrialization of the country. Directly attached to the Office of the President, its four sanitation engineers have already conducted an environmental study of Kinshasa and are currently studying the problem of industrial waste disposal in Zaire.

The recent assignment of a WHO sanitation engineer to the Department of Public Health will hopefully revitalize and redirect the work of this department in the surveillance and control of drinking water quality throughout the republic, and in the identification of rural water supply needs, both of which tasks have been very poorly administered to date.

## Health Attitudes

The cultural diversity of Zairian society, with its wide range of tribes and ethnic groups, makes it impossible to speak of a single popular attitude concerning disease, its cause and cure.<sup>5</sup> Overall, however, it can be said that many of the health problems of the population are traceable to their basic philosophical outlook on life and concomitantly their attitude toward health practices, particularly that of preventive health care.

The Bantu philosophy, the predominant influence in the formation of the Zairian outlook on life, is based on the belief that all of life is a cyclical process over which man has no control. As the seasons for planting and harvesting pass naturally from one to the next, so it is inevitable that man's life will pass through cycles of good and bad fortune. Importantly, man cannot protect himself from nature; he must accept these phases of his life. Inherently, therefore, the philosophy allows for no concept of progress or self-improvement or a sense of responsibility for one's self, family, neighbor or village. Rather, it serves to reinforce man's feeling of pre-ordained fate and inevitability. Thus, the Bantu philosophy has a profound impact on health.

The Bantu belief that man has no control over nature is reinforced by the widespread practice of indigenous religion. A pagan, essentially spirit worship, native religion is based on a belief in the existence of innumerable spirits which dwell in and around the forest areas and are embodied in diverse animate and inanimate objects. The harmful spirits, which are believed to far outnumber the good spirits, constantly require appeasement, not specifically by outward gestures or other tangible displays, but by a spiritual attitude of mind. It is this fear of the power of the unseen spirits which prepares the typical villager for the implantation of a curse.<sup>6</sup>

Throughout Zairian tribes, placing a curse on an enemy is viewed as the most powerful means of causing mental discomfort. While the most common curse is of a transitory nature, that is, one which will be lifted when the wrongdoing is redressed, in its most extreme form the curse is a death curse. The power of a curse on the victim cannot be overemphasized. While the more educated Zairians are less affected by the purported power of cursing, a universal sense of discomfort and annoyance are evident among those who are subject to a curse.

The local village witch-doctor plays a key role in the practice of cursing. In contrast to the guérisseur, or local practitioner, who provides villagers with herbs to alleviate illness, the witch-doctor is primarily a village elder experienced in the art of the occult. He is paid in cash or kind to settle family business and social disputes; and/or to both apply and remove curses.

In the case of the death curse, numerous cases of death among cursed villagers (with no apparent physiological cause other than acute depression) have been documented at hospitals. The vast majority of cursed persons, however, are assumed to die within the confines of their own village without ever seeking medical attention, for as can be expected from the Bantu philosophy, the victims are generally totally resigned to their fate.

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<sup>5</sup> American University, Area Handbook for the Democratic Republic of the Congo (Kinshasa), 1971, p. 145.

<sup>6</sup> See Alan A. Watson, "Death by Cursing - A Problem for Forensic Psychiatry," Medicine, Science and the Law, Vol. 13, No. 3, July 1973, pp. 192-94.

"The probable explanation of death by cursing lies in the realm of transfer-hypnosis activating an intense deep-seated fear based on tradition, superstition, and an innate respect for harmful spirits."<sup>7</sup> Since limited hospital facilities preclude extensive laboratory tests and autopsies are not permitted by the families, the exact cause of death among the cursed remains unknown, and still intricately tied to the occult.

The negative effect of these traditional beliefs on health status is clear. To the extent that all illnesses that befall a person are believed to be inevitable or uncontrollable, the community as a whole neither promotes nor sanctions preventive health care. Such preventive-oriented health activities as mass immunizations, dietary and nutritional education have been accepted only cursorily by villagers.

Traditional food taboos and family eating patterns have also had a negative effect on the nutritional status and thus health of the typical Zairian. Among several tribes, for instance, pregnant women are forbidden to eat eggs, beef, goat or pork -- all of which are rich in animal proteins. The custom, common to many African tribes, of allowing the men to take their food first, after which the women and children eat, means that sufficient amounts of food, especially protein, may not reach these latter members of the family.

Despite these beliefs and continued reliance on traditional medicines and practitioners, most notably in the rural areas, the Zairian population, with few exceptions, has demonstrated a generally wide acceptance of modern curative-based medical procedures when available. This acceptance can be largely attributed to familiarization of the population with formal medical practices through the extensive Belgian health care delivery system in existence prior to independence. The visible successes of the Belgians in controlling smallpox, trypanosomiasis, and other dreaded diseases encouraged participation of Zairians in existing health programs and medical facilities were generally crowded. The demand for health care was especially high in maternal and infant care clinics since the Zairian views the child as the source of all true family wealth and his/her protection is therefore critical to the functioning of the society.

The one main exception to acceptance of non-traditional medicine is in the area of long-term illness requiring repeated treatments. The problems of gaining acceptance of formal medical care by the villagers are centered around the belief that if the missionary doctors with their Western-oriented medical education, cannot cure an illness with one treatment, their medicine is obviously worthless. Thus, it has not been uncommon for patients undergoing extended long-term care for tuberculosis, leprosy, etc., to abandon mission medical facilities and return to local traditional healers.

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<sup>7</sup> Ibid.

## CURRENT HEALTH STATUS

### Health Indicators

The current overall health status of the Zairian population is difficult to assess, given the fact that national health indicators are virtually nonexistent. Morbidity and mortality statistics collected by the Belgian Government in the mid-1950's, to the extent that they can be viewed as indicators of health status, revealed a relatively high standard of health compared to other African nations, as noted in Table 3. This can be largely attributed to the extensive health care delivery system carried out by the Belgians which provided a significant level of coverage to the population as a whole.

In contrast, the exact extent and nature of mortality and morbidity in Zaire at the present time is not known. The exodus of the majority of statistical personnel in the post-independence period, coupled with the fact that the Government of Zaire has attached relatively low priority to the statistical gathering process, and thus provided inadequate funding for such operations, have resulted in an almost complete void in national vital and health statistics collection.

Although in theory all national health facilities must report monthly case loads and deaths to the next higher health unit in their region, and each regional director in turn to the Department of Health, in actuality reporting is incomplete, often inaccurate due to wrong, largely symptomatic diagnoses and biased by political and economic considerations. Since the quantity of medical supplies distributed to hospitals and dispensaries by the Government's Central Pharmaceutical Supply (DCMP) is dependent on patient load size, overreporting of patients by facility administrators is not uncommon. The desire to obtain Government funds for capital investment in constructing new facilities, and in renovating and/or expanding existing facilities also leads to overreporting of patients. Underreporting of specific diseases is widespread, although its extent has not been clearly determined. While 16 diseases are formally listed as notifiable for public health purposes, official statistics for these diseases cover only an estimated 20-30 percent of actual cases.<sup>8</sup>

The most timely and accurate mortality statistics on morbidity and mortality, therefore, are those obtained from small-scale sample surveys of specific localities conducted in conjunction with mass immunization campaigns, review of hospital records, etc. In such a setting, estimates of national mortality are varied and contradictory. A 1967 study of mortality in Kinshasa conducted by the Statistical Office of the Department of Health revealed a crude death rate of 10 per 1,000 population. In contrast, examination of demographic trends, notably population growth and fertility rates over the 1965-70 period, indicate an overall crude death rate of 23.8 per 1,000 population.<sup>9</sup> In the absence of valid data for the nation as a whole, the Government of Zaire has accepted 20 deaths per 1,000 population as the official national crude death rate. This is a national average, however, with mortality being significantly higher in two sub-groups of the population -- infants and children under 5 years of age.

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<sup>8</sup> Medical Survey of Zaire, Walter Reed, Section 4, p. 1.

<sup>9</sup> Dr. Bill Duncan, AID Population Sector Assessment, 1974.

Table 3

Comparison of Pre- and Post-Independence  
Select Health Status Indicators  
 (per 1,000 Population)

<u>Crude Death Rate</u>	<u>1955-57*</u>	<u>1974**</u>
Total country	20	
Urban	9	20-23
Rural	23	
<u>Infant Mortality</u>		
Total country	165***	150-200***

\* Republique du Congo, Government Central, Ministere du Plan et de la Coordination Economique, Service des Statistiques.

\*\* Official Government estimates.

\*\*\* Based on estimates by Dr. Bill Duncan, U.S. Bureau of the Census for USAID, Population Sector Assessment, December 1974.

Infant and child mortality comprise an estimated 80 percent of the total deaths in Zaire annually.<sup>10</sup> While it is not possible to clearly ascertain current infant mortality rates, data suggest that there has been only a minimal, if any, reduction in the rates over the past 20 years. In contrast to a rate of 165 per thousand live births in the 1955-57 period indicated by the demographic survey, it is presently conceded that for the nation as a whole, infant mortality ranges from 150-200 per thousand, and is subject to sudden and significant variations. The almost complete destruction of the health infrastructure in the immediate post-independence period and its slow redevelopment, coupled with rapid population increase, significantly impeded adequate health care coverage to Zairians and can be considered a major cause of the relatively constant infant mortality rates over this period. Nevertheless, as Table 4 highlights, infant mortality in Zaire is generally low in comparison to that of surrounding African countries. Cumulative child mortality, including infants through children 5 years of age, may represent up to 500 per thousand persons in this total population group.

The major causes of death in the under 5-year age group in both urban and rural Zaire are a triumvirate of malnutrition, malaria and gastroenteritis, coupled with repetitive cases of bronchial pneumonia, diarrhea and infectious diseases such as measles and tuberculosis. Those who survive often must pay heavily for their illness in terms of retardation of both physical and mental development.

High maternal mortality, currently estimated at about 1 per thousand births in Kinshasa and about 2 per thousand live births in the rural areas of the nation, is another major health problem in Zaire. The lower maternal mortality in Kinshasa than the rest of the country can be directly attributed to the high percentage of mothers who receive prenatal care and who deliver at maternities, in contrast to almost the reverse situation in the rural areas in which the vast majority of pregnancies traditionally are attended by largely untrained midwives.<sup>11</sup> Hemorrhages and infections remain the major cause of maternal mortality and can be related to the relatively low level of prenatal care throughout the republic. Generally unsanitary delivery conditions, coupled with the basically poor health status of Zairian women at the time of delivery, especially with regard to the high incidence of anemia and other symptoms of malnutrition are other major causes of maternal mortality. The generally poor maternal health status is also a direct cause of the high rate of premature births throughout the republic. Many such early deliveries result in neonatal deaths. For the premature babies who survive, studies have indicated that mental capacity may be permanently diminished by the lack of adequate nutrient intake during gestation, as well as by the failure to continue gestation for the full nine-month period.

<sup>10</sup> USAID Nutrition Planning Project Proposal, 1974.

<sup>11</sup> A 1974 Nutrition/Health Survey of Kinshasa, indicated that 98.3 percent of mothers surveyed had delivered their children at a maternity facility.

Table 4

Infant Mortality in Select Countries of Africa  
(per 1,000 live births)

<u>Country</u>	<u>Rate</u>	<u>Year</u>
Angola	203	1972
Burundi	175	1971
Central African Republic	175	1972
Congo (Brazzaville)	160	1972
Rwanda	163	1972
Sudan	141	1972
Tanzania	165	1968
Uganda	136	1971
Zaire	150-200*	1974
Zambia	157	1970

Source: U.S. Department of Commerce, Bureau of the Census, International Statistical Programs Center, World Population: 1973: Recent Demographic Estimates for the Countries and Regions of the World.

\* Estimates by Dr. Bill Duncan, U.S. Bureau of the Census for USAID, Population Sector Assessment, December 1974.

Maternal Mortality Rates  
(per 1,000 live births)

<u>Country</u>	<u>Rate</u>	<u>Year</u>
Zaire	1.0 Urban 2.0 Rural	1974
U.S.	0.25	1974

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Morbidity

Disease has been almost accepted as an inevitable fact of life in Zaire, so pervasive is its impact. It is commonly accepted that nearly all Zairians have at least one intestinal or skin disease, and especially in the rural areas, multiple diseases are common. In Kinshasa, the typical patient treated at FOMEKO's Mama Yemo Hospital complex in 1973 had an average of 2.7 diseases.<sup>12</sup>

Information collected by the Statistical Office of the Department of Health, in cooperation with WHO, indicated that 76 percent of the national morbidity in 1972 could be attributed to the following diseases: (1) infectious and parasitic diseases, (2) diseases of the respiratory system, (3) diseases of the digestive system, (4) traumatism, and (5) complications resulting from pregnancy and childbirth. An examination of the 1973 records of the largest national health facility -- the Mama Yemo complex in Kinshasa -- supported by information on the quantity and types of products in demand from the major pharmaceutical distributors in Zaire, revealed that the following diseases accounted for approximately three-fourths of all illnesses treated: (1) intestinal parasites, especially worms; (2) malaria; (3) infectious diseases, especially measles and tuberculosis; (4) respiratory infections including coughs, colds and pneumonias; (5) anemias; (6) digestive diseases including diarrheas; (7) diabetes; and, (8) hypertension.

The most comprehensive data gathered to date on child morbidity are those obtained in a nutrition/health survey of 4,391 children between 1 month and 4 years of age in Kinshasa.<sup>13</sup> The data, collected in conjunction with a measles immunization campaign in June-July 1974, revealed that 86.9 percent of the children surveyed had had at least one disease since birth in contrast to just 13.1 percent who had never been sick. Of those children who were sick, 62 percent had one illness, 21 percent had two diseases, and 4 percent had three or more diseases.

The data above, while indicative of the extent of illness in the nation's capital, probably underestimate total national morbidity. Given the severe shortage of medical facilities and supplies in the rural areas of the republic in which the vast majority of Zaire's population live, it can be assumed that the overall rate of morbidity for the nation as a whole is significantly higher.

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<sup>12</sup> FOMEKO Annual Report, 1973.

<sup>13</sup> The surveyed children represent approximately 3.8 percent of those vaccinated and 1.6 percent of children that age in Kinshasa.

High morbidity and mortality in Zaire, especially in the under 5-year age population group could be eliminated or at least substantially reduced through the institution of preventive health measures, including immunization campaigns, extension of potable water systems, and a general upgrading in basic living and housing conditions.

It is commonly accepted that mortality in a country generally falls virtually by itself in the course of modernization and socioeconomic development, even without accompanying improvements in the health infrastructure. Nevertheless, average life expectancy has increased only minimally in the post-independence period. Average life span rose from 37.2 years in 1955-57 to 40 years in the 1965-70 period.<sup>14</sup> Projections by the Development Planning Division of the Office of the President, in collaboration with the National Statistical Institute, estimate an average life expectancy of 48 years by 1980, based on anticipated health and health-related improvements. Nevertheless, as Table 5 illustrates, life expectancy will still be low compared to other major African countries.

The prevalence of debilitating diseases throughout Zaire exacts a high economic and social cost on the republic's development process. The effects of excessive morbidity are definite, synergistic, and farreaching. Demand continues to exceed the supply of curative medical services, which are extremely costly. High expenditures on curative care in turn place a heavy financial burden on the national health budget and effectively limit availability of resources for the expansion of preventive health activities which are inherently more efficient and economical. The attainment of an adequate education for the nation's youth is seriously impeded by pervasive illnesses which lead to high rates of absenteeism and drop-outs; even among those children in school, learning ability is impaired by repeated illness and general malaise. While the exact economic cost of disease is impossible to quantify, it is clear that reduced energy levels due to parasitic, infectious and respiratory diseases, coupled with widespread malnutrition, severely curtail the productivity/output of the typical Zairian worker. Over the long term, poor national health status inevitably slows down the very pace of the economic development process itself through low productivity of the labor force, excessive absenteeism and premature death.

The major endemic and epidemic diseases in Zaire, as well as the ongoing programs to deal with them, if any, are discussed below.

#### Major Diseases

##### Malaria

Malaria is a major cause of morbidity in Zaire. Virtually the entire population is affected and repeated cases of malaria are common. The disease is endemic in the lowland areas and occurs in unstable epidemic form in the highlands to elevations of 2,000 meters or more. It has been estimated that all children in the lowlands have at least one attack before the age

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<sup>14</sup> Dr. Bill Duncan, USAID Population Sector Assessment, December 1974.

Table 5

Life Expectancy at Birth in Select African Countries, 1972

<u>Country</u>	<u>Average Life Span (in years)</u>
Angola	35
Botswana	55
Cameroon	48
Central African Republic	40
Congo (Brazzaville)	44
Ghana	48
Kenya	49
Liberia	53
Mali	38
Rwanda	43
Tanzania	44
Tunisia	55
Uganda	49
Zambia	45
Zaire	44

Source: U.S. Department of Commerce, Bureau of the Census, International Statistical Programs Center, World Population: 1973: Recent Demographic Estimates for the Countries and Regions of the World.

of 10.<sup>15</sup> In the highlands, all age groups are equally affected under epidemic conditions. Precise data on malaria infection rates for the nation as a whole are nonexistent. The last epidemiological surveys for malaria incidence were conducted in the pre-1960 period. It is estimated, however, that 70 percent of all patients seen for all causes have malaria and surveys of incidence in rural children using the spleen examination method have shown a range of from 5 to 90 percent positive findings.<sup>16</sup>

Malaria is a major public health problem in Kinshasa at the present time. While there have been reported increases of malaria throughout the republic in the May through June and October through December period, the active transmission of malaria in Kinshasa is considered to be occurring at some endemic level over the total area throughout the entire year. The exact level of malaria and malaria-related infant deaths in Kinshasa, as in the case of the nation as a whole, is not known. It has been estimated, however, that mortality directly or indirectly related to malaria may be as high as 50 percent in the under one-year of age group in light of its endemicity and the fact that 3 cases of cerebral malaria are diagnosed per week at Mama Yemo Hospital in Kinshasa.<sup>17</sup> (The situation can be assumed to be even worse in most of the remaining regions of the nation, given the numerous natural breeding sites for mosquitoes and the decreased availability of medical personnel to treat the disease once contracted.)

There are no recent, acceptably accurate data on the epidemiology of the disease, or on the vector mosquitoes and the parasite including species and resistance to various insecticides or anti-malaral drugs, etc. Reported data include wide discrepancies. Indications are that P. falciparum is the most prevalent form of malaria with the balance generally P. vivax, but the data is not confirmed.<sup>18</sup> The main vector of malaria in Kinshasa is considered to be An. gambia, an especially difficult mosquito to control because of its adaptability to a wide variety of breeding conditions -- slow flowing water, polluted water and clean water. This vector is apparently still susceptible to DDT and to malathion. However, any control efforts should be concentrated on methods using proper water management, source reduction and larviciding, rather than solely through the use of expensive chemicals because of its biting habits.

Although the National Malaria Service within the Department of Health has conducted some spraying and larviciding operations, its work to date has not been sufficient to provide the public with adequate protection against this disease. Extension of the program, as organized, has been also inherently limited by several technical and institutional constraints. In addition to the absence of scientifically based basic entomological or parasitological work to support the operational procedures of malaria programs, inadequate levels of trained manpower, laboratory facilities and funds also impede effective operation of the National Malaria Service.

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<sup>15</sup> Walter Reed Army Institute of Research, Health Data Publications, Republic of the Congo, August 1965.

<sup>16</sup> Medical Survey of Zaire, Walter Reed, Section 4, p. 2.

<sup>17</sup> Larry Cowper, AID Technical Assistance Bureau/Health, Regional Malaria Officer.

<sup>18</sup> Medical Survey of Zaire, Ibid.

Further, in the absence of effective mosquito control programs, most residents, whether nationals or foreigners, have accepted malaria as an unavoidable part of life in Zaire. The use of chemoprophylactic drugs is almost totally confined to the expatriate and diplomatic community. Although the most commonly used drug, chloroquine (Aralen) is widely available to the population, its use, if at all, tends to be empirical and irregular rather than following a set routine as required as preventive.

Overall, the malaria control program in Zaire has had limited effectiveness. Persons have been treated on a case-by-case basis when drug supplies were available. The national medical facilities, especially those in the capital, have reportedly been doing a commendable job in providing clinical services to malaria victims. This method of combatting malaria with its present level of endemicity, however, is unrealistic if a real reduction of malaria levels is to be obtained. With the current operational focus of the malaria program, a patient can literally be cured of malaria one day and reinfected that same night. Such duplicative use of facilities, drugs and medical supplies are extremely costly and inefficient measures, given the already limited financial and human resources of Zaire to combat the wide range of diseases affecting its population.

In an attempt, therefore, to form a viable framework for a successful anti-malaria campaign the recently instituted National Health Council has formed a National Commission for Malaria. The creation of the Commission is a needed positive step in eradicating the disease, since it represents a formal acceptance by the Government of Zaire of the need for development of malaria programs as a major national health priority over the current decade. Initial meetings of the Commission in late 1974 and early 1975 have led to a plan to develop a malaria program for the city and region of Kinshasa which would serve as a model for eventual replication nationwide. The exact details of the Kinshasa program are still being developed and will be modified over the course of the project life as conditions require. Nevertheless, the program is generally envisioned to include an initial period of basic data collection to begin in 1975, to definitely identify the nature and extent of incidence and the mosquito vectors. Over the long term it is most likely that participation of the national military will be included, since no malaria control operation in the area would be effective without including extensive spraying of the numerous homes and environs of this large population group.

Such formalization of a malaria program is viewed as essential to revitalizing the National Malaria Service and providing it with the necessary legislative support as well as sufficient levels of financial and human resource inputs to assure its success. The program as outlined will begin in Kinshasa, and eventually be expanded through urban malaria programs, demonstration areas, etc., to the other eight regions of the country. Kinshasa is to be the policy, training, and national coordination center of the national malaria program. A detailed Plan of Operations for control efforts through 1980 is to be drawn up by the Department of Health with the coordination of the World Health Organization (WHO) and other interested multilateral or bilateral assistance agencies. Overall, every opportunity must be explored to carry out malaria control activities in an innovative fashion, using existing and planned health programs, including MCH and other general health care facilities to promote maximum efficiencies and economies of limited resources. One possibility is to assign house visitors to primary health care centers who would conduct direct home visits to the center's target area for malaria surveillance and treatment, as well as census, nutrition, population and family planning, immunization and general health education activities. It has been estimated that such multipurpose

house visitors working in Kinshasa proper could cover 8,000 to 10,000 persons per month.<sup>19</sup> Such a system would also facilitate the collection of much-needed and currently nonexistent vital statistics including data on total morbidity and mortality.

Strengthening of the refuse collection, maintenance of major canals and storm drainage systems and land fill operations of the Public Works Department -- all of which are essential to decrease natural breeding sites -- are viewed as an essential corollary to the institution of a national malaria control program. Reform and/or enforcement of the existing sanitary code to insure the elimination of mosquito breeding sites on private property, coupled with initiation of an extensive national health education program to familiarize the public with and elicit cooperation with malaria control programs are also needed.

The institution of a comprehensive and active anti-malaria program can be expected to provide significant side benefits in addition to reducing the actual level of malaria. Mosquito vectors of yellow fever, dengue and filariasis would also be reduced with spraying and larviciding activities. The fly population, believed to be part of the dysentery transmission cycle, would also be affected. Nutritional improvements should accrue, even if actual food intake is not increased, because nutrient intake will not be dissipated in high caloric expenditure associated with malaria chills and fever. Further, mortality from other diseases may also decrease as malaria is brought under control. These malaria related deaths are estimated to be equal to deaths directly caused by malaria, given the fact that malaria unduly weakens physical status and exacerbates most other health conditions.

#### Trypanosomiasis (sleeping sickness)

It is estimated that as much as one-third of the Zairian people live in endemic trypanosomiasis regions heavily infested with the tsetse fly, the principal vector of sleeping sickness. Woodland areas bordering lakes, rivers or streams pose the greatest risk of infection. The principal focus of the disease at present is in the eastern regions of Bas-Zaïre and Equateur, Haute-Zaïre, and the Kasai and northern Shaba regions.<sup>20</sup> The debilitating effects of this disease exact a high price on the economic development process.

The exact incidence of trypanosomiasis nationwide at the present time is not known. At the end of 1971 there were approximately 20,000 cases of sleeping sickness under treatment or control under a national program, with an estimated coverage of 1.5 million persons or approximately 25 percent of the "at risk" population.<sup>21</sup>

Prior to independence, trypanosomiasis had largely been controlled through the operation by the Belgians of an extensive and vigorous program. Over 500 mobile teams scanned the nation for surveillance, diagnosis, treatment with pentamidine, and follow-ups and overall prevalence was reduced to approximately 1,000 new cases yearly by 1960.

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<sup>19</sup> Larry Cowper, AID, TA/H Summary Report on Malaria, Zaïre visit of November 13 to December 7, 1973 (unpublished report).

<sup>20</sup> Medical Survey of Zaïre, Section 4, p. 4.

<sup>21</sup> Dr. J. Burke, Note sur la Situation de la Trypanosomiase en République du Zaïre, Bilan de Trois Années (1969-1972) (unpublished report)

The breakdown in the health care system following independence led to a complete interruption in the control program between 1960 and 1963. Incidence increased as formerly cleared areas were reinfested with the tsetse fly. As the examined population fell to around 2 percent, about 2,000 new cases of trypanosomiasis erupted rather spontaneously in the nation's hospitals.

With the alarm clearly sounded, the anti-trypanosomiasis program resumed, in 1964, under the guidance of Dr. J. Burke, an expatriate with financial support provided by the Fonds Médical Tropical Belge (FOMETRO), a Belgian non-profit organization. The current program is administered by a Central Office of Trypanosomiasis through an agreement with the Fonds Médical de Coordination (FOMECCO) in the Office of the President, rather than under the direct supervision of the Department of Health. Operationally, the program has 24 mobile units of 11 men each, working in Land Rovers, and 2 surveillance teams. The typical team is comprised of the following personnel, all of whom are Zairian: one sanitary engineer; 4 technicians to conduct physical exams, laboratory work and provide treatment; 2 drivers; 2 messengers who precede the team and inform villagers of the mobile units' arrival; and, 2 technicians in training.

With 24 teams operating, each village is visited approximately every 6 months. Together, the teams are covering 6 percent of the total Zairian population.<sup>22</sup> In addition to the mobile units, there are two itinerant teams in the Bas-Zaire region which form part of a large project for the creation of a rural health zone in the Madimba territory. A special trypanosomiasis treatment center was established at Kimpangu along the Angola frontier. The Central Office of Trypanosomiasis has established ties as well with itinerant teams in certain regions run by other organizations as well as with a number of government and missionary hospitals.

Several factors have hampered efforts to date to regain control of this debilitating disease, including the large-scale reinfestation of many areas, increasing vector resistance to chemical control measures, some patient resistance to treatment, and substantial population mobility. Epidemiologically, the situation with regard to trypanosomiasis is somewhat confusing and data are being only slowly documented. Areas with only sporadic cases in the past can suddenly be subject to massive outbreaks. Mobile teams working in one area must often abandon them to respond to epidemics, only to find large outbreaks in their own areas upon returning. The primary cause of endemicity is clearly the failure to obey sanitary legislation and measures which have been edicted by the National Government to control the disease. The uncontrolled movement of persons from areas of hyper-endemicity has resulted in frequent detection of trypanosomiasis outside of "fly-belts." For example, a large influx of Angolan refugees to Bas-Zaire in 1963 resulted in 2-3 times as many cases among refugees as the local population. These refugees are spreading the disease toward Matadi and Kinshasa as they move into these areas, with 50-100 cases per year detected in the capital city of Kinshasa, primarily among rural immigrants from Bas-Zaire. Generally, it appears that endemicity follows villagers looking for new work or the setting up of villages in new areas.<sup>23</sup> Another problem in control is the documented existence of "healthy carriers" with at least 30 carriers identified to date, thus spreading

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<sup>22</sup> Dr. J. Burke, *Ibid.*

<sup>23</sup> Medical Survey of the Republic of Zaire, Section 4, p. 4.

disease unknowingly.<sup>24</sup> Clinically, substantial numbers of relapses and resistance to treatment methods are developing. Drugs currently available are not highly effective in treating the disease.

While the historical trend highlighted in Table 6 suggests a rising epidemic, predictions that the peak of trypanosomiasis outbreak was reached in 1970 appear to have been confirmed by the recent course of events. In fact, despite increased examinations covering a larger section of the population, the number of new cases per year is actually declining. In the major part of the areas covered by the mobile units, the general tendency over the last five years has been a decline in endemicity. This is particularly evident in the Bas-Zaire and along the Angola frontier. If, however, the endemicity is tending to decrease in intensity, in contrast it is spreading in sheer geographic area affected and is reaching villages and regions that for many years have been immune to outbreaks.<sup>25</sup> Clearly, trypanosomiasis remains a most serious and widespread health problem, and demands close consideration in any national endemic disease control program which may be developed.

#### Onchocerciasis (river blindness)

Onchocerciasis is endemic in many areas of Zaire. While its exact incidence and geographic distribution is not known, in the Kasai region alone some villages have 100 percent infection rates, including up to 15 percent associated blindness.<sup>26</sup> The most heavily infected area, that of Lusambo in Kasai region, is the site of a national onchocerciasis mission. Created by a Department of Health Order of November 26, 1973, this mission has already begun work toward eradicating the adult vectors and the larva of the disease-carrying insects along the length of the Sankuru River and its affluents. Insecticide spraying has already begun along the river area while concomitantly medical teams to treat the disease have become operational. Injection centers set up in the numerous endemic localities along the Sankuru River are visited regularly by these mobile teams and are providing needed care for diagnosed cases.

The ongoing Zaire River Expedition may also play an important role in the eventual eradication of the disease. Teams of foreign scientists and doctors on the boats are exploring the natural breeding sites of the fly in an attempt to identify the most cost-effective method of eliminating this vector. The eradication of onchocerciasis from Zaire carries not only a high social value in terms of improved health of its people, but also vast economic potential in opening up heretofore uninhabitable, yet highly fertile areas along river beds for agricultural production.

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<sup>24</sup> Dr. J. Burke, op. cit., p. 6-8.

<sup>25</sup> Dr. J. Burke, Ibid.

<sup>26</sup> Medical Survey of Zaire, Section 4, p. 7.

Table 6  
New Cases of Trypanosomiasis  
for Select Years 1930 - 1973

<u>Year</u>	<u>Number of New Cases</u>
1930	33,502
1940	11,837
1945	11,080
1950	6,109
1955	2,117
1957	1,560
1959	1,098
1960	131 <sup>§</sup>
1963	739
1964	970
1965	1,324
1968	3,247
1970	6,172
1971	5,121

<sup>§</sup> This low figure reflects the fact that the national independence had just begun, with its ensuing civil rebellions and concomitantly poor health reporting; in actuality, cases are assumed to have increased over 1960 to 1965.

Source: Dr. J. Burke, Note sur la Situation de la Trypanosomiase en République du Zaïre Bilan de Trois Années (1969-1972). (Unpublished report)

## Measles

Measles is an acute national health problem. Although exact national incidence is difficult to determine because of scant reporting procedures, measles is considered to be one of the four leading causes of death in children 5 years of age and younger.<sup>27</sup> Incidence generally peaks during the dry season between June and October, but transmission continues rather unabated throughout the year.

A total of 9,441 cases with 6 deaths were reported in Kinshasa in 1973. Local health authorities, however, estimate that actual incidence in the capital was probably closer to 45,000 cases with 2,700 deaths, or an overall mortality rate of 6 per 100 cases.<sup>28</sup> The mortality rate for those children who were hospitalized is estimated to be even higher: 20 per 100 cases. And in the rural areas, indications are that child mortality from measles may be as high as 10 per 100 cases.

A study of cases of measles treated at the Pediatric Clinic, National University of Zaire, Lubumbashi Campus in 1968, is illustrative of the severity of the problem.<sup>29</sup> Measles was the primary diagnosis for 740 children or 63 percent of the total caseload of children treated that year. Of these 740 cases, 101 or 14 percent of the children (93 percent of which children were less than 2 years of age) died. This high mortality rate may overestimate national mortality from measles because of the fact that all of the children admitted to the hospital in Lubumbashi study were in the advanced stages of the disease. Nevertheless, deaths are excessive for this disease, as highlighted by the fact that in the United States, for example, only about one child per 100,000 infected with measles, dies.

The severe course of measles in Zaire leading to excessively high mortality rates can be attributed to several key factors: frequent serious post-measles secondary infections, most commonly broncho-pulmonary complications and gastroenteritis; patients already physically weakened by infections such as malaria, parasitism, diarrhea and malnutrition; unsatisfactory environmental conditions including close living quarters, houses without basic sanitary and hygienic facilities; hot tropical climate, coupled with diarrhea and lack of appetite which accelerates the dehydration process in fevered children; existing social patterns favoring frequent visitation between households by mothers carrying children on their backs so that disease transmission is increased; and, a continued reliance on traditional practitioners as initial contact for consultation, thus leading to valuable loss of time in obtaining professional medical care, coupled with lack of medical facilities. Poverty remains an underlying cause of the severity of measles in the country.<sup>30</sup>

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<sup>27</sup> APHA Report, Measles Immunization in City Kinshasa, Zaire, 1972.

<sup>28</sup> Ibid. Estimates on actual incidence are based on an estimated 80 percent nonreporting of communicable diseases, as determined by the Department of Health and WHO.

<sup>29</sup> "Concerning 101 deaths from measles in African children in Lubumbashi," Materia Medica Polona, Vol. 4, No. 2, April-June 1972, pp. 89-93.

<sup>30</sup> Gilbert Ngandu-Kabeya, "Concerning 101 deaths from measles in African children in Lubumbashi" Materia Medica Polona, Vol. 4, No. 2, April-June 1972, pp. 89-93.

Over the long term, changes in socioeconomic conditions, dietary habits and improved health education of the people will be essential complements to effectively eliminate the health hazards of measles.

The most recent attempt by the Government of Zaire to tackle this disease was a massive citywide campaign conducted in Kinshasa June 19-July 20, 1974, which inoculated 14,664 susceptible children between 1 month and 4 years of age. Under a cooperative effort between the Department of Health, WHO, and FOMEKO's Mama Yemo Hospital, personnel for 12 temporary mobile teams were provided from the various divisions of the Department of Health, and vaccine was donated by FOMEKO. Supervisors of the National Smallpox Campaign (CNEV) were responsible for selecting 12 sites throughout the city. Extensive use of mass media, including radio-television broadcasts and the airdrop of leaflets over the major market places, were instrumental in acquainting the public with the purpose and sites of the campaign and encouraging wide participation.

Overall, the campaign reached approximately 42 percent of the 0-4 years of age population. While the accomplishments of this recent effort are important, it is only a first step. The institution of yearly mass campaigns, preferably at the beginning of the dry season - May through June - when incidence tends to peak, will be essential for maintaining control. Further, such campaigns will have to extend to the rural areas of the country in which the vast majority of the nation's children live, if any significant reduction in child mortality from this disease is to be achieved.

#### Schistosomiasis (bilharziasis)

Schistosomiasis is prevalent and may in fact be spreading throughout Zaire. While the exact national incidence is not known, in the Bas-Zaire region alone it is considered to be the leading cause of morbidity among infectious diseases. In a study of a village near Kimpese, 90 percent of the children examined between 1 and 12 years of age were infected.<sup>31</sup> The disease, in both its intestinal and urinary forms, is especially endemic in areas close to natural waterways which provide ideal breeding sites for the vector.

While the curative aspect of schistosomiasis now focuses on the relatively inexpensive provision of one sole dose of chemotherapy, the preventive aspect of the disease is an inherently costly one.<sup>32</sup> The institution of a major national campaign against schistosomiasis will necessitate not only medical inputs and the training of large numbers of health personnel, but more importantly, a coincident change in many cultural habits of the population. Villagers will have to avoid bathing and swimming in areas infested with the vector. Because effecting these necessary societal changes is an inherently slow process, no significant reduction in incidence levels is foreseen in the near future.

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<sup>31</sup> Medical Survey of Zaire, Section 4, p. 2.

<sup>32</sup> The chemotherapy is dangerous, however, because of the high toxicity noted with the injection.

### Smallpox and Tuberculosis

Historically, smallpox and tuberculosis have been major health problems in Zaire. In the decade prior to independence, a total of 32,793 cases of smallpox were registered or more than 3,000 cases annually. With the breakdown in health services and absence of epidemiological reporting over the 1960 to 1965 period, the incidence of smallpox rose while the official figures did not accurately reflect the severity of the problem. Epidemics occurred in almost all the zones of the country, but with particularly strong impact on Kasai, Equateur and Katanga and in the Oriental, where smallpox took dozens of thousands of lives over that six-year period.

The gravity of the tuberculosis situation in the post-independence period was compounded by the complete disorganization of the diagnostic and treatment services, and the poor nutritional situation in the rebel areas. An immediate action program was imperative.

In the 1965 the Government of Zaire attached highest priority in health to the eradication of smallpox. Given its endemicity, an anti-tuberculosis program, based on the systematic BCG vaccination of all children under 15 years of age, also was attached to the smallpox eradication program. The organization plan for the combined smallpox/tuberculosis campaign was laid out over the course of 1966 with WHO assistance. The Government designated a doctor to head the operations and WHO contributed 5 physicians, 2 administrators, and 5 technicians, 100 vehicles, and all the vaccine inoculation material including refrigerators for conserving the vaccine.

The plan of operations was based on three successive phases: (1) preparation carried out in 1967; (2) pilot projects beginning in March 1968 in Kasai Oriental and Equateur; and, (3) the attack phase which began in November 1968 and was completed in July 1971, actually five months before the predicted termination of the campaign.

The smallpox eradication/tuberculosis vaccination action program embraced a broad spectrum of activities. These included: health education to assure public cooperation in the campaigns; systematic smallpox vaccination of the entire population to provide complete coverage in a period of 4 years; systematic BCG vaccination of all children under 15; improvements in the notification and registration of cases and deaths from smallpox; epidemiological surveys on each case or family with smallpox; isolation operations for each case or family with smallpox; and, routine vaccination in the maternities of all newborns against smallpox and tuberculosis.

Organizationally, the operations were directed by the Campagne Nationale de l'Eradication de la Variole (CNEV) based in Kinshasa, which was directly responsible to the Department of Health. The actual vaccinations were carried out by four groups covering the national regions, although not all four were in operation over the entire period. Each group had a principal base at the regional capital and a temporary mobile base. The physician in charge of each of the groups was responsible for five vaccination teams, an information team and an evaluation team. In total, each group was comprised of 15 persons, one dozen Land Rovers, two trucks, and materials. Each vaccination team worked independently although often in the same area. The evaluation team was responsible for controlling the coverage of the population quantitatively and qualitatively and at the same time vaccinating those who were missed by the vaccination teams. No evaluation was made of tuberculosis operations since the measurement of the scar of the BCG vaccination was believed to be an adequate judge of its efficacy.

The campaign's experience highlighted the need for maintenance vehicles to keep the trucks and Land Rovers operational. Long-term planning often proved to be more idealistic than realizable. Despite the existence of detailed plans, doctors found it necessary to take the initiative and readjust schedules constantly.

In total, between March 1968 and July 1971, 24,346,418 smallpox vaccinations and 11,356,928 BCG vaccinations were given. In August 1971, control and maintenance activities were vested in 11 mobile surveillance teams. Each team has three principal responsibilities: (1) active surveillance of smallpox; (2) vaccinations for maintenance; and, (3) evaluation of the level of immunity of the population. The teams are in constant contact with health facilities. If a case of smallpox is suspected, the team verifies the diagnosis, conducts an epidemiological survey, effects containment vaccinations to the entire population in the area, makes formal notification to the regional medical director, and returns to the area within two weeks to diagnose possible new cases and verify the control within the area. Both the WHO and the Peace Corps have actively supported the campaign through the contribution of personnel to head each surveillance team.<sup>33</sup>

The effectiveness of the smallpox vaccination program is evidenced by the sharp drop in the incidence rate of reported smallpox cases. By August 1971 transmission had apparently been checked throughout the country. Despite numerous epidemiological surveys since that time, there have been no confirmed cases of smallpox reported; (nine cases of monkeypox were confirmed).

In contrast, tuberculosis is still prevalent, most notably in the overcrowded urban centers. While precise figures on morbidity levels are not available, mortality has been estimated to be 10 percent.<sup>34</sup>

The control of tuberculosis has been difficult, not only in urban, but rural areas as well. Increased emphasis has been put on the adoption of new methods for tuberculosis treatment, most notably outpatient control. But the severe shortage of health manpower and facilities, especially in the rural sections, precludes adequate follow-up care for outpatients and overall high reinfection rates have been recorded. The problems of control are compounded by the fact that rural villagers are resistant to long-term treatment. Faced with repeated visits to a missionary or Government health facility, many Zairians prefer to go to local practitioners whose curative powers are believed to work more quickly. Because of the deep-rooted causes of tuberculosis, improvements in environmental sanitation and housing will be essential corollaries to any national tuberculosis control program.

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<sup>33</sup> For detailed information, see René Lekie, "La Campagne D'Eradication de la Variole en République du Zaïre," Bulletin de la Société de Pathologie Exotique, Vol. 64, Sept.-Oct. 1971, p. 761-775.

<sup>34</sup> Medical Survey of Zaïre, Walter Reed, 1972.

### Skin Diseases

Skin infections are common throughout Zaire, with virtually the entire population affected at one time or another. One of the most prevalent infections is that caused by the chigger flea. In addition to general pain and discomfort as the flea expands after entering the body, the associated entry of secondary organisms may result in suppuration, tetanus and/or gangrene. While the feet and lower legs are the most commonly infected sites, all exposed skin is vulnerable to attack.

Infections caused by fly bites are prevalent, not only in rural areas, but in Kinshasa as well. Upon biting, the fly deposits eggs which subsequently hatch, causing the body to be a living breeding site. Yaws, tropical ulcer, fungus infections and itch mite are also widespread, although factual data on exact incidence is not available.

A high prevalence of cutaneous ulcers has been reported in several geographical areas including Kimpese, Boloko, Watsa, and Kasongo. Although the ulcers, which persist from a few weeks to months, can occur in any age group, they appear to be most prevalent in infants through 20 years of age. The epidemiology of the disease, including the natural reservoir of transmission to man's skin, is not known, and is currently under study. Data collected to date, however, suggest that the disease is neither seasonal nor contagious.

### Leprosy

The exact incidence of leprosy in Zaire at the present time is not known. In the mid-1960's there were a reported 20,000 to 30,000 new cases annually, or an infection rate of approximately 1,500 to 2,000 per million population. The Equateur and Oriental regions of the country have traditionally been the areas of highest prevalence.

Current programs in leprosy are centered in a special office attached directly to the Department of Public Health to treat known cases, to locate and treat new cases, and to collect medical statistics on the incidence nationwide. In contrast to traditional medical treatment procedures in this area and in line with new international knowledge and understanding of this dreaded disease, most patients are now dealt with on an outpatient basis and only the most severe cases are hospitalized.

### Hookworm and Other Parasitic Diseases

Almost all Zairians have at least one parasitic infection, usually hookworm, and multiple infections are not uncommon. Because of their widespread prevalence and thus acceptance by the population as the norm, they are very infrequently reported. The high incidence of anemia in the population can be directly related to high hookworm infection rates. Among the parasitic diseases, round worm and pin worm are also common. Because of the difficulty of attacking this group of diseases until significant environmental sanitation improvements, including sewage disposal systems, are undertaken nationwide, an (inherently slow and costly process) there is little possibility of reducing incidence of these diseases in the near future.

### Dysentery and Other Diarrheal Diseases

As in the case of parasitic diseases, most of the population suffers from dysentery and other diarrheal disorders. Although amebic dysentery is more common than bacillary, the differences in incidence levels may be due to the fact that the former are easier to diagnose and that persons with the milder forms of bacillary dysentery do not generally seek medical care.

### Typhoid and Paratyphoid Fevers

Typhoid fever is endemic with occasional epidemics throughout Zaire. Although reporting of typhoid and paratyphoid fever is mandatory, official data on incidence is greatly underreported. Highest incidence levels occur during the dry season when water levels are low and thus the possibility of contamination greatest. During the Belgian colonial administration, all Government workers were required to be inoculated against this disease, and the infection rate decreased. The breakdown in the preventive care system in the post-independence period has resulted in increased incidence.

### Yellow Fever

Yellow fever is rare in the country, although the *Aedes aegypti* mosquito vector is present. A suspected outbreak in 1971 in Equateur region was brought under control through the inoculation of an estimated 365,000 persons and strict quarantining of the two diagnosed cases. There have been no known outbreaks since that time. Massive inoculations of persons living along the Zaire and other principal rivers of the country have been undertaken to control cholera. The mosquito vector of yellow fever is present in the country and the danger of an outbreak of this disease is omnipresent.

### Sterility

Sterility is a demographic, social and health phenomenon in Zaire. It is a paradox in the context of national demography in which principal attention has been focused on the problem of excessive pregnancies and high maternal and infant mortality rates. At the same time it cannot be ignored, for technically the level of sterility in the country is too elevated to be normal. A study of sterility in the then Congo in 1963 showed that 20 percent of all women who had attained menopause or were 45 years of age and older had never had a live infant, although even the most pessimistic estimates are that from a demographic and health standpoint, physical sterility should scarcely affect 10 percent of all women in a normal population group. The study, conducted by the director of the Institute of Economic and Social Research at the then University of Leopoldville (currently UNAZA-Kinshasa), therefore, sought to isolate the facts and the causes of such high sterility rates in Congolese women. Although the study is 11 years old, the problem it identifies is still part of the maternal health situation in the country.

In 1963 single women 30 years of age and older comprised less than 1 percent of the total female population. Forty-four percent of Congolese women were already married at the age of 20; and 85 percent were married by the time they had reached 25 years of age. While current data on marital status is not available, it can be assumed that these statistics are fairly representative of the present situation, given the continuation of traditional societal patterns over the period since the study was undertaken. The curve of sterility in 1963 indicated that

there was very little possibility of a Congolese woman becoming a mother if she had not had a child before 25 years of age. This is due to both the early age at which the overwhelming majority married, and thus were at risk of conception, and the fact that even among unmarried women, high birth rates are common.

Thus, given the 20 percent rate of sterility in the population, the study focused on whether this sterility was voluntary or not, and if not, whether the problem was a socio-cultural or health one.

As the study revealed, much "sterility" is voluntary, assured through widespread use of both contraceptive and abortive practices throughout many Congolese (Zairian) tribes. Abortive recipes abound among certain tribes. While the chemical composition of products is not known, they are usually extracts of bark, diverse plants and roots. In some tribes, more violent techniques, including the placing of pressure on the abdomen or the introduction of sharp instruments are used. In general, the high incidence of abortion can be attributed more closely to tribal customs and lifestyles than to any conscious desire to control population growth. In some tribes, preoccupation with avoiding birth of adulterously conceived children is cited as the primary cause for numerous abortions. Women who have had difficult pregnancies in the past, have several children already, and/or are very old will also tend to abort. In some tribes the high tendency of women to abort is viewed as a form of vengeance on her family or husband. This is especially notable in patrilineal tribes, where children conceived in marriage belong to the husband's clan. In these cases, the women in the community tend to band together and keep abortions secret. Although abortion was the most common method of terminating pregnancies, contraceptive practices are becoming more popular since introduced by European colonizers. These include the use of jellies and quinine, as well as more modern clinical methods such as IUD's, pills, and injections. The use of "femmes-libres" or semi-prostitutes by some tribes to avoid risk of conception to unmarried females also caused a high measure of "sterility."

While voluntary measures accounted for a significant amount of the sterility noted in the study, nevertheless, involuntary sterility was substantial. In some instances, women were sterilizing themselves unknowingly through the use of drugs and medicaments to protect against the contract of disease. Importantly, however, the study revealed that health complications, most notably venereal disease, were the primary cause of a large part of abnormally high maternal sterility levels.<sup>35</sup>

Large-scale urban-rural migrations of the population in the post-independence period are considered one of the primary causes of increased incidence of venereal diseases, especially gonorrhoea, in the principal urban centers of the nation. Growing numbers of prostitutes operating in the major cities have also exacerbated the prevalence of these types of diseases.

Although the exact incidence of venereal disease in Zaire at the present time is not known, it is reportedly reaching epidemic proportions in many areas. Both the long-term health implications of this disease, if left untreated, as well as the social stigma attached to involuntary sterility in Zaire, demand that programs to combat venereal diseases be rapidly and effectively instituted.

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<sup>35</sup> A. Romaniuk. L'Aspect Demographique de la Stérilité des Femmes Congolaises. Editions de l'Université, Leopoldville: 1963.

### Chronic Diseases

As in most developing nations, the low average life span in Zaire tends to reduce the incidence of degenerative diseases such as heart disease and cancer, common to advanced industrialized nations. The one principal exception in Zaire is that of hepatocellular carcinoma, liver cancer, which is a major cause of death of young adults in both rural and urban areas. Although the exact reason for this phenomenon is not known, animal experiments and epidemiological studies suggest that aflatoxins may be a causal factor. The high incidence of malnutrition and viral hepatitis throughout the nation may also be associated causes.<sup>36</sup>

Diabetes is widespread. Although exact national incidence is not known, reports on sales of insulin by the major pharmaceutical companies confirm high incidence and in the outpatient department of Mama Yemo Hospital in Kinshasa, the largest national hospital, alone, approximately 200 diabetics are treated daily. The exact cause of high incidence has not been studied but may be linked to high sugar consumption in the local diet.

### Mental Health

### Drugs

The Government of Zaire is a signatory to the Geneva Convention on Drugs and strict regulations exist on the distribution of narcotics in the nation. Nevertheless, drug addiction is a health problem, notably among health personnel in the various national health facilities. The ease of acquiring narcotics given the generally poor control of medicaments' supply areas in the hospitals, dispensaries, etc., is a primary cause of high drug usage by employees and highlights the need for better administrative practices in this area.

The local production of marijuana makes it virtually impossible to control. Its use is widespread, but in contrast to many nations, its principal users are the older population who smoke it as a relaxer after a hard day's work in the fields. There is no social discrimination against its usage, however, and it is not considered to be a health problem.

### Stress Diseases

Hypertension is prevalent, most notably in the major cities of Zaire, and may be linked to stresses associated with adaption from the slow pace of rural villages to rapid pressured lifestyles characteristic of urban centers. Its principal victim is the young, in contrast to trends in most developed countries in which older population groups are affected. Kinshasa's general hospital, Mama Yemo, treats approximately 400 cases of hypertension daily in its outpatient department, out of a total caseload of 2,400.

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<sup>36</sup> Medical Survey of Zaire, Section 4, 1972.

## Accidents

Precise data on the number of traffic accidents in Zaire annually are not available. Traumatism and injuries from such accidents, however, are a primary cause of hospitalization throughout the nation. The high incidence of road accidents can be largely attributed to a poor road system which poses a constant safety hazard, coupled with driving at excessive rates of speed.

## Occupational Health

Very little information is available on the number or type of worker's accidents in Zaire. Lax enforcement of occupational safety code regulations, however, is common and is visible in the poor condition of construction sites around the major cities. There have been reports of an increasing number of accidents at the nation's copper mining sites, again due to failure to enforce strictly the provision of safe working conditions.

## Zoonoses

The responsibility for the nation's veterinary medicine is vested in the Department of Agriculture. Headed by a young veterinarian, the Department operates an animal vaccine production laboratory in Lubumbashi, clinical laboratories in Kinshasa, Lubumbashi and Kisangani and monitors the Veterinary School of the National University of Zaire (UNAZA) in Lubumbashi. Severe shortages of trained veterinary medicine personnel including just 30 veterinarians in the whole country, seriously hamper efforts to monitor and control animal health. Amidst such limited manpower, the inspection of public slaughterhouses in all major cities is most difficult, and in the rural areas in which 74 percent of the population live, such control of food is virtually nonexistent. Tribal customs also impede control of this important group of diseases. Since in many tribes livestock serve as a symbol of prestige or as dowries rather than as a source of income, the incentive for guarding animal health is low. Further, the failure of many Zairians to link animal diseases with human illnesses thwarts the development of effective zoonoses programs. Existing cultural patterns such as inadequate cooking of meats in rural areas also increases the transmission of zoonotic infections in humans. National health education programs will have to be developed to alert the population to the existence of zoonoses and preventive measures.

In such a setting, it is not surprising that the following major animal diseases are prevalent throughout Zaire, although exact infection rates are not known: East Coast cattle fever (in the Kivu Region); anthrax (Kivu and Shaba regions); foot and mouth disease; trypanosomiasis (Equateur and Haut-Zaire regions); African Swine fever (Bas-Zaire); and, rabies in cattle (Kasai). Anthrax is a particularly serious problem because many tribes tend to save the hides from animals who have died from this disease, thereby exposing persons to the organism. Contact with the hide causes a malignant pustular form on the skin. In those cases in which the flesh of the animal is eaten, intestinal anthrax occurs. Animal tapeworms are endemic and brucellosis prevalent in various areas of the country. Rabies in dogs is endemic and can be directly attributed to the fact that immunization of pets is not required by law. Although no data are available on the number of rabies deaths in Zairians annually, it is not uncommon. Mass campaigns to inoculate dogs with free vaccine provided by the Department of Agriculture do occur, however, when death by rabies occurs in a community.

#### IV. HEALTH PROGRAMS

The announcement by President Mobutu in his November 1973 policy speech of the assignment of health as one of the four key national development priorities can be viewed as a critically needed catalyst to affect significant changes in the health status of the Zairian people if complemented by substantial financial and human resource inputs from the Government. To date, however, the Government has moved very slowly in extending coverage or quality of health care programs to the people. Part of this slack may be explained by a severe shortage of trained health personnel necessary to enlarge existing programs or more importantly, extend programs to heretofore unattended populations, most notably in the rural areas.

Several key health programs have been initiated during the 1970's which augur an improvement in the priority areas of maternal/child health, family planning, endemic disease control, occupational health, etc. The majority of these programs, however, reach only a small percentage and often not the most vulnerable subgroups of the population. In fact, it is estimated that more than 75 percent of the total population remain entirely outside the formal health care delivery system. Nevertheless, these programs are an important first step toward effecting optimal improvement in the health status of the Zairian population. Continued Government inputs, not only to maintain but to rapidly expand these programs, are essential. In this setting, complementary technical and financial assistance from both domestic and international private and public organizations will be a critical key to ultimate success in the short term.

#### Maternal Child Health/Desired Births Program

##### The Setting for MCH

Morbidity and mortality in Zaire are concentrated in women and children, particularly those under 5 years of age, which two groups comprise approximately 75 percent of the total population. Therefore, any improvement in health status is dependent above all on the availability of quality maternal and child health care (MCH).

Both private and public organizations, including public hospitals, church groups, and voluntary agencies, have been active for years in the provision of MCH care. But traditionally this care focused solely on curative-oriented activities focused on restoring them to good health after they became ill. Amidst rapid population increases and only minimal improvements in the health infrastructure, demand for such curative services soon exceeded the institutional capacity to absorb. The problems of providing adequate levels of care were compounded by the fact that there was complete uncoordination of the MCH care among the various groups providing it. Thus, programs tended to concentrate in a few key geographic areas to the general exclusion of the more populous rural areas. Inevitably, maternal and child mortality levels not only showed little improvement in the immediate post-independence period, but in fact may actually have increased.

In recognition of this fact, the Government of Zaire has given the first priority to the creation of a national MCH program to include a broad spectrum of preventive and public health activities, with particular emphasis on improved maternity care, health education, and under-5 clinics.

By the end of the first decade of independence, Mama Yemo Hospital (MYH), the nation's largest health facility, was handling a record 140-150 births daily. This excessive amount of deliveries daily severely overtaxed both institutional and staff capability and limited the hospital's ability to provide quality maternity care. In such a setting, the National Government requested technical assistance in redirecting its maternity program. As a result, a consultative group from the American Public Health Association financed by the U.S. Agency for International Development (AID) assessed the MCH situation and outlined an alternative model for delivering services.<sup>1</sup> While the specific details of their proposal were subsequently adapted, the basic recommendation for decentralization of the hospital's extensive MCH care through the development of small satellite centers throughout Kinshasa, formed the core of the new MCH program. This decentralization is viewed as primary means by which better coverage of the target population with comprehensive health care could be achieved.

#### Ongoing Program

Actual program implementation was undertaken in 1972 with substantial technical inputs from USAID. The Geneva-headquartered Organization for Rehabilitation through Training (ORT) was contracted to provide technical assistance to the National Government in the establishment of a series of clinics in Kinshasa proper and its outlying zones, which would serve as a model for an eventual national MCH/family planning service network. The Fonds Médical de Coordination (FOMECO) within the Office of the President, was given overall responsibility for the establishment and management of this pilot project because of its capability in medical care planning and provision displayed in the reorganization of MYH. USAID provided funds to FOMECO for construction of MCH centers, equipment, supplies and commodities, as well as arranged for the overseas training of Zairian supervisory and training personnel for the MCH program.

The first MCH center was Barumbu, opened in January 1974, just four blocks from the main MYH complex. A second -- Bumbu -- began operations in October 1974 in another, much poorer, zone of Kinshasa; a third was opened in early 1975.<sup>2</sup> Each MCH center program focuses on the provision of a full range of health services, including prenatal, post-natal consultations, normal deliveries, immunizations of mothers and children, health education including nutrition guidance, and a 24-hour dispensary service. Each is also to serve as a training center to provide medical students, nursing staff, etc., practical experience in MCH activities.

Ultimately, the establishment of a total of 14 such MCH centers is included in the long-term plan, each of which would serve two zones of Kinshasa, or a total of 140,000 persons. There is some question whether this number will be sufficient to meet the demand for maternity services in

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<sup>1</sup> American Public Health Association. Report on Maternal and Child Health Services in Kinshasa Area. June 27-July 27, 1971. APHA/AID Contract AID/csd. 2604.

<sup>2</sup> Under the original agreement with the Government of Zaire, a total of six centers are to be built with AID grant funds; the government is to continue extension of the MCH system at project completion. Of the six, three centers are now operational and three buildings are being renovated to serve as MCH centers prior to scheduled project termination at the end of FY 1976. The possibility of a new AID grant for a comprehensive MCH/family planning/nutrition program in line with the health goals of the new National Health Council is under discussion.

the near future, given the fact that the total population of Kinshasa is expected to double to 3.4 million by 1980. Thus, each such MCH center would in actuality have to cover the needs of 280,000 persons. Further, in the short-term, expansion of the number of MCH centers is inherently limited by the scarcity of trained and auxiliary nurses. ORT was given the responsibility for training and supervising the staff for the MCH centers, utilizing existing MYH facilities for practical training. The shortage of personnel at MYH and the high turnover rate among its nursing staff have precluded the formation of adequate numbers of staff to rapidly extend the MCH centers. Assessment of the quantity and quality of the graduates from the nation's nursing schools, with a view toward determining the availability of various personnel types, will be essential to the development of a comprehensive long-term MCH center staffing pattern.

The high cost of constructing Barumbu Center forced FOMECO to revise its original plan of constructing all such centers from the ground up. The two other centers currently in operation were established in rehabilitated buildings. The current focus continues to be on the less expensive renovation of existing buildings in the various zones to serve as MCH centers.

In the area of maternal care, the Barumbu MCH Center was averaging 50 prenatal consultations daily and its 46 maternity beds were handling an average of 13 to 14 births per day in December 1974. The number of deliveries per day increased substantially in the short period since the center first opened in 1974 and it can be assumed that its present capacity of a maximum of 20 deliveries daily will soon be reached. The delivery procedure itself incorporates some of the most modern techniques available. Upon arriving at the Center, each mother is given a preliminary examination, showers, and then takes a bed in the labor room. A chart is attached to the foot of the bed on which the extent of dilation is marked at hourly intervals by the attending nurses. Labor room nurses have been taught to watch for 15 warning signs, any one of which will alert them to call the on-duty physician. In the case of extremely complicated pregnancies, women are taken by ambulance to Mama Yemo Hospital. On the average, just 5 percent of all deliveries require attendance by the physician; 95 percent of all births are attended by auxiliary nurses. The average length of stay at the Center is three days. Studies conducted to date have shown a substantial increase in the number of women from zones other than Barumbu coming to the maternity center, relative to those from the immediate and surrounding areas. It can be assumed that these data reflect the demonstrated effectiveness of the service.

Further, the large percentage of women who have had prenatal consultations prior to delivery at Barumbu is a significant indication of the success to date of its program. Approximately 75 percent of the women delivering at Barumbu have had at least one prenatal consultation, and the vast majority have had an average of 3 to 4 visits; only 25 percent have had no prenatal consultation prior to delivery.

Importantly, the three existing MCH centers have relieved some of the congestion in the maternity ward at MYH. And at the MYH itself, maternal mortality has shown steady declines over the past few years. Despite inroads to date, the high prevalence of malnutrition among pregnant mothers, however, continues to endanger their deliveries. At MYH alone, over 60 percent of the mothers arriving at the maternity ward have anemia, and of those, more than 80 percent have hemoglobin levels below 10 grams.<sup>3</sup>

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<sup>3</sup> FOMECO 1973 Annual Report. Note that in the U.S. the normal range of hemoglobin levels for females is 12 to 14 grams.

Approximately 85 percent of the mothers delivering at MYH have parasitism. Thus, overall improvement in maternal health throughout the republic will still be dependent on the institution of other interrelated programs, most notably nutrition improvement and extended primary and preventive care.

A minimal fee of 20K or approximately \$.40 is required of each woman for three prenatal consultations. Fees for delivery of children at the MCH centers are set according to the individual mother's income level. On the average, women will pay 22.50, or about \$5.00, for full delivery services including the actual delivery and a minimum 2 days length of stay at the Center's maternity ward. In the case of women covered by health insurance plans due to their own or husband's employment, a fee of 210, or \$20.00, is assessed. Birth certificates are withheld from mothers until the entire fee is paid. Since birth certificates are essential documents for formalizing citizenship, their withholding is serious and serves to encourage full payment as soon as possible. All medications required during maternity care are provided free of charge.

Under-5 clinics at MYH, and the three MCH centers, provide a wide range of preventive and curative health services. At the initial visit, mothers are given an Ilesha health/weight record for each child, and one is filled out for the center's permanent medical record.<sup>4</sup> An area on each chart is marked in green to display acceptable weights for each age period. The chart also serves as the medical record and in addition to illnesses and immunizations, includes data on living conditions, such as the number of rooms in the child's home, and the educational level of the parents, which will hopefully provide key information to FOMECO with which the causal relationship between illness, malnutrition and environment can be ascertained. This is viewed as an essential component of the pilot project in that it will provide insights for the development of a national MCH program. All children attending the under-5 clinic are routinely given immunizations for BCG, smallpox, tuberculosis and poliomyelitis. Mothers whose children fall below acceptable weight for age limits are counseled on nutrition and proper child care methods.

Nutrition education is an important corollary to the under-5 clinic session. Thus, all mothers are required to attend a nutrition education class during each routine visit of their child(ren) to the clinic. In an experimental attempt to relieve nursing personnel for more direct patient care activities, the classes are being given by filles de salle, non-nursing staff, who have received just a basic course in nutrition education from the FOMECO staff. While mothers sit on the floor, the fille de salle uses a typical shopping basket filled with beans, flour, etc., to demonstrate the type of foods that should be purchased on the local market and their proper preparation. Special emphasis is given to demonstration of preweaning multi-mixes from foods which are low in cost yet high in protein content. Since early weaning may

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<sup>4</sup> The chart, which was developed by Dr. David Morley to provide a health profile of children in Ilesha, Nigeria, was tested over an eight-year period in several countries and is presently in use in numerous African countries' MCH programs.

Note: For an extensive study of the cost-benefit of MCH centers at MYH and Barumbu, see: Université Nationale du Zaire, Campus de Kinshasa, Faculté des Sciences Economiques, Citoyen Moyila-Mboma, Le cout et le bénéfice de la santé maternelle et infantile au Centres Meres-Enfantes des Zones Kinshasa et Barumbu, Memoire présenté en vue de l'obtention du grade de Licencie en Sciences Economiques, Kinshasa, Juillet 1974.

severely reduce the child's nutrient intake and thus place him/her in a precarious position nutritionally, all mothers are encouraged to breastfeed for as long as possible in accordance with customs of their villages. The disadvantages of cow's milk as contrasted to mothers' milk with its natural immunities, and the special dangers of infection, etc., from bottle feeding are pointed out from the time of prenatal consultations, through the maternity stay in the center, and continuing during routine visits to the under-5 clinics. The centers have banned the advertising of prepared food for infants and formulas in any of their areas, to discourage their replacement of mothers' milk.

Diarrheas are the principal killer of infants. Therefore, in conjunction with nutrition education, mothers are counseled on measures to prevent diarrheal and intestinal parasites. Demonstrations are given of easily prepared oral rehydration mixtures to use at home when necessary. Anti-malaria suppressants are also administered. All services in the under-5 clinic including prescribed medications are provided free of charge.

Overall, the clinic session seeks to maintain a "mother's club" atmosphere in which mothers meet, discuss their mutual childrearing problems and obtain professional guidance from trained staff. The centers have focused on the extensive use of non-highly trained health technicians to perform the basic services with a minimum level of professionals for organization, administration, teaching and supervisory activities.

#### The Concept of Desired Births

The concept of family planning is not new to Zairian society for birth control in some form has been carried on for several hundred years. Traditionally, tribal customs did serve to at least space some births and, in some cases, actually avoid conception altogether.<sup>5</sup> Tribal regulations often required both lactating mother and child to return to the parents' home during the nursing period. While such practices often also led to polygamy on the part of the husband, they nevertheless served as a natural means of spacing children and provided assured nourishment for the child until weaning at about 2 years of age.

Overall, however, it can be said that traditional societal and family patterns have encouraged high birth rates. The predominant Bantu philosophy places a high value on procreation. Throughout Zaire, marriage without at least the intention of having children is an alien concept. Because of the cultural link between marriage and children, even the Western concept of waiting for a period of marital adjustment before having children is entirely foreign to Zairian couples. In fact, women who have not been able to conceive soon after marriage have much social pressure placed upon them. Even among single girls, pregnancy is openly accepted and in fact a source of pride if the child was fathered by a good hunter or village leader, etc.

The Zairian society places a high value on children. The desire for having children is reinforced by the fact that they are in essence a principal source of family "wealth" reverting to the kinship group. And in the absence of a comprehensive national social security system, children represent an assurance of security and income for their parents in old age. Large families of five children have been commonly viewed as the ideal family size. While many of these traditional patterns are changing, their influence is still pervasive throughout society.

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<sup>5</sup> See Chapter III, subsection on Sterility. -51-

Official support for family planning activities was thus very slow in emerging. Data such as that obtained in the 1970 administrative census which revealed an average population density of just 8.4 persons per square kilometer further encouraged the Government of Zaire to attach low priority to programs clearly focused on limiting family size. Nevertheless, several indications of a population problem did exist. Amidst rapid population growth and limited financial resources the National Government was unable to keep pace with the demand for public services such as roads, transportation facilities, utilities, schools, hospitals, and dispensaries, or to increase the supplies of medicines and food commensurately. Existing facilities were severely overtaxed. Rising unemployment, juvenile delinquency and crime led to considerable internal tensions, notably in the fast-growing urban centers. In the December 1972 policy speech, President Mobutu stated that one of the key national goals must be to reduce infant mortality so that the number of actual births corresponds to the number of desired births. His announcement signaled the birth of an official population policy and support of family planning activities.

The convening of an international seminar on the concept of "desired births" in Kinshasa from March 7 through 9, 1974 marks the first formal activity in the area of family planning to Francophone Africa. Over 110 participants from Zaire and 14 other countries, the majority of which were African, attended the two and one-half days of sessions to exchange points of view on family planning and its relevance to the African continent. Support was received from the Population Council as well as the Obstetrics and Gynecology Department of Mama Yemo Hospital.<sup>6</sup>

The concept of "desired births" is importantly viewed throughout the Government of Zaire as an attempt, within its search for authenticity, to find an original and rational approach to family planning consistent with the values of Zairian society. Thus, the principal premise on which it is founded is that the high infant mortality rates common throughout the republic have traditionally motivated society, particularly rural society, to have numerous children. Therefore diminution of infant mortality is viewed as the key to assuage parents' instinctive fear of premature death of their children, and thus reduce their compulsion to have excessive numbers. The protection of maternity and the ability of the couple to have children when they want and to raise them in good sanitary and social conditions are other underlying premises of the desired births concept.

Importantly, the Government of Zaire, as the Black African continent as a whole, rejects all imposed plans of limiting births because births are not viewed as a detriment, but rather a potential for expanding the national output. In fact, rejection of population control per se was formally adopted by a resolution of the Colloquium on Population in Francophone Africa held in Abidjan, Ivory Coast, June 27-29, 1973.

The advantages of desired births, as expressed at the 1974 Seminar, are "above all, the improvement of health, the wellbeing and health of the couple, and especially of the mother and infant. It is necessary therefore to reconcile the principle of restriction of births and of limitation of the size of the family with the traditional attitudes, the moral values, and the motivations of the population."<sup>7</sup>

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<sup>6</sup> Despite this ambitious undertaking of Zaire to establish a unique model for family planning for the African continent, no known follow-up to this original conference has occurred.

<sup>7</sup> Compendium. Naissances Desirables: Bases sur la Maternite, du 7-9 mars, 1974. Kinshasa, Republique du Zaire.

The benefits to accrue to the family from the practice of desired births will include improved physical development of both parents and children, as more abundant amounts of food are available for each one. For the women, a lessening of fatigue is envisioned as repetitive pregnancies are ended. The fact that each child will be desired and have adequate parental attention is viewed as critical to an improvement of their psychological wellbeing as well. As a corollary to the advantages to accrue to the individuals, the desired births program will have positive benefits for the State. As President Mobutu stated, "the control of the evolution of our population will permit also the control of our national development."<sup>8</sup>

#### Organization of the Desired Births Program

The Fonds Médical de Coordination (FOMECO) organization was extended responsibility for the development and implementation of programs in desired births until the National Council of Health whose establishment was pending, could take over such functions. In the absence of that Council until December 1974, FOMECO undertook the leadership role in national desired births/family planning activities.

At the request of President Mobutu, FOMECO integrated the desired births with existing MCH programs rather than constructing separate facilities. Such an integration was viewed as an essential process for two key reasons. First, any new program would stand a better chance of success if incorporated into the framework of a service designed to satisfy an already felt need - maternal child health care - than if it were to stand alone. Second, to the extent that the principle of desired births was based on improvement of health of mothers and children, MCH activities were seen as an integral part of any national family planning program. Thus, the desired births program was focused on three prime activities: sterility treatment, child spacing/family planning, and an under-5 clinic.

For women who want children but are unable to conceive because of correctable physiological defects, or more commonly, the high incidence of venereal disease which renders them sterile, the desired births program offers extensive medical services including treatment by penicillin. For mothers who already have children, the provision of contraceptive services by the staff permits each woman to personally choose how many children she wants to have and exactly at what intervals she wants to have them. All acceptors are encouraged to wait at least two years between births of children to protect the mother's health and, at the same time, extend the period of breastfeeding so that young infants are assured adequate nutrient intake. The incorporation of an under-5 clinic in the desired births program was undertaken to provide adequate health care for a woman's children so that she could be assured that all of the children she already had would live until adulthood; such a step was viewed as essential to establishing confidence and thus lowering the average number of births per woman.

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<sup>8</sup> Compendium. Naissances Désirables: Bases sur la Maternité. du 7-9 mars, 1974. Kinshasa, République du Zaïre.

The heart of the nation's Desired Birth program is the Obstetrics and Gynecology Department of Mama Yemo Hospital in Kinshasa and the three FOMECO-run MCH centers in other zones. FOMECO's contract with the Organization for Rehabilitation through Training (ORT) extended to the area of training staff for desired births program in techniques to follow for initial contact, education/motivation initial visit services, follow-up activities, and statistical measurements to assess the effectiveness of, and modify as necessary, the existing program -- all of which were viewed as essential to assure that the program was built on a firm foundation.

The typical desired births initial clinic session includes a lecture by a motivatrice on the concept of desired births, and general information on the choice of methods. This group lecture is followed by personal consultation with each woman during which a physical examination is conducted, and the family planning nurse recommends an appropriate method.

The desired births clinic at Mama Yemo Hospital operates 5 days a week and as of late 1974 was handling about 100 new family planning acceptors per month. The Barumbu MCH center program, which is conducted entirely by an auxiliary nurse, records about 66 new acceptors monthly. Since Bumbu MCH had only opened in October 1974, no statistics on family planning acceptors were available. While the type of methods chosen vary slightly from one clinic to another, in general about 60 percent of acceptors are using Depoprovera, another 30 percent IUD's, about 8 percent pills, and the remaining 2 percent one of several other alternative methods including sterilization.

Most of the data collected to date, however, are considered to be unreliable. The absence of accurate and timely statistics on the desired births program to include the number of women who change methods or "drop out" and in the latter case the cause of discontinuance all impede assessment of the success of the program. While no reliable statistics are available for the three clinics, it is estimated that overall there is a 20-30 percent difference between the number of women who register for family planning counseling, and those who actually receive a method.

#### Constraints to Program Expansion

While increasing numbers of acceptors since the clinics started family planning counseling are encouraging, nevertheless several institutional and societal constraints exist which threaten the success of the program over the long term. Despite the fact that FOMECO was selected by the President to develop the model for a desired births program which could eventually be extended nationwide, there are several other contenders for program direction. The Department of Health has been sending staff to Canada for family planning training in anticipation of development of a desired births model program. Further, the numerous church missions throughout the republic are engaged in family planning activities, although the exact extent and methods used are not known.

There is a critical need for the Government of Zaire to define the direction of national desired births-related activities. While the National Government has vocally expressed concern for the need to rapidly augment the number of facilities providing family planning services, it has moved very slowly in providing the essential financial and human resources to do so. It has been suggested that the Government, at FOMECO's direction, has sensed the need for the slow,

thoughtful introduction of contraceptive services in the nation's health facilities. In fact, the Government may have serious reservations about vigorously promoting the desired births program without ensuring the capacity of existing facilities to absorb the increased demand for such services.

The Government of Zaire has consistently stated that the population must have confidence in the medical sector in order to accept family planning. Thus, the extension of family planning activities requires the establishment of a viable MCH infrastructure with which it can be integrated. Complementary programs in health care and nutrition are also envisioned. The integration of health/nutrition/MCH/desired births will permit considerable economies in health care delivery and thus allow optimization of scarce health resources. Nevertheless, it will effectively slow down the rate at which the desired births program can be extended.

The decision to integrate desired births with MCH activities has meant that the program has had to have higher trained personnel capable of handling prenatal, postnatal, and under-5 clinics, than if the program had been organized separately. Thus, the serious shortage of trained health personnel throughout the sector has severely hampered extension of desired births programs. At the same time, many existing health facilities which could easily incorporate desired births programs into their ongoing programs, have not done so.

Even in facilities which are adequately staffed, the lack of well-motivated personnel has impeded the program. Overall, the health system personnel generally have displayed a lack of professionalism or sense of commitment to the desired births program or its goals. The high turnover rate in hospital and clinic personnel with an estimated three-month average length of stay per employee, has resulted in the time-consuming and costly requirement to constantly train personnel who can take responsibility for carrying out the program.

To date, the Government of Zaire has not really linked the desired births program to the existence of a population problem. Rather, it is viewed as an entirely health improvement, enhanced quality of life oriented program. Nevertheless, it cannot be denied that in terms of resource availability, there is a population problem. And the current focus of the program on assuring that women have only the number of children they actually desire inherently has little impact on slowing rapid population growth. Given the fact that the average woman's reproductive life spans more than 25 years, even women who practice child spacing can still have 10 or more children. Given the fact that five children is commonly viewed as the ideal family size in Zairian society, the typical desired births acceptor is a woman who already has several children, in contrast to the more common family planning program approach of focusing on low parity women. The resultant high fertility rates common throughout the republic, with population expected to double in just 28 years given the current 2.5 percent growth rate, clearly threatens to dissipate any benefits in improved economic, social and health conditions to accrue from the development process.

The absence of a nationwide health information system to relate the benefits of and availability of family planning services has been another impediment to the program's effectiveness. As a result the percentage of women "at risk" of conception participating in the desired births program has been negligible. RENAPEC, the national radio educational television production agency, of the Department of Information, was awarded a \$50,000 contract with FOMECO to produce tapes and films for national distribution on family planning and MCH. Such mass media efforts have been very limited to date, however. In general, referrals to family planning clinics continue to depend largely on nurses and aides providing information to patients in obstetrical wards and MCH clinics. Although many referrals have occurred because satisfied acceptors

encourage their friends and family members to seek family planning services, such actions have only skimmed the very top of potential participants in the program. Family planning information/education programs, which specifically are targeted on both national and local leaders, appear to be needed. Acceptance of the concept of family planning by this group of persons is essential if the program is to succeed in attracting the majority of women of reproductive age in the republic. One must caution, however, that extension of the basic family planning/delivery system is a necessary corollary to intensified education/informational efforts in this area, if as some "desired birth" program staff fear, such efforts are not to be counterproductive.

The constraints to extending the desired birth program are not only institutional but socially imbued. Although the number of acceptors is increasing in the urban centers, the desired birth program has had only a minimal effect on the rural women who comprise the vast majority of the nation's potential participants.

In the rural areas, pervasive cultural constraints have effectively confined the desired birth program to only the few educated couples among the village. The Zairian social structure affords little incentive to the married rural woman to practice child spacing. Currently, those who use contraceptives face the constant possibility that their husbands may find another woman and ultimately completely abandon them. Given the socioeconomic conditions of rural life, with its male dominated structure, abandonment by a husband will inevitably lead to severe financial strains on both the women, and importantly, their children.

Overall, much resistance has developed to date among husbands of potential acceptors to the very concept of family planning itself. The typical Zairian man places a high value on having a large family and is reluctant to permit his wife to use contraceptives. At Bumbu MCH Center in Kinshasa, women have increasingly requested that their husbands attend the general orientation lecture for the desired births program. Clearly, not only the encouragement of the husband's attendance at desired birth clinic sessions, but importantly, the use of mass media to educate men to the positive aspects of family planning and thus gain their acceptance, will be critical to the success of the program.

Despite inability to use contraceptives and thus the high number of unplanned conceptions, even unwanted pregnancies are usually continued to natural termination. Unlike the cities in which abortions are in high demand, in recent years abortions have been extremely uncommon in the rural areas of Zaire. Local midwives are reluctant to perform abortions because of strict village regulations which prohibit such activities under penalty of substantial fines, or in some instances, even death. According to most rural village codes, a fetus becomes a person with all the rights of the village after just two months. Further, the closeness of village life makes it virtually impossible for a woman to become pregnant and then have an abortion, whether self-induced or performed by another person, without other women in the village knowing and notifying authorities.

Continued high infant mortality rates, notably in rural areas, with an estimated mortality rate of 50-60 percent of all children by the age of 5, also serve to promote high birth rates. Because of this high mortality, the average Zairian woman wishing to have a family of 5 or 6 children would have to give birth to between 10 and 15 to assure that 5 children will survive past early childhood.<sup>9</sup>

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<sup>9</sup> Compendium. Naissances Désirables: Bases sur la Maternité. du 7-9 mars, 1974. Kinshasa, République du Zaire.

In general, the typical family planning acceptor in the rural village is a married woman who has obtained a primary education and already has at least 5 children. The majority of these women prefer the IUD to other contraceptive methods. In the few cases in which women with less than 5 children have accepted a method, it has been most commonly due to medical problems. In such instances, the doctor has received permission from the husband which in turn has served to gain his acceptance, and thus reduced the wife's fear of his abandonment of her for another woman.

### Key Issues

Given the already existing institutional and cultural constraints, the very nature and direction of anticipated nationwide systems for delivery of family planning services will depend on thoughtful and carefully documented answers to the following key questions:

- which contraceptive methods are most suitable in the Zairian setting?
- what types and levels of manpower should be trained to support the program and what is the most efficient, least costly method to do so?
- will clinics only distribute clinical contraceptives such as IUD's and injections, or should other methods such as condoms and foam be provided as well?
- what price, if any, should be charged for the provision of contraceptives in government clinics?
- will contraceptive distribution be principally controlled through the National Government, or should the private sector also be involved; and if so, at what level?
- if government subsidies are granted to encourage distribution/use of contraceptives, should they be given only to non-profit organizations involved in family planning, or should the commercial distribution system including stores, and pharmacies, also receive subsidized, low-cost contraceptives as well?
- what type of evaluative system should be set up, and who should control it, to measure the effectiveness of the desired births program?

Ultimately, the creation of a network of MCH/desired births facilities can be envisioned as a first step in the total restructuring of the national health care delivery system. This restructuring would provide for the eventual integration of MCH/desired birth activities in a comprehensive health care program so that there will be one point of entry for comprehensive care for all members of the family.

Still unclear is what effect the institution of a vigorous and comprehensive national desired birth program will have on population growth. An AID population sector assessment conducted in mid-1974 hypothesized that such a program could lead to an additional 5 percent decrease in crude birth rates through 1980 over that projected by the Office of the President.

Given that all other assumptions in the original projection remain the same, the rate of natural increase of the population would decrease to 2.6 percent in the 1971-75 period, and 2.7 percent in the 1976-80 period. In terms of actual numbers of persons, although the population would continue to grow rapidly over the decade, the total population in 1980 would be 574,000 persons less than that originally projected. Looking at the projected composition of the population in 1980, such reductions would result in a lower percentage of population 15 years of age and under, or a lower dependency ratio. In economic terms, the 574,000 less persons in the total population in 1980 as a result of family planning activities, would represent a saving to employers of approximately \$11 million in wages in 1980 alone.<sup>10</sup> This substantial amount of money could then be utilized to expand industrial output and concomitantly employment levels, and construct additional schools, public health facilities and utilities, etc.

The birth of less children can also be expected to improve the overall nutritional status of the typical family since all family members will have more food to eat; and importantly, by reducing the number of deliveries in already overtaxed maternity facilities, it will release health personnel and facilities for other needed primary health care services. All of these factors should lead to significant improvements in the quality of life of Zairian citizens.

#### Rural Health Programs: The Example of Vanga

From a first glance, Vanga Mission is a quiet, picturesque village resting on the banks of the Kwilu River in the Bandundu region of Zaire. The dirt roads which wind from the mission hospital to the airstrip and on toward Kikwit, the closest city which is several hours away, are relatively deserted except as children arrive and leave from the primary school, on mornings when church bells call the local villagers to the service, and on the two days a week when the Mission Aviation Fellowship Cessna plane arrives with mail, supplies, and persons from Kinshasa and the other missions enroute. The river affords a welcome bathing and swimming respite from the hot, humid climate, as well as serves as a principal source for supplies. Amidst this seemingly tranquil setting, the Baptist Mission at Vanga operates one of the most innovative and at the same time successful rural public health programs in Zaire.

Baptist missionaries have been active in the Vanga area for 65 years, operating a mission hospital, the primary focus of which was curative care. In 1961 the mission began to extend its activities to outreach health programs. The actual preventive medicine program began in 1967 with the establishment of formal ties between the local village authorities and the medical service of the Vanga hospital for health education and sanitation programs. The program moved very slowly, however, until 1969 when a public health director was appointed. A grant from non-profit Oxford Committee for Assistance in Case of Famine (OXFAM) in 1970 for the establishment of a Department of Public Health at the hospital led to institution of an extensive integrated health outreach program.<sup>11</sup> The focus is primarily on the five key areas of: rural sanitation,

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<sup>10</sup> The following methodology was used by AID to arrive at this figure. If current salary increases of 4.8K per child per day increase by 10 percent by 1980, or to 5.3K, and if even half of the 574,000 less population had a parent who would have received this salary increase for dependents in 1980, a total of 25,552,015 in wages would not have to be expended by employers in 1980 alone. NOTE: 1 Zaire equals 100 Makuta (Z1 equals 100K) (Z1 equals \$2)

<sup>11</sup> For a detailed description of OXFAM's technical assistance activities, see Chapter IX.

maternal/infant care, tuberculosis control, nutrition improvement, and desired births.<sup>12</sup> Through December 1974, OXFAM has provided \$75,000 in grants to Vanga for operation of this essentially preventive care program.

### Curative Care

The main operational base for the program is the 200-bed Mission hospital on the Mission grounds in Vanga. The hospital is comprised of a series of pavilions, each of which has a particular function: the administrative accounting offices, pharmacy/supplies, pediatric ward, surgery room, and acute care, maternity ward with labor room, and communicable disease wards. Within the wards, patients are segregated not only by type of disease, but with the exception of the pediatric ward, by sex. Although nursing care is provided by the hospital, the acquisition and preparation of food is the patient's responsibility. (The main exception is in the case of children admitted to the pediatric ward, the vast majority of whom are suffering from severe malnutrition and for whom the mission hospital does provide food.) Most patients, therefore, are accompanied by one or more family members from their village who stay at the hospital with them and cook their meals. It is not uncommon to see relatives sleeping underneath patients' beds or in the public areas between the pavilions. The washing of bed linens and clothing is also done by the patient's relatives, and colorful cloths are visible hanging on ropes strung between buildings or trees.

American and Canadian Baptist missionaries comprise the entire core of physicians at the hospital. In addition there are two American nurses, one Danish nurse, and a Canadian pharmacist. The balance of the staff, including the Director of the hospital who is a nurse, and Director of the Department of Public Health who directs the outreach program, are Zairians.

In addition to general acute care, the mission hospital holds several outpatient clinics, including general dispensary open five days a week with an average of 40 patients daily, prenatal care, and nutrition consultations. The maternity ward handles approximately 800 births annually or about 2 per day. The birth rate in the area around Vanga is considerably higher than these figures reflect because although an estimated 50 percent of the women in the area do receive prenatal consultations, the majority still prefer to deliver their children in their own villages by midwives. Women delivering at the mission hospital have a relatively long average length of stay -- 6 to 7 days -- in order to assure both the mother's and child's health before their lengthy return home, and consequently, difficulty of returning to Vanga if complications ensue.

In contrast to the Western medical approach to surgery in which the surgical patients enter the hospital at least a day prior to operation for preparation and rest, the typical surgery patient at Vanga sits in a small room outside the surgical suite and patiently awaits his/her turn to come up on the daily roster. The patient then enters the operating room, lies on the table, receives anaesthetic, and is operated on at the end of which he/she is admitted to the surgical ward for recovery and postoperative care. Although the mission has electricity just three hours a day between 6 and 9 p.m., the generator does provide backup electricity for the operating room in case of emergency. When the generator breaks down, as has occurred in 1974, delays in receipt of spare parts for repair resulted in operations being performed by candlelight.

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<sup>12</sup> For details of operations in 1973, see Rapport Annuel 1973, Departement de Santé Publique, Hôpital CBZO, Vanga.

### Public Health Outreach Program

Four mobile teams provide the vital link between the approximately 300 villages of about 500 persons each that the public health outreach program serves and the hospital.<sup>13</sup> Each team is headed by an auxiliary nurse who has completed the three-year training program at Vanga's own nursing school. The remainder are four health auxiliaries, each of whom has completed two years of secondary school and attended a four-month training course in the hospital's Department of Public Health to learn the techniques essential to practicing medicine as a member of the mobile team; and, a driver. The teams generally leave Vanga on Tuesday and work in the surrounding villages for four or five days, returning to the hospital on Saturdays with acutely ill patients picked up from several villages visited, and to resupply for the following week.

The truck to carry the team and supplies leaves the hospital at dawn Tuesday to catch the ferry boat across the Kwilu River. Since the crossing is a substantial distance up-river from the villages to be served, the team may wait a few hours for the truck to arrive at the point across the river from the mission and then cross over in dug-out canoes with the four to five day supplies to meet the driver. Though the trucks are purchased with all heavy-duty equipment, poor road conditions exact a high price on their durability and the average truck life has been just about 50,000 miles.

With four mobile teams in operation and approximately 300 villages to cover, the outreach program has managed to serve each of the villages about once a month. The arrival of the team has been announced in the few days prior to the actual visit by the rural animateur, or educator, who serves as the key link in the chain between the hospital, the mobile team, and the local village. The use of the rural animateur as a member of the health care delivery team is still in its experimental stage.

As of December 1974, Vanga had 17 animateurs on its outreach staff. The typical animateur is a married man between 25 and 35 years of age with three to six children. Their training is in Kituba -- the local dialect in the Vanga area. Although all have completed primary school (through the eighth grade), their knowledge of French is limited. The training course is divided into two parts -- the first week is devoted to theoretical formation based on the general philosophy of public health and etiology, transmission and prevention of endemic diseases such as TB, malaria, malnutrition and intestinal worms. During the second week, the focus is on practical training in the methods of census taking, sanitary education, and basic health statistics.

Each animateur remains a resident in his own village, but works in other villages ranging from five to as many as 36, in the case of one individual. At the initiation of his work, each animateur makes a census of each village for which he is responsible, through use of a civil register which records the name, sex, and age of each child under five years of age. The name of the mother and father are also noted. The mother of each child under five receives a card encased in a plastic container which bears the number of her child within the civil registry of her village. At each preschool consultation session of the mobile health teams, the mothers present the card to the animateur so that he can control the frequency of each infant's visit. He keeps current on children regularly attending the consultations and those who do not. In the latter case, the animateur contacts the mothers and encourages them to attend preschool consultations as a vital means to improve health of their children.

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<sup>13</sup> In December 1974, one of the mobile teams had been inoperative because of truck breakdown and its reactivation was awaiting arrival of spare parts from Kinshasa.

The animateurs are also responsible for maintaining contact with ambulatory tuberculosis patients, especially noting those who are not regularly obtaining treatment. They notify the Tuberculosis Department of Vanga Mission of all deaths, as well as migration of active patients.

While the exact role of the rural animateur in health delivery is still not precisely defined he has had a positive impact on the work of the mobile teams. Since the animatrice program was begun, an estimated 25 to 30 percent of the children in a typical village arrive for preventive care by the mobile team.

#### Maternal/Infant Care

Vanga's rural health programs are structured to deal not only with the provision of direct medical care and preventive care, but importantly, with the mental and spiritual wellbeing of the local villager as well. Through the incorporation of religious teaching and activities into the mobile team's outreach program, Vanga leaders have sought to redirect basic village philosophies to embrace the concept of self-responsibility for one's own health, and to bring an end to the traditional fear of medicine and the belief that illness is an inevitable or acceptable state of man.

Thus, each mobile team session begins with motivational songs which have been written by the Vanga staff. The songs, which are viewed as important vehicles for creating a preventive health awareness, deal not only with basic themes of sanitation such as the importance of building and using latrines, and general health education to encourage the regular taking of malaria prophylactics which have been taught by the village animateur, but with religious and political themes as well. Despite the fact that all the villagers, regardless of age, displayed an excellent knowledge of the songs, their impact to date has been cursory. Several villages visited had no, or just a handful of, latrines, although they are regularly visited by the teams. Further, the high incidence of malaria in children examined shows a general neglect of preventive measures despite an awareness created by the songs.

The consultation held at the village of Muyeke is typical of the mobile team's work in maternal infant care. The sounding of the truck horn alerts the villagers to the team's arrival. Within minutes, mothers carrying and followed by scores of children, come from huts and nearby fields to the control area in which the truck has parked. Tables carried among the supplies in the truck are removed and set up in a semi-circular pattern to serve as check-in, weighing, examination, and medication dispensary stations. Two-hooked scales are hung from the branches of a large tree in the center of the village.

Each mother checks in at the registration table by submitting a plastic encased weight profile chart for her children.<sup>14</sup> At the next table, small plastic shorts with a long strap around the neck are put on each child in sequence, who is then suspended from the scale. The health auxiliary marks the date and weight on the profile chart and returns it to the mother, who then continues to the next table, at which the team chief is seated. The chief, an auxiliary nurse, examines each child's spleen and chest, queries the mother about any specific health problems since the last mobile team visit, and then prescribes medication as necessary.<sup>15</sup>

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<sup>14</sup> A general registry is kept for the team's use on which each visit is recorded for every child. This registry is the principal source of baseline statistics for the outreach program.

<sup>15</sup> The program follows the general outline for under-five clinics prescribed by Dr. David Morley in the book, Medical Care in Developing Countries, Maurice King (ed.). Special weight charts commonly called Ilesha after the Nigerian town for which Dr. Morley developed them, were provided by USAID for Vanga's use.

In the case that the profile shows that the child's weight is not within an acceptable range, marked in green, or is actually falling and reaching a critical stage, the nurse alerts the mother to the situation and counsels her on proper nutrition practices, etc.

At the final table, each child is given one 100 mg. dose of liquid chloroquine malarial suppressant, and three more doses are placed in a bottle which the mother has brought with her for the weeks before the next visit of the mobile team. The dosage is enough to reduce the incidence of grave and repetitive cases, but not sufficient to entirely suppress malaria, thus eliminating the possibility of developing drug resistance. For the consultation by the mobile team, each mother pays 20K (\$.40) per child for the first visit, and 5K (\$.10) for the subsequent visits for the first child, and 3K for each additional child. A limited number of other drugs can be purchased from the team for 10K as needed for other family members. Although these minimal charges cover only a small percentage of the total operating cost of the mobile team operations, they have been found psychologically essential to villagers as a means of gaining acceptance of the team. Villagers tend to be suspicious and unreceptive to any service which does not cost at least a few makutas (K).

Prenatal consultations are given concurrently with the under-5 session. Women are weighed and given a general examination (the lack of enclosed examining areas precludes pelvic examinations). Medications are prescribed as needed. At the initial visit, an anti-worm medication is given, and at all subsequent visits, expectant mothers are given iron, vitamins and chloroquine for malaria. Each woman also receives a 3-injection series for tetanus. Although special attention is given to high-risk cases, all women are encouraged to give birth at the maternity center at the mission hospital. A small fee is charged for each prenatal consultation.

#### Outreach Problems

The poor road conditions in the Vanga area have been a major impediment to operation of the outreach program. After a heavy rain, bridges are washed out and deep gouges result in the main road linking the numerous villages being completely impassable. Further, even in relatively good weather, the truck ride to the village is a long and arduous one for the mobile teams. The outreach programs has also proven to be an extremely costly method of health care delivery.

The mission expenses for the 60 people involved in the various aspects of the outreach program, from the team chiefs to the drivers and rural animateurs, has been about 500Z or \$1,000 monthly in salaries alone. This high cost, coupled with the added expenditure of gasoline and trucks, parts, etc. associated with the mobile operation, has led Vanga to reexamine its outreach program and explore alternative methods for rural health delivery.

Current thoughts are to seek support for the extension of its system of dispensaries so that there is at least one dispensary located within each 10-kilometer radius. Each dispensary would be staffed with one or two auxiliary A-3 nurses<sup>16</sup> equipped with bicycles to be responsible for continuing the work the mobile teams have been doing over a 10-kilometer radius from the dispensary site. Each auxiliary would be required to buy his own bike, since it has been found that ownership imbues a sense of pride in maintaining the bike in good operational condition.

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<sup>16</sup> The A-3 nurse is the lowest level in Zaire's nursing structure; educational requirements for the A-3 classification are completion of 8 years of primary school plus two years to nursing training. For a complete description of the nursing structure, refer to Chapter VI.

Salaries would be supplemented, however, with a fee for having to use the bicycle in their work. The advantage of having two auxiliaries per dispensary is that one could be constantly available to the local villages for medical attention without having to close down the dispensary for extended periods of time during outreach work. It is further envisioned that supervisory personnel would travel between this network of dispensaries via motorcycles.

A dispensary visited at Lebidi which was a mud-palm-thatched roof hut run by an A-3 male nurse, is typical of the type of dispensary network Vanga plans to extend throughout surrounding villages. As in Lebidi, the dispensary would be built by the nurse and his family and local villagers. Many villages have expressed an interest in including a maternity unit in the dispensary construction plan. The addition of maternity units will permit decentralization of Vanga's maternity caseload and is viewed as an important step in reducing maternal mortality -- which is especially high in the periphery areas in which travel to Vanga is particularly difficult.

In the area of desired births, the Vanga mission has an auxiliary nurse and an assistant working full-time in prenatal and postnatal consultations, including education on child spacing methods. Women are encouraged to wait at least two years between children to promote the health of their children, as well as protect their own health. Because mothers have shown a preference for female counselors on family planning, the mission has given a young technician a short course in family planning techniques and she will participate in the mobile team's work.

#### Sanitation

Vanga's rural sanitation program is based on the concept that much of the sanitation problem -- the high incidence of intestinal parasites, which coupled with anemias and malnutrition, contribute to elevated mortality in the local villages -- could be solved through two basic steps. Local villages should be encouraged to construct and use latrines for each individual hut for the elimination of human wastes to reduce the possibility of infections; and, the team should administer anti-worm medications to lower parasitic infections in those already infected. The program was therefore developed into four stages. Initially, the special rural sanitation team meets with village chiefs and inspects the village. Health education courses are held for the villagers on illness, transmission and prevention of intestinal worms. Because of the high rates of reinfection of villagers with intestinal worms after worm medication is given if there is not concomitantly installation of latrines, the team informs the village that it will return with medications after all the huts in the village have latrines.

In the second stage, during village latrine construction, the rural animateur follows the progress of the village and makes a monthly report to the Department of Public Health at Vanga. Once the Department is notified by the animateur that a latrine system is in use, the team returns to the village for an initial and then a follow-up deworming visit. Both piperazine and tetrachlorethylene are used. In the final stage, the team makes an annual inspection of the village, during which education on sanitation is given to villagers, especially new members, and additional deworming is conducted as needed. An evaluative study of six villages in 1972 highlighted the positive impact of the program. While in non-treated villages the frequency of intestinal worms was 70 percent of the total population, in treated villages it was just 20 percent, with an especially notable decrease in the incidence of ascaris. In 1973, a total of 173 villages participated in the rural sanitation program, of which 88 were completing the first three phases and 85 villages were in the fourth phase. Approximately 30,000 persons received worm medications in that year.

### Tuberculosis Program

The tuberculosis program focuses on diagnoses, treatment, and case finding, location of contacts, and BCG vaccination. In 1973 the Vanga Department of Public Health gave a seminar on tuberculosis to the auxiliary nurses operating six of Vanga's rural dispensaries. These six dispensaries now serve as satellite offices for ambulatory treatment. Although at least one-fourth of new cases require at least a short period of hospitalization, the program concentration is on the less costly ambulatory care treatment. Rural animateurs follow cases once an individual returns to the village. Because the risk of infection is particularly high in families of active cases, BCG vaccination is now routine for all newborns and children examined during under-5 mobile team consultations.

In addition to its rural public health outreach work, Vanga mission personnel have begun to conduct health surveys of attended villages to ascertain what, if any, impact their programs have had on village mortality and morbidity levels, notably in the under-5 year of age group. Staff will utilize civil registers prepared by the rural animateurs as a basis of general information on the universe with which they are dealing, in each village, and then compare the universe to that group served.

A nutrition rehabilitation program and the operation of an auxiliary A-3 nurses' training school are also an important part of Vanga's health program. The nutrition education/rehabilitation program is discussed in Chapter V.

### Overview

In overview, Vanga is just one example of numerous possible approaches to rural health delivery. Its directors have already learned important lessons in resolving the numerous problems that must be surmounted in dealing with health needs in the rural setting, ranging from cultural constraints to acceptance of care, to political and economic factors. While mobile teams have been an effective vehicle for carrying medical care to the dispersed rural villages, the experience at Vanga at least points to the need to explore alternative delivery methods. Until recently, however, the existing health infrastructure had no formal mechanism for the exchange of information between mission health services and the other organizations working in the health sector, many of which are also exploring potential rural health delivery models. In such a setting, replication of errors was not uncommon, and at the same time resulted in a costly method of allocating scarce health resources.

Since the formation of the National Council of Health and Welfare in late 1974, Government attention has clearly focused on the pressing health care needs of the rural population. Given its proven record of action to date in developing new program approaches to effectively meet rural community health needs, the Vanga program is currently under consideration by the Council as one of the initial pilot project areas for formalizing a collaborative relationship between the Government of Zaire and the church missions in rural health delivery. Further, the Council has requested the services of the director of the Vanga mission program as an official consultant on rural health planning. These initiatives by the National Government can be viewed as important mechanisms for establishing a heretofore absent dialogue and cross-fertilization of ideas between the principal private and public health care providers.

## Occupational Health

The health of the Zairian labor force in general is poor. Subsistence farmers have especially suffered since independence in 1960 because of the breakdown in the extensive rural health system formerly maintained by the Belgian colonial administration. Currently most farmers receive only a minimum of health care. In contrast, new labor laws promulgated since 1960 have generally tended to improve the health status of the average Zairian wage and salary earner.

The Labor Code of Zaire requires that all enterprises must pay for regular medical, dental, surgical, pharmaceutical and hospital care for sickness, accident, pregnancy or confinement, for all workers and their families as long as the company has a work contract in effect. A worker's family is understood to include legal wife and children who live with the worker and are not gainfully employed; it includes as well all children of the worker attending a school anywhere in the country and/or those family members mentioned who are separated from the worker due to custom, the nature of work, etc.

As part of this overall health care requirement, all enterprises must provide an opportunity for and pay the cost of an annual physical examination for each of their workers. The results of this examination form part of a confidential medical record on the employee, which indicates his fitness for work and any types of work he cannot perform without undue danger to his health. This preventive health measure is viewed as an important cause of the general improvement in the health status of the Zairian wage and salary earners.

In order to meet these Labor Code requirements, many large industrial enterprises operate their own medical services on-site. Smaller companies generally either join together with other small enterprises to form cooperative arrangements for the establishment of a common health service, or contract with a public or government-approved medical facility to provide such care to their employees. Medical charges are generally billed to the employer for each medical intervention. If there is no health facility in the enterprise itself, employers are also responsible for transporting workers in need of medical care to such facilities at the employer's expense. Minimum levels of health personnel available to staff according to size are set by the Department of Labor and must be met. Between 100-499 personnel, one nurse must be on site; between 500 and 999, two nurses; and, over 1,000-3,499 must have a doctor on staff with a nurse, 3,500-5,000 need two doctors on site. For each additional 2,000 employees, an additional doctor is necessary.

While businesses throughout the nation have met these regulations, the exact coverage to a given employee and his family varies widely, not only quantitatively but qualitatively by enterprise. Further, while in theory the enterprise provides "comprehensive coverage," many workers, especially National Government employees, must pay at least some portion of their medical expenses, usually that of drugs or medications not readily available through other means.

The national labor code specifically limits work schedules to a 48-hour week with a maximum of eight hours of duty a day, except in the case of especially noted instances, including emergency work situations in which overtime pay is warranted. Work schedules generally cannot exceed eleven hours daily, including shifts, and must be set to assure that there is a minimum of twelve uninterrupted hours of rest between two days of work. In the case of women and children, the workday must include one or more breaks, each of which is not to be less than one hour in duration, when the total number of hours worked daily exceeds four. For children between 14 and 16 years of age, employment must not exceed four hours daily during the school year, and must be light and nonhazardous duty. All of these measures are important in protecting the general health of the Zairian workforce.

All employers are required to give paid leave in the case of sickness, accident, birth, specially delineated family occasions, and vacations, according to specific regulations outlined in the National Labor Code. Up to six months sick leave may have to be paid to a worker incapacitated by a non-work-related illness or injury, regardless of his length of service with the enterprise. Sick pay equals two-thirds the worker's regular wage, including bonuses and other cash supplements normally due him/her, except transportation supplements from home to work travel, as well as the entire family allowance. All benefits in kind such as room, board, must also be continued during this period of illness; and, with the exception of housing, an incapacitated worker can demand that such payments be made in cash instead of kind. After six months of sick leave payments, employers can terminate work contracts with employees who are still incapacitated.

For those employees disabled because of occupational diseases or work injuries, the same sick leave benefits outlined above must be paid by the employer from the day following the work injury throughout the period of recuperation. Benefits for occupational diseases or work-related injuries are, according to the Labor Code, to be paid to the worker by the employer who should be reimbursed, out of the social security system. In actuality, the social security system has not met this requirement, with the result that these disabled employees and their families remain without financial resources. A National Interindustry Accord signed in 1968, however, requires that employers pay one-third of an incapacitated worker's normal wage for up to three months after social security benefits begin and some subsequent agreements in certain industries have extended this period of dual benefits even longer.

All workers covered under both work and non-work related illness and injury are required to use the employer-provided medical services in order to receive benefits. Benefits can be discontinued if the worker does not observe enterprise-established rules to verify incapacity and receive benefits.

Pregnant women workers, whether married or not, are eligible under the Labor Code for 14 consecutive weeks' leave at two-thirds the normal wage and all benefits in kind normally received during regular employment. At least six weeks of this leave must be taken after the birth of the child. This practice encourages mothers to nurse their children, thus providing them with an assured adequate nutrient intake, at least for the first month of life. However, the provision of salary benefits to pregnant women also reduces the economic cost of having children on the typical Zairian family, and thus may at least indirectly promote higher birth rates than if such benefits were not paid.

While annual leave provisions vary from industry to industry, the general rule is that all workers 18 years of age and older accrue one day of leave per month after one year of service, and one and one-half days per month for those workers under 18 years of age. All days actually worked, including those spent in other categories of leave, are required by the Labor Code to be counted in computing annual leave levels.

Although the National Labor Code requires that all business enterprises maintain a healthy, hygienic work atmosphere, the laws have never been successfully implemented and are generally disregarded. All enterprises are required by law to maintain a minimum level of emergency

facilities, the specific degree of sophistication of which is dependent on the size of the business. All businesses with at least 100 employees within a 15-kilometer radius of the main office must also maintain a sick room the size of which varies according to the number of workers.

Numerous other labor regulations and workers' benefits have a direct effect on the health status of the Zairian labor force. The Union National des Travailleurs du Zaire (UNTZa) has been the country's sole trade union center, uniting and representing all former major unions and their locals, as well as independent unions since 1967. Because of a relative decline in the Zairian worker's standard of living since independence, the UNTZ has consistently urged the Government to adopt a comprehensive national economic development plan which would include government-financed projects in housing, health, education and transportation, specifically targeted at improving the living conditions of the Zairian workforce. Such demands to date have not received needed Government financial backing for implementation.

#### Social Welfare Programs

Traditionally throughout Zaire, social welfare was the responsibility of the lineage and extended family group. The communal nature of the family structure resulted in mutual obligations for support in time of need between an individual and the family group. All personal security derived from this extended family which cared for the aged, widowed, and orphaned and donated labor and money to those unable to care for themselves.

With the large-scale migration of many individuals from rural villages for employment in the growing urban areas of the country, these traditional patterns of familial obligations largely began to break down. In their place, Zairians formed private, often family or ethnic-based aid associations, alumni groups and benefit clubs to provide assistance to needy members through donations.

Numerous private organizations have organized social welfare activities in the post-independence period, including the Salvation Army, the Red Cross, the Young Men's Christian Association, the Boy Scouts, the Girl Guides, the Lion's Club and the dispersed church missionary groups. Their programs include interrelated health, education and recreation programs, as well as youth and general vocational training.<sup>17</sup> The largest provider of social assistance to the Zairian population, however, is the Government of Zaire.

The Republic of Zaire, under the direction of the Social Action Division of the Department of Social Welfare, has undertaken a dynamic social assistance and advancement program.<sup>18</sup> Currently operational social assistance programs are primarily targeted on the following categories of recipients: (1) abandoned infants and orphans, (2) aged persons without family, including widows without financial resources, and (3) the physically handicapped.

<sup>17</sup> American University Area Handbook, pp. 150-51.

<sup>18</sup> The Department of Social Welfare is currently being reorganized into a Committee of Social Works to be headed by Mrs. Mobutu. What effect the pending reorganization will have on the programs outlined is not clear at this time.

The post-independence years were marked by an extended period of violent civil rebellions. In order to provide a home for the numerous children left orphaned as a result of the uprisings, the National Government established a national orphanage, Mobutu Sese Seko, in Kisangani. Previously under the Department of Social Affairs, its operations have been recently taken over by the Office of the President. The primary budgetary allocations for operating the orphanage come through the Fonds National de Promotion et Affaires Sociales and amount to 760,000, or approximately \$120,000 annually.

The orphanage, which currently has almost 200 children in residence, assumes all expenses for their food, lodging in the dormitories, and education. The children attend regular government schools outside the orphanage in order to facilitate their mixing with other children. The children, if desired, can complete education through the university level at the orphanage's expense, returning to reside in the dormitories over vacation periods. When their advanced education is completed, or at 16 years of age, children leave the orphanage.

Given the prevailing social patterns revolving around the extended family group, the exact need for institutional care for the elderly in Zaire is not clear. The majority are assumed to be provided for by their own families. Nevertheless, under an experimental program supervised by the Department of Social Affairs, the first national home for the aged was opened in Kinshasa. As of December 1974, 118 abandoned and/or nonpensioned elderly persons were housed in the Home de Veillards. While the Home provides for food and lodging, medical care is provided, as needed, by the numerous Governmental health facilities in the capital city. There are no plans to date to establish any other such homes.

The provision of care for the large number of physically handicapped persons who came to Kinshasa during the civil rebellions posed a serious problem for the Government of Zaire. In 1969, the National Learning Center for the Physically Handicapped (CENAPHI) was established in Kinshasa as a first step in ameliorating this national problem. Under the supervision of the Department of Social Affairs, the CENAPHI program is based on the concept that the handicapped should be taught trades in order to be self-sufficient. To this end, four experimental training programs are currently under way for teaching basic trade skills of ceramics, sewing/tailoring, furniture construction, and typewriter repairs. While the Kinshasa Center is the only one to date, the Department's long-range plans include the eventual development of similar centers in each national region. In addition to operating the CENAPHI, the Department also supervises the private Center for Handicapped in Kinshasa.

In contrast to the social assistance programs outlined above, which are targeted on persons in poor economic, social and health status, the nation's current social advancement programs are open to all Zairians who wish to participate. Social centers were in existence prior to independence, but their programs were largely limited to adult women and juvenile delinquents on restricted liberty. Further, the activities and organizational structure varied greatly between the various regions of the country.

Since independence the nation's social centers, which as of December 1974, included 437 such facilities across the country (226 private and 211 public) have played an important part in upgrading the quality of life of the typical Zairian.

Operationally, each social center is divided into four principal sections: (1) the masculine activities section provides an opportunity for apprenticeship in masonry, construction and electrical trades; (2) the female activities section serves as a training center for sewing, homemaking, and child care lessons; (3) the social service or social work section provides family and individual counseling; and, (4) animation section, which is in charge of a community or social awareness program. This last section is the most important in terms of the national development process because it is charged with animating the social conscience of its area's residents, encouraging self-help in individual and community problem-solving. While in theory each center is to have all four subsections, in actuality many are incomplete and the lack of adequate numbers of trained personnel remains a major impediment to extending service in the near future. Clearly, the vocational training courses remain the priority activities. Each person must pay for his/her own materials used in the course. The salaries of the instructors are paid by the National Government. It is hoped that these social centers will eventually become self-sufficient, perhaps through a combination tuition and crafts-sale program.

In the directly health-related area of nutrition education, the Department of Social Affairs has taken a leadership role in the development of a nutrition education program at the Centre de Protection Familiale et Maternale du Kinshasa. The program is based on the idea that a primary cause of widespread child malnutrition is the lack of knowledge by mothers of the type, quantity and quality of food to feed young children. Therefore, in cooperation with the Department of Public Health, food preparation classes are held.



## V. NUTRITION

### Nutritional Status

Malnutrition is generally considered to be a primary or associated cause of approximately 60 percent of Zaire's high morbidity and mortality.<sup>1</sup> While no comprehensive national nutrition survey has been undertaken to date, several local surveys point to the fact that malnutrition is pervasive and may be actually increasing.

The main nutritional problem is protein deficiency. The average caloric intake is estimated to be 85 percent of requirements as determined by the FAO. In contrast, estimates of average daily per capita protein intake range from 32.7 to 43.4 grams, or only half of the recommended daily intake of 70 grams of protein per person as determined by FAO.<sup>2</sup> While these per capita consumption figures are only an average and do not take into account wide variations due to differences in nutrient availability between geographic regions, they nevertheless can be assumed fairly representative of the nutrition situation in Zaire as a whole.

In general the relatively high consumption of fruits and vegetables by the population precludes vitamin deficiencies common to many developing countries. The large consumption of palm oil also provides an ideal source of Vitamin A. Anemias associated with widespread Vitamin B deficiencies, however, are common.

Serious shortages of iodine have been noted in the Kivu region. In Idjwi alone an estimated 70 percent of the population have goiters and a one percent incidence of cretinism.<sup>3</sup>

Two subgroups of the population are especially vulnerable to malnutrition -- infants and children under five and pregnant women. In the rural areas malnutrition is significantly high, representing as much as 60 percent in various areas studied. Malnutrition is especially prevalent in pregnant women and, coupled with high parasitism, has resulted in an estimated 50 percent of all pregnant women having serious anemia. The large number of perinatal and infant deaths can also be traced to substantial maternal malnutrition.

The several nutrition surveys undertaken in the republic over the current decade while confined to specific geographic areas, clearly illustrate the severity of the problem. A 1970 nutrition survey of Kinshasa conducted by the Institute for Economic and Social Research confirmed deficits in consumption of proteins, calories, vitamins B<sub>1</sub> and B<sub>2</sub>, niacin and phosphorus.<sup>4</sup> Of the 1,471 families surveyed, only 13.6 percent met minimum daily protein and calorie requirements. The overwhelming majority -- 86.4 percent -- of families were malnourished.

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<sup>1</sup> USAID Nutrition Planning Project Proposal, 1974

<sup>2</sup> Estimates by the United Nations Food and Agriculture Organization.

<sup>3</sup> Quelques donees sur la situation Alimentaire en Republique Democratique du Congo, Docteur Perier-Scheer, Section Nutrition, Ministere de Sante, 20 Juin 1969.

<sup>4</sup> USAID Nutrition Planning, Republic of Zaire, Project Proposal, 1974.

In the two Kasai regions, studies conducted by the Institut Médical Chrétien du Kasai in 1972 indicated that 50-60 percent of the children suffered from protein malnutrition; further, kwashiorkor and marasmus were cited as the most frequent childhood diseases in the area.<sup>5</sup>

Hospital records and doctors' observations at the Mama Yemo Hospital in Kinshasa indicate that approximately 75 percent of the deaths occurring in the hospital are of children under five. At least 50 percent of all the children who die in the hospital are considered to be malnourished, their resistance to disease and infection lowered so greatly that many cannot survive otherwise mild maladies.

In the rural areas, malnutrition, especially among children, is even worse. At Vanga mission in the Bandundu, malnutrition with its consequent dehydration process is estimated to be the primary cause of death of at least 50 percent of all children under 5 admitted to the hospital.

Clearly the most recent, and at the same time striking, example of the nutritional situation is that identified by a health/nutrition survey conducted in Kinshasa in June-July 1974 in conjunction with a measles immunization campaign. The survey was organized and conducted by the National Office of Research and Development (ONRD) and USAID, with assistance from Fonds Médical de Coordination (FOMECO) in the Office of the President. Data was obtained on 3,864 mothers and 4,391 children between 6 months and 4 years of age who represent approximately 4 percent of total children vaccinated in the campaign and 1.6 percent of the universe of children in that age group in Kinshasa. The questionnaire requested information on the following key inter-related indicators of health and nutritional status: (1) weight for age; (2) incidence of morbidity and mortality among children surveyed; (3) mother's age, residence, origin and date of arrival in Kinshasa; (4) whether the mother had attended nutrition education courses; (5) place of birth of her children, e.g. home or clinic; (6) child feeding practices before and after weaning; and, (7) age that the child was weaned and reason for weaning. The questions were selected as a test of certain hypotheses on the causes of malnutrition among this vulnerable age group. The survey has limitations, most notably in the fact that its representativeness is not firmly established since mothers who brought children to vaccination centers may be more educated or of higher economic class than those who did not. Nevertheless, the survey provides the only extensive health/nutrition profile of children in Kinshasa.

Analysis of the data revolved around the separation of the surveyed group into two sub-groups -- those still being breastfed and those weaned -- since it was conceded that weaning is a prime determinant of nutritional status. As the study showed, more than half (58.4 percent) were weaned at 14 months and that by 2 years more than 99 percent weaned. Highlighting the survey results, overall approximately 22 percent of the children surveyed were malnourished. Prior to weaning, 19 percent are malnourished; after weaning, malnutrition increases to 28 percent or approximately one out of every three children surveyed fell below normal weight for age measurements. Frequency of disease has a direct impact on present health with children who had at least one illness weighing significantly less than those who had never been sick. Although the cause-effect relationship is not clearly established, children who had diarrhea, flu, anemia, skin disease and malaria had a greater incidence of malnutrition than those who did not.

<sup>5</sup> Department of State Telegram, "P.L. 480 Title II Nutrition Analysis," Kinshasa, June 25, 1973.

Overall, only 13 percent of children surveyed had never been sick. Of the remaining 87 percent, 71 percent had one disease and another one-fourth had had two diseases. The study revealed no significant relationship between mothers' attendance at nutrition education classes and child's weight, although there was a direct correlation between geographic origin of the mother and child's weight. For both nonweaned and weaned children, those with mothers from Angola weighed much less than other children.

Prior to weaning, the study revealed that the age of the mother has no significant impact on the weight or frequency of disease. After weaning, however, the older the mother, the more the child weighs and the lower the incidence of disease.

The effects of malnutrition are visible throughout the republic. Widespread malnutrition, coupled with severe anemias, notably sickle cell, result in workers in the major urban centers as well as rural areas being constantly fatigued and often asleep numerous times over the course of the day. The detrimental effects of malnutrition on productivity are obvious. While the signs of malnutrition are evident nationwide, the severity appears to be geographically defined. In general, malnutrition is regular and endemic in those areas where manioc is the basic food. The incidence of malnutrition is greatest in the largest cities, especially Kinshasa, and in the Kwilu, Kasai Oriental, and South Kivu regions of the nation, and along the Angolan and Sudanese borders.

Kwashiorkor is clearly the most serious of the nutritional deficiency diseases in the country. While precise figures on its prevalence are not available, it is endemic in the northern and northeastern areas of the country, particularly in those areas of high consumption of manioc. The existence of kwashiorkor is not confined to any one geographic area or to a particular socioeconomic group. Its presence has been documented in large urban and industrial as well as rural areas. In general, the worst causes of malnutrition and its accompanying diseases are considered to be in the area from the Southern Bandundu region to the southern border of the country, where low agricultural production, coupled with sparse population to augment agricultural activities, has severely limited food availability.

In addition to the most serious deficiency diseases -- kwashiorkor and marasmus -- others occur regularly throughout the country, often with marked peak seasons which can be correlated with planting and growing schedules prior to harvesting when food supply is limited.

#### Primary Causes of Malnutrition

Overall, the primary causes of malnutrition in Zaire are complex and interwoven. They include inadequate availability of food for consumption, poor knowledge of nutrition requirements, coupled with traditional dietary and societal patterns, generally low socioeconomic status and the lack of viable subsystems such as environmental sanitation, essential to supporting nutritional status.

#### Unavailability of Food

A combination of plentiful rainfall, a wide range of climatic zones, alternating seasons in different parts of the country, forests stocked with wildlife and rivers abundant with fish

hold vast potential not only for meeting domestic nutritional needs but for making Zaire an important African food exporter. To date, however, the potential has remained relatively unexploited.

A breakdown in the farm-to-market transportation system in the post-independence period, declines in agricultural outputs in recent years due to Government pricing policies, and subsequent disincentives to increasing production, coupled with rapid population increase, have severely limited food available to the population. In fact, the gap between proteins required annually and those available currently is estimated to be about 200,000 metric tons, and is estimated to increase to approximately 380,000 metric tons by 1980.<sup>6</sup>

While over one-half of the total land area of Zaire is considered to be arable, only approximately 0.6 acres of land per person are currently under production.<sup>7</sup> Primary emphasis in the agriculture sector historically was placed on cash crops rather than the production of foods for domestic consumption. The use of fertilizer which is critical to expanding output in the short run is almost exclusively limited to cash crop production. The typical small farmer growing his own subsistence crops has no money for such expensive inputs. Recurrent and heavy tropical rainfall results in increasing deficits in soil nutrients and thus decreasing output for consumption by the average family.

Government of Zaire programs in support of market development have had mixed results. Controls, including the fixing of minimum and maximum prices for major agricultural products often below their true market value, have served to discourage production of key crops. For example, production of palm oil (a primary source of Vitamin A for the population) has been declining in recent years because of Government controlled low prices. Former producers have, therefore, changed from palm fruit to other more lucrative export crops.

Thus, despite the potential for self-sufficiency in providing for its main food needs, the Republic has been importing increasing amounts of foodstuffs in recent years. Zaire imported 150,000 metric tons of maize in 1974, and the requirement increases by several thousand metric tons per year.

Zaire possesses a potentially rich and exploitable resource in its ocean, river and lake fisheries. Fish is an excellent source of protein and there appears to be no taboo against its consumption. Nevertheless, consumption has been limited nationwide; and, even in areas near rivers and streams where fish is readily accessible, high levels of protein deficiency have been noted. Massive imports of fish have been necessary to meet internal demand for consumption. These imports, which are already valued at over \$15 million annually, are a substantial and unnecessary drain on the nation's foreign exchange earnings, particularly in view of the fact that the supply of fish in the nation's water is estimated to be sufficient to entirely meet domestic consumption and at the same time provide excess for export and earning of foreign exchange for the development process.<sup>8</sup>

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<sup>6</sup> Estimate by Dean Wilson, Nutrition consultant from AID to the Government of Zaire.

<sup>7</sup> USAID Population Sector Assessment, December 1974.

<sup>8</sup> See AID's Preliminary Project Paper (PPP) Fishing cooperative expansion, 1974.

In an attempt to change these patterns and improve the domestic fishing industry, the USAID is presently considering a project for expanding fishing cooperatives in the Southern Kivu area of Zaire. The site was selected because of the abundance of fish in the surrounding lakes, coupled with a growing demand for fish and the economic viability of the population to purchase it if enough were available. While the primary goal of the proposed fishing cooperatives is increased economic wealth for the area, other important benefits will accrue. It is estimated that the fish will provide a source of 100 percent daily protein requirement of 72 grams and thus lead to considerable improvements in the nutritional status of the people.

A problem equally as serious in meeting domestic food needs in Zaire as declining production or failure to develop new food sources is the rapid increase in population, currently estimated to be more than 2.5 percent annually. Given the already substantial deficits in supplies of basic staple foodstuffs such as rice and maize, this expansive population growth threatens to dissipate the nutritional benefits of increased agricultural production to accrue from the development process.

The lack of an adequate national transportation network capable of rapid and efficient transportation of commodities from production areas to consumption areas has also impeded the attainment of adequate nutritional status for the majority of Zairians. Families are commonly limited to one or two principal staples. The resultant imbalance in diet leads to serious nutrient deficiencies. Even within producing areas, however, lack of diversity in the diet has a detrimental effect on nutritional status.

The present transport system is complex, requiring numerous trans-shipments and coordination of varying modes. Waterways are the primary means of moving agricultural commodities. Though the country enjoys an extensive navigable system of approximately 16,000 kilometers, numerous falls, shallows and rapids interrupt the route and require complementary transport via railroads and roads. The railroad system which includes 5,000 kilometers of separate segments was seriously damaged in the immediate post-independence period of civil rebellions, and is only now being restored to full service. The total national road system of 90,000 miles is largely comprised of earth roads and tracks which only the most sturdy vehicles can traverse. Even of the 23,000 miles which are major routes linking the regional capitals, only about 1,000 miles are paved. Heavy and recurrent rainfalls throughout the country result in roads being impassable for several days at a time, thus precluding the delivery of foodstuffs into the area. Overall, only an estimated 15 percent of the road system in existence prior to 1960 is considered to be commercially passable.

Given the severe limitations in the ground transportation system, airlifting foodstuffs remains the only feasible way to supply many areas of the country. But it is also inherently costly and the high prices which are passed on to consumers also serves to limit the amount of food available to the local population. The 1973 policy speech by President Mobutu which announced the immediate mandatory exodus of all Portuguese and Pakistani from the nation may have a detrimental effect in the short term on nutritional status, since most were small traders in the interior and played an important role in extending credit to local villagers. It is not clear whether sufficient numbers of Zairian personnel are available to take over this commercial function.

The lack of adequate numbers and an uneven distribution of food storage facilities also limits the availability of food to the population. (Overall losses due to poor storage are estimated to be between 10 and 30 percent of production.) Small mills and food processing plants have only very limited storage areas. The pre-independence system of storing seeds in central village storage areas has collapsed and losses and damage prior to harvesting are high. With food transported from production to consumption areas in large bags, the lack of food storage facilities at food transportation transfer points leads to considerable losses due to spoilage and pilferage. At its final destination, food is then placed in unfumigated stores, thus increasing lossage. In an attempt to ameliorate this situation, an AID sponsored team from Kansas State University was visiting Zaire in early 1975 to conduct a study of grain marketing and storage practices and make recommendations to the National Government.

#### Low Income

The effect of income on nutritional status is definite and pervasive throughout the republic. In the 1970 study of consumption and budget of 1,471 families in Kinshasa, it is noteworthy that the 13.6 percent of the families who received adequate nutrients corresponded to the part of the sample with the highest income levels. In fact, as the study points out, half of the food available in Kinshasa is consumed by 25 percent of the people, leaving only about 50 percent of total foodstuffs for the remaining 75 percent of the population.

Rampant inflation trends in food prices have effectively precluded the average family from purchasing sufficient quantities of foodstuffs. In the last half of 1973, the price of staples rose significantly in Kinshasa: bread by 42 percent, rice by 82 percent and palm oil by 70 percent. In December 1973 alone, the price of manioc roots, the principal dietary staple, increased to 60 percent.<sup>9</sup> These high food prices have had an especially adverse effect on urban residents who in contrast to the rural subsistence farmers, have no other source of food than the local market.

A consumption study undertaken in the Bushi area of Kivu showed that while the low subsistence level income of the people did not permit them to purchase the quantity or type of foods required for a balanced diet, families would instinctively incorporate more nutritious foods into their diets with just a minimal increase in their incomes.<sup>10</sup> The study, therefore, suggested that increasing income, assuming that adequate food quantitatively and qualitatively were available on the local market, might have a greater impact on improving nutritional status than instituting the more profound and inherently slow process of health education to effect changes in dietary habits and attitudes.

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<sup>9</sup> USAID Nutrition Planning Project Proposal, 1974.

<sup>10</sup> Department of State Telegram "P.L. 480 Title II Nutrition Analysis," Kinshasa, June 25, 1973.

Given the interrelationship of income and consumption, continuing low average family incomes, averaging approximately Z25 to Z30 per month, coupled with rampant inflation in food prices throughout the republic, threaten to further reduce the ability of Zairians to purchase needed nutrients, especially animal proteins. Ultimately increased malnutrition may result. The low income levels also preclude the average family from stocking foods and thus having a reserve supply in case of shortages, or as an edge against inflation. With the exception of manioc flour which is sold in large sacks, families generally purchase only enough food to cover one days' meals.

#### Excessive Morbidity

The substantial level of malnutrition is especially serious because of its synergistic effects, both exacerbating existing illnesses, and increasing susceptibility to new infection. At the same time, malnutrition is compounded by the high incidence of disease leading to malabsorption of nutrients which in turn significantly raises the nutritional requirements of an already malnourished population. Impure water and inadequate sewerage facilities, plus generally crowded and unsanitary living facilities, encourage the spread of water-, rat-, insect-, and air-borne diseases and infections, thus increasing nutrient needs.

#### Dietary and Social Patterns

An understanding of the nutritional practices of a people at the village level is an essential key to understanding their nutritional status. Throughout Zaire, differences in food preferences, customs and taboos result in significant disparities in nutritional status between population groups.

For the nation as a whole, there are six principal dietary staples: manioc, sweet potato, plantain, rice, corn, and millets and sorghum. While their use varies among the regions, manioc prepared into "fufu," a paste-like mixture boiled over the fire, is the main national dish. In all areas in which manioc is the staple and not complemented with other nutritious foods, a high prevalence of malnutrition is inevitable, given its low protein content.

The serious shortage of protein in the diet, particularly in the rural areas, contributes to widespread nutritional deficiencies. Animal protein is noticeably absent. Fresh milk is rarely consumed. Eggs are small and most commonly used for hatching rather than as part of the diet. Poultry is not readily available and when served is usually for adult consumption only; goat meat is also most commonly consumed during feasts and confined to adults. At the same time, vegetable sources of protein are limited to a few crops such as corn, peanuts, manioc greens; other potentially excellent sources of vegetable protein such as beans are still not widely consumed.

Because of poor food preparation methods, common throughout the country, substantial nutrient losses occur, adding to the nutrition problems associated with an already limited amount of food. The practices of the Bakongo tribe serve as a prime example of the failure to obtain maximum benefit out of foodstuffs. The daily dish -- fufu -- is dipped in a sauce made of pimento, palm oil and tomato puree. Beans and/or manioc leaves, fish or meat complement the meal depending on availability and individual taste. Several practices during the course of food preparation, however, significantly reduce the desirability and the nutritional value of the foods including: the failure to presoak and sufficiently cook beans; the over-soaking and boiling of meat and then discarding its water which contains many of the nutrients; and, the failure to mix the mashed manioc with sufficient amounts of water (leaving the dough heavy and hard to digest). Similarly, the common practice of cooking foods in oil at high temperatures also destroys much of their nutrient content.

Food taboos focused most often on pregnant women and young children also preclude consumption of adequate nutrients among these two especially vulnerable sub-groups of the population.

Social conditions remain an underlying cause of much of malnutrition throughout Zaire. The predominant family eating pattern in which the male head of the household is served first, and the remaining food divided between women and children, serves to reinforce inadequate nutrient intake by these latter family members. While precise data on marital status is not available, it has been estimated that in the rural areas of the country, the vast majority of mothers are unmarried. And malnutrition strikes the children of unmarried women much more frequently than married ones. The reasons are probably threefold: the general lack of money with which to buy adequate food quantitatively and qualitatively; the generally low level of education, coupled with the absence of older family members to teach food preparation, etc.; and, importantly, the necessity of having the mother working in the fields all day so that children are virtually abandoned all day. It is a common scene through rural Zaire to see entire villages deserted of all persons except young children running freely and unattended except by other small children. Since the mother leaves for the field at dawn and does not return until sunset, it can be assumed that the children receive absolutely nothing to eat all day. The main exception -- that of the infants who are being breastfed and thus accompany the mothers to the fields -- highlights the critical role of weaning in determining the nutritional status of young children. Clearly, after weaning, the basic nutrients are no longer available and it is at this stage between one and two years of age that the most severe cases of malnutrition occur.<sup>11</sup>

Surveys of school children in Zaire confirmed the correlation between feeding patterns and nutritional status. These surveys showed that the majority come to school without having eaten and further, receive only one meal daily, usually in the evening. Studies of their weight and height revealed a 15-25 percent deficit over normal measures for children in their age group.<sup>12</sup>

The problem of malnutrition in children of unwed mothers is compounded by the fact that their poor economic status may often preclude the mother seeking medical attention for her child, since at least a minimum charge is usually made. Further, since single mothers must work in the field to provide for themselves and their children, they are never at home. Thus, although their children are generally the most malnourished and thus most in need of nutrition programs, at the same time they are the most difficult to reach.

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<sup>11</sup> The typical age at weaning for the nation as a whole is estimated to be about 18 months. A health/nutrition survey of Kinshasa conducted in 1974 revealed that the cumulative percentage of children weaned doubled from 21.7 to 41.6 percent between 11 and 12 months of age; by the age of 18 months, 91.4 percent of all mothers had discontinued breastfeeding.

<sup>12</sup> Quelques données sur la Situation Alimentaire en République Democratique du Congo, Docteur Perier-Scheer, Section Nutrition, Ministère de Santé, 20 Juin, 1969, p. 2.

The effect of poor soil, lack of technology on agricultural output and concomitantly nutritional status cannot be underestimated. Nevertheless, a primary cause of malnutrition is widely conceded to be a pervasive ignorance on the part of the population of basic food requirements. The average Zairian woman receives little education beyond the first few years of primary school. Further, even for those who attend longer, the curriculum incorporates no health or nutrition education on nutrient needs or the importance of a balanced diet. Thus, the majority of women continue to feed their children what they have been fed by their families. The problem of inadequate nutrient intake because of poor selection of foods is compounded by the provision of much smaller quantities of food than the average child needs. Introduction of nutrition education into the school curriculum will therefore be an essential corollary to any national nutritional improvement program.

#### Nutrition Programs

Several nutrition programs have been instituted in the post-independence period to ameliorate the poor nutritional status of the population. To date, however, they have been largely fragmented and uncoordinated and importantly, have dealt with the problem on only a small-scale regional basis.

#### Research and Experimentation

In the area of research and experimentation, the introduction of new agricultural commodities and crop varieties has been intensified to expand the national food availability.

An ongoing National Maize Production Program in the Shaba region has already led to introduction of new higher yielding composite varieties. Financed by the Government of Zaire and operated in coordination with the International Corn and Wheat Improvement of Mexico City (CIMMYT), this corn research and marketing program, begun in 1971, holds vast potential for helping meet increasing domestic consumption needs, particularly of high protein foods. To date, corn production levels still fall short of domestic requirements and substantial imports have been necessary. Low income families were particularly affected by the fact that corn prices doubled between 1973 and 1974. The program will have an important impact, however, in serving as a dynamic model on which other agricultural research can be patterned.

Intensive soybean production has resulted in a tripling of the annual harvest in recent years. The increased output in turn has led to the opening by a Catholic agriculture school of a pilot soya processing mill to produce soya flour in Kasai Oriental. The Government is providing agricultural field agents to the project to assist farmers in the seed distribution and planting. Government counterpart funds and WHO technical assistance also support the project. The school developed a high protein soya cookie for use in school feeding programs. Concurrently, agronomists are continuing experiments with different varieties of soybeans and concomitantly instructing farmers in their cultivation. An analysis by the World Bank (IBRD)

of the impact of increased soya production in Kasai Oriental region indicated that in 1969 the average protein content in the diet of the 58,000 persons studied had increased by 10 grams per person per day.<sup>13</sup>

Under an AID grant, the Tennessee Valley Authority is currently studying potential fertilizer application to improve agricultural production. Expanded outputs will be an important key to increasing food availability.

Although Zaire has extensive grazing land and about one million head of cattle, current meat production is insufficient to meet domestic consumption needs. The World Bank and the Belgian government are supporting the expansion of livestock ranches. FAO and German technicians are also providing extensive assistance for the improvement of livestock, both in increased production and in research on and prevention of zoonoses. National rice production has increased substantially since a technical team from the People's Republic of China took over the technical assistance for the rice development program in 1973.

In 1971 the National Government established a center for nutrition research - Centre de Education Recherche et de Nutrition du Zaire (CERNA) - in the National Office of Research and Development. The USAID provided technical training for the nutritionist to head the unit. The scarcity of funds for nutrition research have impeded the development of a comprehensive program to date, however, and only marginal inputs have been made. Overall, research into the nature and extent of malnutrition in Zaire is still seriously lacking.

#### Supplementary Feeding Programs

A USAID nutrition education/P.L. 480 Title II program administered by the Catholic Relief Services (CRS) has been an important input in the attempt to ameliorate malnutrition. The CRS program was terminated, however, in early 1975. Over the past several years, the program orientation had concentrated almost exclusively on the two sub-groups of the population most vulnerable to malnutrition -- mothers and children -- and included provision of supplementary foods to approximately 80,000 mothers and preschool children. In order to increase nutritional benefits among the target group, the majority of Title II supplementary programs' foods were blended fortified foods. Recently, in an attempt to provide a firm foundation for the eventual phase-out of the external food supplements and concomitantly, Government takeover of the program, the Title II program had limited its distributable commodities to soy-fortified cornmeal because of its high protein content and importantly, since both soya and corn are being grown locally in constantly increasing quantities.<sup>14</sup>

<sup>13</sup> USAID Nutrition Planning Project Proposal, 1974.

<sup>14</sup> AID/Washington has an ongoing dialogue with USAID/Zaire regarding possible alternatives for the CRS operated Title II program if the Government of Zaire desires to continue a supplementary feeding program.

Approximately 45,000, or more than half of the Title II recipients, also participated in a preschool nutrition education program. The program, initially funded under a USAID incentive grant which terminated October 1973, was administered by CRS and conducted throughout some 110 clinics and health centers throughout Zaire. Through the program, recipients were provided the following four services: (1) a comprehensive medical examination including weight measurement and recording on profile; (2) group nutrition education classes including demonstration on the proper use of local foods for pregnant and nursing women and preschool children; (3) distribution of Title II foods; and, (4) home visits and nutrition education for fathers. These preschool nutrition education clinics were viewed as playing a key role in improving nutritional status through their collection of initial and continuing data on the weight/health of recipients. They were also to serve as a measure of the effectiveness of supplementary feeding and nutrition education in ameliorating malnutrition in this prime target group.

In support of this preschool nutrition education program, the CRS sponsored 11 seminars in various places in Zaire for the workers in the various participating clinics and centers. The National gendarmerie (police) who have been funding and operating 12 of the preschool clinics, also ran a nutrition seminar in Kinshasa in 1974.

These seminars have already resulted in over 325 Zairians being trained in the techniques of nutrition education, hygiene and methods of measuring nutrition status among the target group. These trained personnel will be valuable resources in the effective operation of a national nutrition program currently proposed by the Government of Zaire.

In an attempt to accelerate the financial self-sufficiency of nutrition clinics, and provide necessary capital for initial start-up costs of new clinics (e.g. outlays for scales, health/weight charts, training seminars for personnel etc.), a small fee was charged each recipient for each month visit. The fees also paid for salaries, purchase of pharmaceutical products and of local foods for food usage and preparation classes.

While the nutrition education program has encouraged and led to the establishment of numerous home gardens for the cultivation of high protein legumes for family consumption, these self-instituted programs had not yet reached a sufficient scale to replace the now terminated Title II program.

The National Government formally recognized the importance of the Title II program and provided direct financial support for its operation. In total the Government gendarmerie contributed the equivalent of \$66,000 for personnel training and commodity costs of the preschool nutrition program. In addition, the Government allocated approximately \$180,000 annually for the inland transportation costs associated with Title II distribution.

Informal assessments of the effectiveness of the preschool nutrition education programs demonstrated encouraging trends, with a fairly high continuation rate once mothers entered the program. No formal survey was undertaken, however, to evaluate the impact of the program in such important areas as effecting changes in dietary habits, lowering infant mortality, etc.

In addition to these formal governmental/voluntary agency programs to reduce malnutrition, several private groups have been conducting nutrition programs either alone or more commonly in conjunction with general primary and preventive health care programs. Each holds important lessons in adapting nutrition programs to local products and customs.

In 1965 the BWAKI Committee was founded in the Kivu region of Zaire to attack widespread malnutrition in that area. Comprised of government and private organizations involved in the interdisciplinary areas of health, nutrition, agriculture, education and social affairs, the BWAKI, named for the Swahili word for kwashiorkor, receives support from the National Government, World Health Organization, Food and Agriculture Organization of the United Nations, and the Oxford Committee for Famine Assistance. Its major program to date has been the introduction of a soy flour project complemented by a nutrition education program to encourage fortification of manioc flour with soya flour. As a result of the BWAKI committee's work, over 100 centers for health, nutrition and extension of soy bean cultivation have been set up in this region. In 1972, the Kivu region was supplied a technician through a joint Zaire/FAO project to develop nutrition education programs focused on encouraging the production and consumption of high protein food.

One approach to attempting to ameliorate malnutrition in the rural areas of Zaire is the Center for Nutrition Rehabilitation at the Vanga Baptist Mission Hospital in southern Bandundu.<sup>15</sup> In the geographic area around the center, as in much of Zaire, manioc is the staple food. An estimated 40 percent of the children under 5 are malnourished. Because the pervasive malnutrition is due not only to an inadequate agricultural system but principally to basic ignorance of good nutrition on the part of mothers, the Center seeks to teach mothers proper food selection and preparation during their children's rehabilitative stay at the Mission hospital. Since mothers generally stay with their children during their entire period of hospitalization, the mothers' average length of stay at the Center is one month and an average of 28 mothers attend per month. The Center is based at an outdoor village-type cookhouse constructed of bamboo and palm thatch roof. A large pot standing in the middle of the shelter, with wood underneath, is used to give daily cooking demonstrations to mothers. Several different recipes are taught; however, the basic meal is prepared from a mixture of corn and peanuts, both of which are easily and inexpensively available on the local market and are rich protein sources.

At the termination of the month's demonstration, each mother is given a fixed weekly diet for her child, which is composed exclusively of local foods. No medicines are prescribed as part of the regime, since the rehabilitation Center hoped to prove that much illness was due simply to inadequate nutrient intake and could therefore be prevented through the introduction of a balanced diet. An accompanying letter designates her child(ren) as having been in attendance at the Center and requests that the mobile health outreach team provide follow-up. This recent addition to the program is an attempt to provide some evaluative mechanism to determine the long-term effects of the Center's approach and specifically whether mothers continue the food regime after returning to their villages. To date, the high number of children returning to Vanga multiple times for nutrition rehabilitation appears to demonstrate a relatively minimal change in the mother's food selection and preparation practices for her children. Overall, the high expense associated with operating the rehabilitation center has intensified the need for development of more preventive-oriented nutrition programs. Vanga has realized that there is little value in extending the program at the Mission with its primarily curative focus if there is no parallel work at the village level. To this end, the Center prepared a series of seminars on nutrition and gardening for the villages; as of December 1974, five nutrition animateurs (educators) were being trained to conduct the seminars in rural church posts. Educational focus is on village chiefs and leaders, pastors and teachers, since these persons will have the greatest influence in introducing new concepts to the village as a whole.

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<sup>15</sup> Vanga's overall rural health outreach program is discussed in detail in Chapter IV.

### Nutrition Planning

As in other health-related areas, nutrition planning is virtually nonexistent in Zaire. The lack of a Government policy on and strategy for nutrition remains a major impediment to any rapid reduction in malnutrition. In the absence of a national strategy and importantly a formal mechanism to assure its implementation, malnutrition in general has been attacked on a piece-meal, local area basis by several private and public organizations, each of which has its own ideas for ameliorating poor nutritional status and none of which coordinates programs with any other.

In an attempt to develop both the institutional capacity for nutrition planning, and at the same time formulate an official national nutrition strategy, the USAID, in collaboration with the Government of Zaire, has outlined a nutrition planning project. This project, to be conducted under the guidance of the newly formed National Health Council, will be carried out over a 5-year period and will be cooperatively financed with an estimated total \$3.3 million input from USAID and \$1.0 million from the National Government.

The proposed project will work systematically on resolving the problem of malnutrition through concurrent activities on both the national and local community levels. On the national level, the ultimate aim is to develop the mechanisms needed to obtain and analyze information for the establishment of a national nutrition strategy. The strategy would identify the principal causes of malnutrition, define the vulnerable population groups, prescribe policies and recommend action programs for ameliorating malnutrition and suggest coordinating mechanisms for Government and private programs.

At the community level, the project includes the institution of operational programs to ameliorate malnutrition in 3-5 demonstration areas in different regions of Zaire where malnutrition is especially serious. The proposed interventions would be based on a multi-faceted, integrated approach to combatting malnutrition which would include complementary inputs in any one or all of the following areas: environmental sanitation, transportation, food marketing, the establishment of primary and preventive health programs, etc., as determined essential for reducing the incidence of malnutrition in that given area. The results of these programs are to supply feedback information to planners working on the national level on the feasibility and costs of alternative approaches. In each demonstration area, the USAID personnel will form an interdisciplinary program action team with Zairian counterparts who will systematically describe the malnutrition/health problem, analyze its causes, develop a detailed design for alternative interventions, select and implement several interventions to reduce malnutrition with continual evaluation and feedback to national planners on the results of their interventions. Ultimately this field work will be used by the national leaders to design cost-effective and realistic nutrition programs for nationwide application. Actual implementation of nutrition interventions for the nation as a whole will be an inherently slow process, however, given the expansive size, tribal diversity and only slowly improving health infrastructure.

As a corollary to these national and community level programs, and in support of the development of a nutrition planning capacity, the project will also provide for on-the-job and formal training of approximately 15 Zairians in planning, statistical techniques and other health-related areas.

Overall, any national nutrition strategy to solve widespread malnutrition in Zaire will have to embrace two major programmatic approaches: (1) an increase in the total supply and distribution of nutrients to the people, particularly the most nutritionally vulnerable target groups; and, (2) at the same time, a decrease in the individual nutritional requirements through improved primary and preventive health care and sanitation conditions. These improvements would inevitably lead to a reduction in morbidity and its accompanying malabsorption of nutrients.



## VI. HEALTH INFRASTRUCTURE

### HEALTH FACILITIES AND SERVICES

#### Historical Perspective

The pattern of development of Zaire's health sector has been largely atypical of that of many developing nations. In contrast to the generally linear progression of the health system in most less developed countries, Zaire has since 1960 actually gone backwards. The country had a comprehensive preventive and curative health delivery system which was almost completely destroyed with independence in 1960. Thus, rather than achieving significant improvements over the last decade and a half, the health sector has been slowly rebuilding and is only now approaching its prior level of service quantitatively and qualitatively.

The Belgian Government instituted in the then Congo one of the most extensive health systems in Africa. Approximately 3,000 hospitals, clinics and dispensaries and 99 specialized health facilities distributed nationwide were complemented by a large cadre of highly trained health and health-related personnel whose levels were ensured through establishment of an extensive medical health education system. This system included two medical schools, a nursing school and 134 other public health training schools, of which there were three for medical assistants, 10 for male nurses, three for sanitarians, five for nurse-midwives, and one for the training of dentists. Importantly, however, the vast core of this infrastructure was European-oriented facilities and staff, supported at the lowest levels by Zairians. There was not a single Zairian physician. All of these factors were to have a significant detrimental impact on the health sector in the post-independence period.

The political upheavals and civil rebellions which ensued after independence in 1960 resulted in an almost complete breakdown in the whole health care delivery system. The majority of health facilities were either completely destroyed or severely damaged over the 1960-67 period. The large-scale exodus of foreign health personnel, especially highly trained categories, including physicians and nurses, coupled with closing of numerous health training schools due to lack of staff, left a serious void in the health system. While Belgian-trained Zairian auxiliary personnel were able to provide some emergency/curative health services, massive health manpower inputs from foreign nations were essential to avoid complete chaos in the medical situation.

Amidst continuous political and economic problems besetting the new Government in the first decade of independence, national leaders were forced to attach relatively low priority to the health sector. Physical, human and above all financial inputs from the National Government were minimal and major responsibility for continual operation of the health delivery system fell largely on private organizations, most notably missionary groups. Despite these groups' significant levels of resources allocated to health, their work was largely focused in dispersed rural areas. The larger urban centers to which vast numbers of rural residents had migrated for political and economic reasons between 1960 and 1970, remained relatively neglected in health.

### Current Situation

The lack of a viable national health infrastructure remains a major impediment to the improvement of health status in the short-term. The national health care delivery system is highly fragmented, with health services provided by the Department of Public Health; the Military Medical Services of the Presidency through the Fonds Médical de Coordination (FOMECO) organization; university health clinics; parastatal health organizations; catholic and protestant missionary groups; and, certain large industrial companies operating in the country. Traditionally each has acted quite independently and in the absence of a formal national health policy, has developed autonomous programs. In fact, given the lack of interaction to date among the numerous components of the health delivery system it is virtually impossible to speak of a truly "national" health sector.

Within this setting, as can be expected, wide discrepancies exist in the very nature and quality of health care provided not only between the public and private health care providers, but within these subsectors themselves. New approaches to health care may be tested in several locations independently, with no mechanism set up for exchanging results between health organizations. This has been especially notable in the case of missionary medical programs. The inefficiencies of such a system are very costly to Zaire, given the already limited resources available for health.

Although a Government organization, since its inception FOMECO has worked relatively autonomously, with little or no coordination between it and the other public health groups, most notably the Department of Health. Likewise, coordination between private health organizations has been seriously lacking.

This significant fragmentation of the health sector has been abetted by a lack of clear leadership and concomitantly by the absence of a cohesive national health policy. This diffusion of inputs has left numerous scars on the national health delivery system.

Amidst numerous independent actors in the health system, none of which organizations have had to follow directives or even report to any other one, such basic and essential aggregate health system information such as the total number, type, quality and distribution of health facilities and manpower or the major causes of morbidity and mortality with which the infrastructure must deal, is nonexistent. Data currently released by health organizations is varied and contradictory, not only between the diverse public and private groups, but within the same organization. The severe lack of accurate and timely statistics on the health sector remains a major obstacle to assessing/evaluating the present system or more importantly, planning any reorganization.

### Health Facilities

The need for a national health facilities survey is critical to even begin to plan or redirect the health infrastructure. Statistics on the number of national health facilities reported in the 1972 publication, Profils du Zaire, of the Office of the President, are not considered reliable. Importantly, they do not reflect such critical qualitative factors as whether the enumerated facilities were staffed or equipped. The most current information on health facilities is that obtained in a 1974 tally by the Protestant Missions. The method of collection is not known, however, and thus data are of questionable accuracy. Nevertheless, the figures obtained are outlined in the table on the following page as at least some indicator of the magnitude of the health infrastructure.

Table 7

Health Facilities in Zaire, 1974

<u>Type</u>	<u>Protestant</u>	<u>Catholic</u>	<u>Government</u>	<u>Private</u>	<u>Total</u>
Hospitals	64	31	82	27	204
Dispensary/Maternity	74	184	20	*	278
Dispensary	290	38	8	5	341
Sanitarium (TB)	--	2	2	--	4
Leprosarium	9	1	5	--	15
Training schools	14	20	7	4	45

Note: \* denotes unknown

Very little information is available on the majority of the nation's hospitals. The main exception is the Mama Yemo Hospital in Kinshasa, the largest national hospital and headquarters of the Fonds Médical de Coordination (FOMECO) health program. It is described in detail in Chapter IV.

The regional hospital in Kisangani is the main reference hospital for the Haut-Zaire region. A 700-bed pavilion-designed hospital, it is completely staffed by Zairians including physicians. A separate pavilion is attached for the care of Zairian armed forces patients, primarily dependents, and has its own Zairian physician directing it. The laboratory of the UNAZA Kisangani clinic does all of the tests for the hospital complex.<sup>18</sup>

The National University of Zaire (UNAZA) Kisangani branch acquired control of the Kisangani hospital and lab in 1970 when a two-year medical program at Kisangani was proposed. Although the decision was subsequently made to centralize all medical education in Kinshasa, UNAZA Kisangani has retained control of the hospital and lab in the absence of any other organization to assume responsibility. Its 200 beds provide medical care to not only local residents, but faculty and staff of UNAZA as well. The separate laboratory is efficiently run, but scarcity of equipment limits capability to do extensive clinical work. The entire staff is comprised of Zairians.

In addition to the health facilities noted in Table 7 above, there are several Centres de Santé in Zaire. Basically health education centers, these facilities serve as referral units; persons arriving with health problems which need medical attention are sent to one of the public health facilities.

<sup>18</sup> Medical Survey of Zaire, Walter Reed Trip Report, Section 3, p. 2.

Formal mental health care is centered in the nation's two primary psychiatric centers -- one in Katuambi in Kasai Occidental region, and the other in an annex to the National University of Zaire in Kinshasa, opened in 1971.

The exact geographic coverage of the nation's medical facilities is difficult to determine because even when a facility is existent in a given area, lack of personnel or supplies may result in its being inoperative. To date, however, as is common in many developing countries, public health services have been highly skewed to the urban areas of the country, most notably in Kinshasa, and have only recently begun to extend to the periphery.

Accessibility of health care facilities is a prime determinant of whether people will obtain medical care when ill. And studies done in Zaire have shown that the sphere of influence of a given health facility is very small. In a 1973 study of accessibility of care in Kazumba, Kasai Occidental region, for instance, 90 percent of those who sought medical care at the three hospitals, 11 dispensaries, and two maternities lived within 15 kilometers of these centers.<sup>19</sup> Importantly, no one outside of 30 kilometers radius of the centers came for medical attention. Further, even for villages within the sphere of influence of the health centers, only about 23 percent of the ill persons were receiving care within the formal health care structure: approximately three-fourths of the population remained completely devoid of health care. In such a setting, it is also noteworthy that in 20 years there had been no recognizable change in the area's mortality or morbidity level. This can probably be attributed to the fact that only small percentages of the population were being served, coupled with the focus on curative and relative disregard for preventive measures. While the study covered only some 400,000 inhabitants in a 12,000 kilometer area, it can be assumed fairly representative of the general health situation, given the poor distribution of health facilities nationwide. In fact, it is currently hypothesized that 80 percent of the rural population have no access to a medical facility.

Mobile teams have formed an integral part of the national health care delivery system since introduction by the Belgian government for endemic disease control, principally in smallpox and trypanosomiasis. Currently they continue to play an important role in the campaign against trypanosomiasis, as well as in several church groups' rural health outreach programs. While the use of mobile teams has partially offset the negative impact of lack of health facilities in the rural areas, their operation has proven to be an increasingly costly approach to health care delivery, and substitution of alternative methods are currently under consideration in several such programs.

With the exception of the larger health facilities, very little information is available on the quality of health care in the Republic of Zaire. While standards vary among the broad range of organizations providing health care, it is generally conceded that Department of Health public facilities appear to provide less adequate care than those operated by other organizations. The publicly operated rural dispensaries are in an especially poor state. Since hospitals command first priority in supplies and personnel, rural dispensaries suffer from mismanagement, continual shortages of drugs and equipment, and inadequate numbers of personnel. Most are staffed by untrained and insufficiently paid medical aides. Thus, the ability to provide even basic curative care is severely limited.

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<sup>19</sup> Croix Rouge du Zaire, Les Services de Santé de Base dans la Zone de Kazumba (Kasai Occidental) 1973 (unpublished manuscript)

### Laboratories and Blood Banks

Legislatively the Department of Public Health maintains control over the nation's laboratories and blood supplies. The Medical Laboratory of Lubumbashi is located in a large two-story building near the UNAZA Lubumbashi campus and regional hospital. Although it contains a large amount of expensive lab equipment, the majority are unused or more commonly in a state of disrepair. Consequently, the quality of its work must be questioned. The laboratory supports the regional hospital, the private Reine Elizabeth Hospital and the local physicians.

Approximately 140,000 laboratory tests, including hematology, microbiology, parasitology, and clinical chemistry are performed annually. The laboratory receives financial support from the Department of Health and the Gecamines national copper industry located in this region. Nevertheless, it not only charges patients for each test performed, but current prices are roughly equivalent to those charged in the United States. Production of typhoid and rabies vaccine is also undertaken at this lab. A separate facility is responsible for the production of veterinary vaccines.

With the exception of the laboratories operated by the Department of Health, FOMECO, the University branches and the pharmaceutical industry, there is no information on the number or distribution of medical laboratories throughout the country. In general it is conceded that the vast majority of existing labs are inadequate to support either public health or veterinary medicine requirements. Microscopes and test tubes are in scarce supply and given severe shortages of money for maintenance, often such equipment as X-ray and sterilizers are in disrepair. Further, until recently there were no formal training programs for laboratory technicians.

There are no private blood banks in Zaire; the only public blood banks are those operated in conjunction with various national health facilities. A contract signed by the Department of Health with Italy in September 1974, provides for the establishment of a series of blood banks nationwide. The Zairian branch of the International Red Cross maintains donor lists and assists in the collection and distribution of blood for the various regions.

### Key Public Health and Health-Related Organizations

The following section describes the principal health and health-related organizations in Zaire in the public sector.

#### National Council of Health and Welfare (Conseil National du Sant  et Bien-Etre)

A health delivery system operating through a multitude of organizations each acting singly and without any overall national health policy guidelines, leads inevitably to duplication of efforts and concomitantly to the inefficient allocation of already scarce financial and human resources. Recognition of this void in leadership in the health sector led President Mobutu in his annual policy speech of November 1973, to announce plans for the creation of a National Council of Health and Welfare. The November 6, 1974 signing into law of that Council signifies probably the most important development in the health sector in Zaire since independence in terms of its potential for reorienting the national health delivery system.

The Council will serve as the national health planning body. In this capacity it will be responsible for developing national health care and welfare policies, setting national health priorities, formulating and implementing programs in health care and education, and preparing and supervising the budgets for all public health programs and health manpower education.<sup>20</sup> Administratively, the Council has overall control of and is responsible for assuring coordination of all national health activities, including the previously independent, and often conflicting, programs of the numerous public and private organizations working in the Zairian health sector.

Organizationally, the Council is an interdisciplinary body, comprised of the following key national leaders: (1) the President of the Republic, chairman of the Council, is officially represented by the Minister of State for Public Health, who is Vice-President of the Council; (2) Minister for Social Affairs; (3) Minister for Education; (4) Director of the Medical Services of the Presidency; (5) Director General of the Fonds Medical de Coordination (FOMECO) within the Office of the President; and, (6) Dean of the Faculty of Medicine, National University of Zaire. The Council is to meet whenever requested by its President, but not less than once a month.

In its few months of operation, the Council has already shown great promise in serving as a forum for dialogue between the diverse entities working in the health sector.

The Council was given specific power to establish independent work commissions to study health problems. In the area of endemic disease control, the Council's newly formed National Malaria Commission has already pooled the ideas of the Department of Public Health, the World Health Organization, the National University of Zaire (UNAZA), and the Office of the President's Fonds Médical de Coordination (FOMECO), with technical assistance from AID's Regional Malaria Officer, for the eradication of this major cause of morbidity. As an outgrowth of a series of meetings held in December 1974, a baseline survey for studying incidence of malaria in Kinshasa has been outlined and additional meetings planned for early 1975 will develop the action program.

The Eglise du Christ du Zaire, the national coordinating body for the Protestant church groups, has requested official representation on the National Health Council. Importantly, the missionary groups seek to use the Council as a vehicle for providing the National Government with insights and experiences in dealing with the public health problems of the nation, particularly in the rural area. To date the Council's membership does not include any formal representative from the private health sector. In early 1975, however, the Director of Vanga Mission, which is operated by the Communauté Baptiste du Zaire Ouest (CBZO), a member of ECZ, was requested to serve as a consultant in rural health planning to the Council. This action may be viewed as an important first step in cementing collaborative efforts in the health sector between the Government of Zaire and the missionary groups which have traditionally been the principal health care providers to rural Zairians.

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<sup>20</sup> The formulation of a national health plan by the Council is still in the preliminary stages. Current objectives and priorities are discussed in Chapter VII.

## The Department of Health (Department de Sante)

Legislatively, the Department of Health has been the principal national health care organization. Its current administrative structure, which became a law on July 25, 1973, is a bilevel organization. Organizational charts of the central and principal levels, headquartered in Kinshasa, and of the ancillary regional level are given in Illustrations 1 and 2. The primary responsibilities of each of these four directorates at the central level are as follows:

The first Directorate, that of General Services and Studies, is further subdivided into two divisions and contains the main administrative units of the Department of Public Health. The Secretariat, public relations, personnel, accounting, and budgetary functions are all centered in this Directorate. In addition, the studies division was responsible for planning and coordination, legislation and documentation of all public health activities nationwide.

The second or General Administration Directorate, is subdivided into five divisions. As of December 1974, the position of director remained vacant, despite the fact that the Directorate is responsible for such important health care areas as inspection and control of laboratories, preparation and analysis of biological products, inspection and control of drugs and regulation and control of medical establishments.

Amidst the three subdivisions of the third Directorate of Epidemiology and Environmental Sanitation, key positions remained vacant as of December 1974. The director was out of the country on a scholarship, and many offices in the organizational chart which are in charge of such important health problems as malaria, tuberculosis, and leprosy, had no staff assigned to them.

The fourth Directorate is in charge of Medical/Health Services. The work of the first division of this Directorate, that of basic health services which includes control of such critical national health and health-related activities as maternal/child health, health education, health center development, and nutrition, is directed by a nonmedical person. Severe shortages of personnel in the second division, social medical services, which encompasses school medicine, mental health care and occupational medicine, have effectively precluded program development, despite a recognized need for innovative and immediate action in these areas.

A regional medical inspector, who heads each field office, is the official link between the specific region and the Department's headquarters in Kinshasa. At the regional level, field offices are currently operational in each of the eight major geographic regions of the country and Kinshasa. In recent years the quality of work in many of the regional health offices has been significantly upgraded with the input of newly trained personnel who have returned from government-financed advanced study abroad. But the recruitment of these personnel to the regional offices has been largely at the expense of the headquarter's level which has been essentially left without adequate numbers of trained personnel to carry out its basic functions.

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\* Note: Its planning functions have been superseded by the National Council of Health and Welfare.

Illustration 1

ORGANIZATIONAL STRUCTURE OF THE DEPARTMENT OF HEALTH

CENTRAL LEVEL

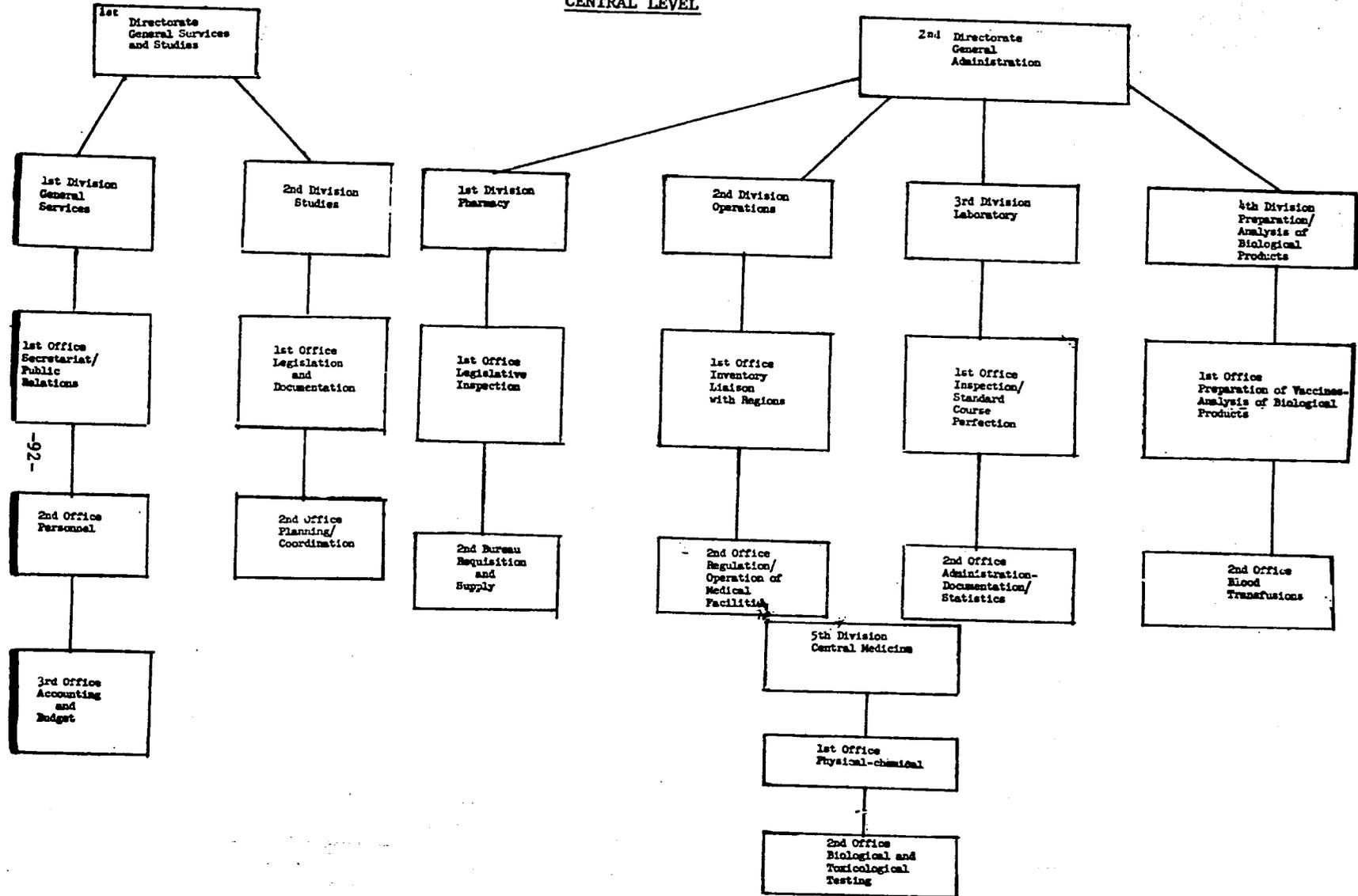
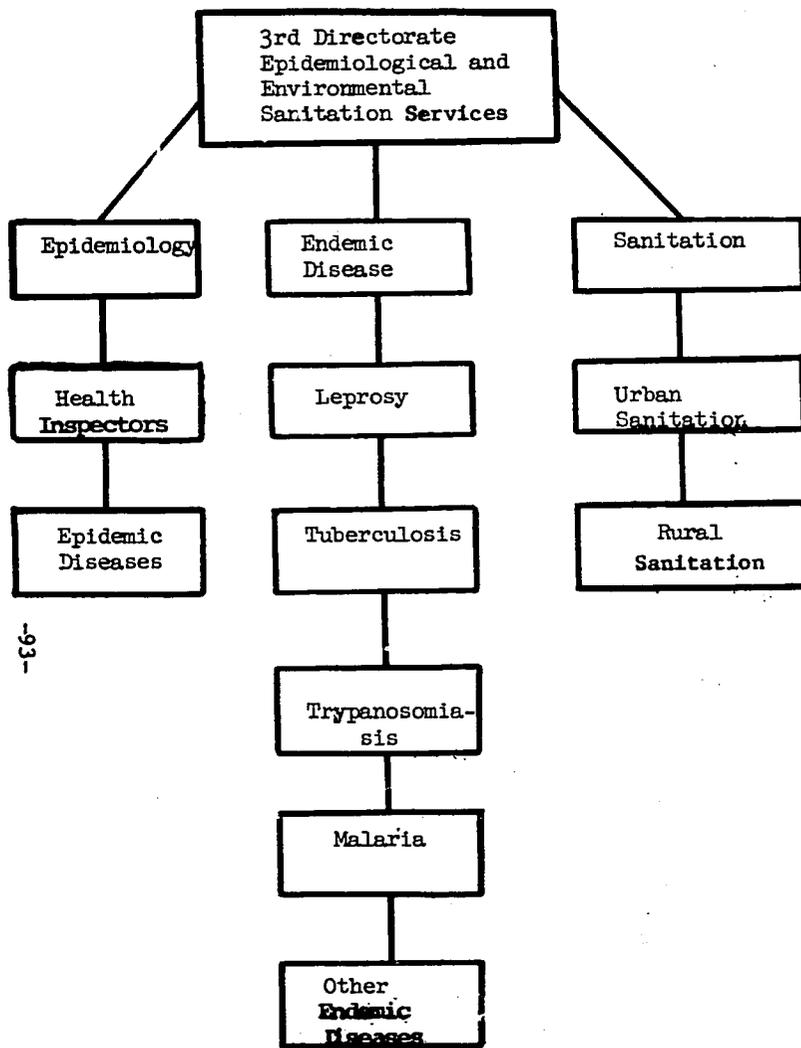


Illustration 1 (cont'd.)



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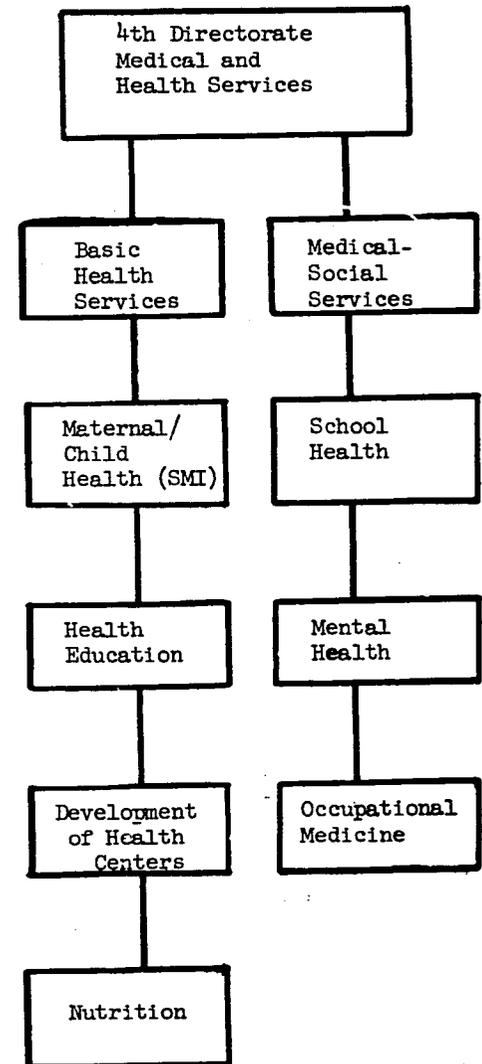
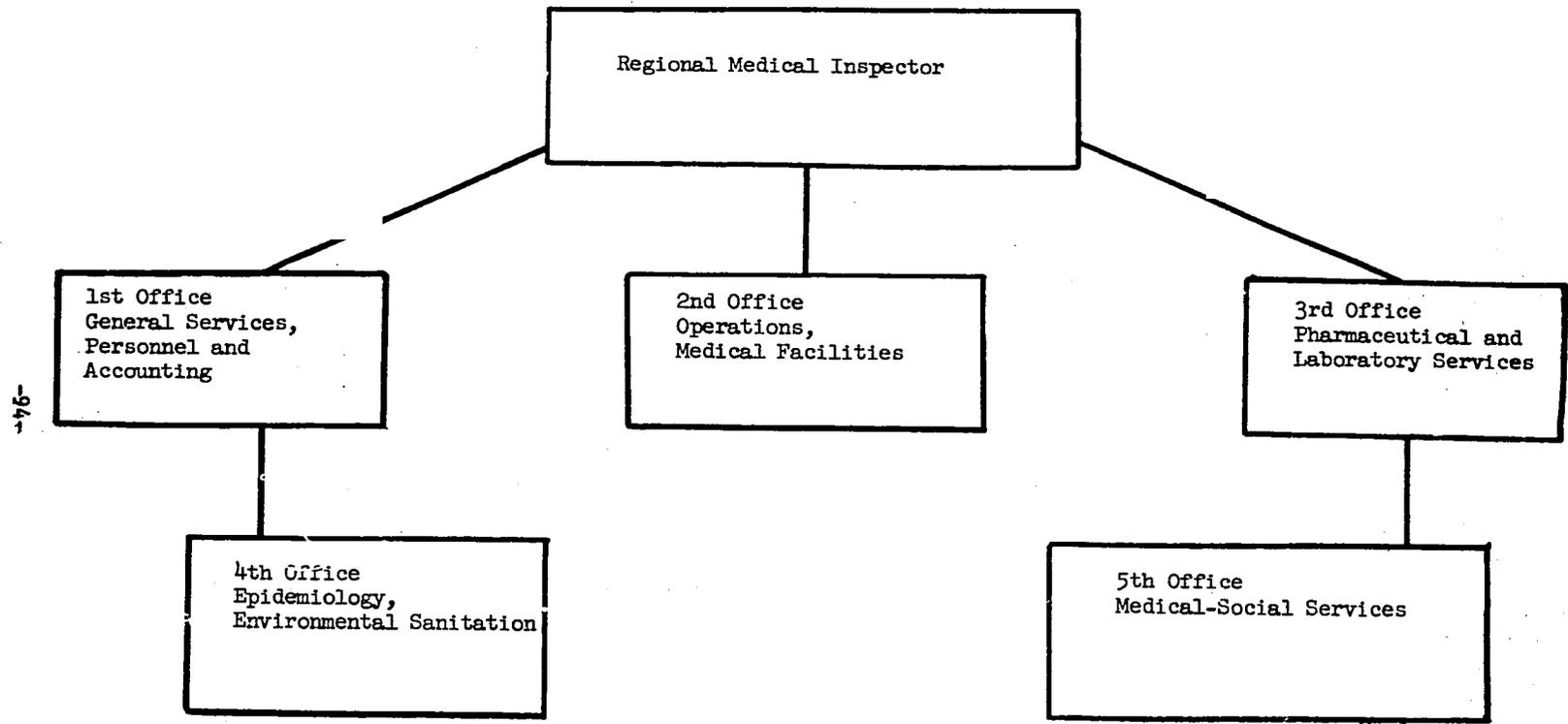


Illustration 2

ORGANIZATIONAL STRUCTURE OF THE DEPARTMENT OF HEALTH

REGIONAL LEVEL



### Fonds Médical de Coordination (FOMEKO)

The largest public health care provider in Kinshasa is the Fonds Médical de Coordination (FOMEKO) organization. Created directly under the Medical Services of the Office of the President, FOMEKO receives separate budgetary allocations and has no official ties with the other public health organizations including either the Department of Public Health or the Medical School of the National University of Zaire. While the primary goal is the research and development of an effective and efficient nationwide health care delivery system, its major orientation to date has been urban centered. Currently it operates two hospitals, a nursing school, three maternal/child health centers, the Institute Médical Tropical laboratory, and a hospital ship. The main purpose of FOMEKO revolves around five main concepts, as outlined in their annual reports: (1) to carry out medical policies of the National Government and provide technical counsel to the Government in health and health-related matters affecting the Zairian population; (2) to provide direct patient care through its own facilities; (3) to conduct in-service as well as formal and theoretical training in the health sciences with the end of improving quantity and quality of medical care available; (4) to serve as a forum for exchange of ideas between the various organizations, etc., operating in the health sector, to achieve more effective and coordinated efforts in provision of national health care; and, (5) to accept a pragmatic and experimental approach to health care, seeking to develop model health services through the provision of data and the innovative ideas needed for the development of a comprehensive and quality national health care delivery system.<sup>21</sup>

The success of its programs to date can largely be attributed to its accomplishments, notably its ability to attract quality personnel, to operate in a modern, professional way, and to identify and implement innovative approaches to health care delivery. As a result, FOMEKO has been able to obtain large budget appropriations from the Government of approximately \$10 million annually, or about equal to that allocated to the Department of Health. At the same time, substantial financial support from the National Government has given FOMEKO considerable flexibility essential to testing innovations.

In recent years, much emphasis has been placed on the recruitment of foreign physicians, largely expatriates, to train Zairians at all health administration and professional levels. The typical two-year contract provides for an annual salary of about \$20,000 supplemented by free housing and automobiles.<sup>22</sup> Expatriates have Zairian counterparts working with them whenever possible as a means of training their own replacements. Since 1970, the number of Zairian health personnel working in FOMEKO facilities increased substantially in the administrative as well as all professional direct patient care areas. Nevertheless, the vast majority of key administrative personnel continue to be expatriate physicians.

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<sup>21</sup> "Purposes of FOMEKO," Annual Report of the Director of the Medical Staff of FOMEKO, 1973.

<sup>22</sup> Medical Survey of Zaire, Walter Reed, Section 3, pp. 3-4.

The administrative core and principal operational base of FOMECO is the 1,800-bed Mama Yemo Hospital in Kinshasa. Formerly Kinshasa General Hospital during the Belgian colonial administration, FOMECO took over the 4-block hospital complex in 1970, in extremely poor condition after almost 10 years of virtual neglect in the immediate post-independence period. Today Mama Yemo serves as the nation's model hospital, providing the most specialized and generally conceded highest quality of care available in Zaire. Organizationally, Mama Yemo Hospital complex is divided into six large clinical services -- internal medicine, surgery, pediatrics, obstetrics and gynecology, community health service, diagnostic service, and three standing committees.

The basic plan of the hospital complex is structured around a series of pavilions, or separate one and two-story buildings connected by a series of walkways. Renovations by FOMECO to date have focused on surgical/acute care areas of the hospital, traditionally the areas of greatest mortality. A modernly equipped surgical suite and intensive care unit, including a special cardiac monitoring section, are now operational, and have reportedly reduced the number of deaths from surgery and its post-complications, and trauma by one-half since institution.

Wards are segregated by type of illness, rather than sex of patient, as is common in many developing countries. Newly renovated surgical wards with screens and fans are improving general circulation within crowded facilities. The approximately 3.3 kilometers of once cracked and potentially dangerous corridors and walkways between pavilions are being replaced with smooth cement. All common areas, including corridors, bath and toilet sections, are scrubbed down twice daily which has reportedly significantly reduced the incidence of infection in the complex.

The sheer volume of patients handled by the diverse departments of the hospital in one year, as highlighted in the table on the following page, would represent a challenging task for any general hospital worldwide.

The obstetrics and gynecology service is among the most active of any hospital in the world. Its 33-bed labor room and delivery rooms handled 42,691 deliveries in 1973, or an average of 116 births a day, or five per hour. Approximately 2,500 of these births were premature; 1.7 percent of the deliveries were by caesarian section. Improved quality of patient care is reflected in a 27 percent decline in maternal and 10 percent decrease in neonatal mortality over the 1972-73 period. Out of 42,691 births, there were a reported 44 maternal deaths, a maternal mortality rate of approximately 1/1,000 births and 647 neonatal deaths, or a neonatal mortality rate of approximately 15/1,000 live births.<sup>23</sup> A maternal intensive care unit put into operation in 1973 is largely responsible for significant reduction in mortality; in 1973 the unit handled 80 cases of eclampsia and 200 hemorrhages. Overall, 95 percent of the actual deliveries are handled by trained midwives with doctors only taking direct part in the remaining five percent "high risk" cases. A detailed set of instructions have been given to the nurses/midwives for checking 15 criteria, any one of which may place the pregnant mother in the high-risk category.<sup>24</sup>

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<sup>23</sup> The number of neonatal deaths is actually significantly underreported in the FOMECO report given the fact that FOMECO staff have reported an overall current infant mortality rate of 49/1,000 live births in general discussions and presentation materials.

<sup>24</sup> For more precise details of the MCH program, refer to Chapter IV's Maternal Child Health/Family Planning Program.

Table 8

Select Levels of Health Care Provided by MYH, 1973

	<u>Number</u>
Total Beds	1,793
Total Admissions	81,759
Total Discharges	81,832
<u>Levels of Service</u>	
Surgeries performed of which	20,404
7,499 major	
12,905 minor	
Outpatient consultations of which	891,680
Prenatal:	120,509
Pediatric:	19,976
Emergency Room	54,784
General Dispensary	233,505
Ophthalmology	43,509
Ear-Nose-Throat	25,482
Dental	31,313
Radiology	47,444 X-rays
Laboratory	560,191 studies
Average length of stay	7.6 days
Bed occupancy rate	98 percent
Average daily number of inpatients	1,803 <sup>6</sup>
Total deaths	3,615
Percentage deaths/admissions	4.4 percent
Total personnel	2,100
Ratio personnel/patient	1.2

Note: Data in this report do not agree with that given in another FOMECO 1973 Annual Report, "Annual Report of the Director of the Medical Staff of FOMECO, 1973" and highlight statistical problems which MYH must still solve.

Source: République du Zaïre, Fonds Médical de Coordination FOMECO, Direction Générale.  
Rapport Annual 1973, Tableau Statistique Synoptique Comparatif.

Pediatric care is a major component of MYH's health service, with almost 20,000 consultations in 1973 alone. There were a total of 2,591 deaths in the pediatric service in 1973 -- 379 among newborns, 1,012 among premature babies, and the remaining 1,200 among all other children treated. This significant level of mortality, representing 18 percent of the hospitalizations, can be attributed to several factors which have mitigated against provision of quality pediatric care to date. First, there is a severe shortage of qualified nursing personnel to handle the pediatric wards. Although in-service training courses have formed an integral part of service in the pediatric area, large personnel turnover, currently estimated to be about one-third of the staff monthly, impede development of an adequately oriented permanent core of personnel. Secondly, the sheer volume of patients is expanding faster than the existing institutional capacity to absorb. In the area of premature care, for instance, although several modern portable isolettes have been purchased, overcrowding and excessive premature births have resulted in having to place two infants in each one of these containers, thus negating their very purpose of providing a more sterile atmosphere for the newborn. It is hoped that the development of satellite maternal and child health centers, of which three are operational, will reduce some of the pressure on MYH pediatric department to handle only the specialized and acute cases in Kinshasa by redirecting care to outlying centers and using MYH as a referral hospital.

Nutrition education for mothers forms an integral part of the treatment in pediatric clinics. Because of the high incidence of malnutrition treated, MYH has established daily classes for mothers in nutritional food selection and preparation for their children. All foods are purchased on the local market, prepared, and eaten in class.

Respiratory care has been a notable area of improvement in patient care in the past few years. The inhalation therapy service established humidified oxygen throughout the hospital and oxygen availability has increased sevenfold from 1970. Over 7,600 specialized treatments were given in 1973, using the most modern inhalation therapy equipment currently available on the world market.

A new combination polyclinic/emergency building is planned for 1975. The new facility, to be located across the street from the main hospital pavilions, will reduce much of the current congestion in that area, and facilitate patient care. Currently 20 clinics are held at MYH. The outpatient department (OPD) of the hospital treated an average of 2,442 people daily, or 123 persons per hour in the general dispensary. Approximately 85 percent of these persons' cases were handled by screening nurses with the balance referred to physicians for more intensive care. The large volume of patients seen in 1973 in the OPD included over 400 cases of hypertension and 200 of diabetics daily. The emergency room in Mama Yemo Hospital serves about 150 persons per day, or six per hour, the vast majority of whom are suffering from injuries sustained in automobile accidents. There were 630 deaths among persons receiving primary care in the emergency room in 1973, a 28 percent decrease from 1972 deaths.

The overtaxing of the current capacity of the laundry and kitchen remain major administrative problems. In 1973 the laundry cleaned on the average one and one-half tons of soiled sheets, surgical gowns, etc. daily, and the kitchen prepared an average of 1,650 meals daily, which provided an average daily caloric intake per patient of 2,500 calories. The ever-increasing volume of patients, coupled with the relatively small working area for laundry and

kitchen activities, precludes a general improvement in operations without substantial financial inputs to modernize and expand both services. Given the other more pressing priorities in providing quality care, in other areas of the hospital complex, and inherently limited financial resources, significant changes are not foreseen in the next few years.

In line with its stated objective to provide in-service training of medical personnel, FOMECO, through the Mama Yemo Hospital, is providing clinical practice for the last year medical students from UNAZA. The average time of service is 15 months and includes rotation through the major specialty services of the hospital complex. Twelve doctors who graduated from medical school in 1972 spent one year in in-service rotation. Grand rounds and case presentations remain the most common teaching tool. Medical conferences and seminars held by the various clinical services almost daily form a basic part of in-service training. Formal lectures are supplemented by films, pathology and X-ray conferences as important cases develop. A new medical library, which includes 30 medical journals, is available to all FOMECO staff.

In addition, numerous in-service courses for paramedical technicians have been conducted in such diverse areas as inhalation therapy, physical therapy, intensive care, and emergency and operating room techniques, by individual staff doctors and nurses. The obstetrical and gynecological services have held classes in family planning and maternal/child health. Coordination and expansion of these programs for upgrading both the scope and quality of care provided by in-house health personnel is planned for 1975.

Nurses were trained in proper neurologic evaluations to operate a "head trauma" unit.

Logistically, MYH complex activities are supported by the following core of services: ambulances carry patients from referral maternal/child health centers, as well as emergency cases such as auto accidents; an extensive radio communications system is operational in the main MYH complex and links headquarters with all of the major operational units of FOMECO including the hospital ship Mama Mbutu; Bolobo Hospital, and, the helicopter, which provides logistical support to these outlying health facilities. The pharmaceutical supply building was recently reorganized and placed under the management of an expatriate. It maintains a several-month stock of all basic drugs and supplies used by the complex. In addition, newly opened laboratories in an annexed building are currently producing and packaging their own generic drugs, thereby substantially reducing the traditionally high financial outlays on pharmaceuticals necessary to support FOMECO's large operation.

The Institut Médical Tropical (IMT) serves as the principal clinical laboratory for the MYH complex. Formerly a health laboratory research center for all tropical medicine in the country, as well as a vaccine production center under the Belgian government, the building had fallen into disrepair in the decade following independence. Being revitalized under FOMECO's direction as of late 1974, renovations were still under way, but significant improvements were already visible. New microscopes and other equipment to improve the automated operations of the laboratory were evident. Operationally, the Institute is divided into five sections: the blood bank, microbiology, anatomic-pathology, biochemistry, and hematology. An outline of the major types and amounts of work performed by the lab is given in the table on the following page. These figures represent an increased emphasis on improved diagnosis. The 124 autopsies noted, for example, reflect a 629 percent increase over the 1972 level of 17 autopsies performed and the 1974 figure is expected to be more than double that of 1973.

Table 9

Select Services Performed by the Various Sections of  
Institut Médical Tropical (IMT) of Mama Yemo Hospital  
Kinshasa, 1973

<b>I. Blood Bank</b>	
Blood supplied	15,000 units
Donors	13,000 persons
Blood typing	31,000 determinations
<b>II. Microbiology</b>	
Total tests performed	65,600
of which:	
parasites	26,000 tests
serology	21,000
<b>III. Biochemistry</b>	
Analysis	89,000
<b>IV. Anatomic-pathology</b>	
Surgical specimens diagnosed	7,800
of which:	
cancerous	700
autopsies	124

In addition to MYH, FOMECO operates three other health facilities in Kinshasa as part of FOMECO's program to decentralize maternal child health care by providing alternative centers for care in the local communities and using MYH as a referral hospital for complicated, high risk cases. Ultimately a total of 14 MCH centers are to be developed, each serving two zones of Kinshasa, or approximately 140,000 persons per center. The high cost of constructing the first MCH building, coupled with continued inflationary trends in the construction industry, have led FOMECO to redirect its original plan of building such facilities from the ground up, to the renovation of, planning and organization of such programs in already existing facilities. For a description of the nature of FOMECO's MCH activities at MYH and these three centers, refer to Chapter IV.

While its work has been largely concentrated in the Kinshasa area, at the end of 1972 FOMECO accepted administrative responsibility for reorganizing the hospital and nursing school at Bolobo, a village 200 kilometers up-river, north of the capital. Bolobo is to serve as FOMECO's principal model for the development of community primary care and preventive health programs in a rural setting. The officially recognized nursing school is training 35 students in hospital nursing and midwifery. Importantly, its location encourages the training of rural persons, the majority of whom will hopefully stay in these currently underserved areas. The medical work of Bolobo is supervised by two FOMECO staff doctors.

The principal exception to the urban-oriented health programs of FOMECO is that of the hospital ship, "Mama Mobutu." Built in 1970 at a cost of \$5 million, the ship was developed as an experimental, alternative approach to providing health care to the previously largely neglected villages along the Zaire River and its tributaries. Specifically, the ship is to: (1) provide health care to isolated population groups who otherwise would have no access to medical care, as well as to larger urban centers along the waterway; (2) to develop public health educational and preventive health programs; (3) to serve as a vehicle for training doctors and paramedical personnel in national health problems through in-service practice in the interior of the country; and, (4) ultimately to serve as a base for basic, practical medical research projects.<sup>25</sup>

The ship, which was launched in 1971, is completely air-conditioned and fully equipped with modern medical equipment, including 20 beds (10 male, 10 female), two operating rooms, a clinical laboratory and complete X-ray facilities. An excellent radio system hookup to the FOMECO headquarters at Mama Yemo Hospital provides a rapid and efficient communication link for logistics arrangements, referrals to hospitals, etc. A helicopter landing pad on the after-deck facilitates transfer of supplies and patients as necessary.

An ex-missionary doctor who has worked in the Congo for 21 years heads the "Mama Mobutu" staff. He is assisted by a Roman Catholic nun who serves as chief nurse. They are the only two permanent staff members; the balance of the medical personnel, who are recruited on a rotational basis from the Mama Yemo hospital staff, is typically comprised of a Zairian doctor (usually a national university hospital intern), one other doctor, and one other nurse, both of whom are generally foreign, four male physicians assistants, 10 male nurses' aides, and one laboratory technician, all of whom are Zairian.

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<sup>25</sup> FOMECO Handbook.

Riverine villages are alerted to the ship's arrival through a series of broadcasts to nearby mission hospitals and on the national radio system, outlining the time schedule and route for the next voyage. The normal mode of operation is for the ship to stop at riverine villages for one to two days on its course up-river to examine and treat patients. Those who are severely ill or require hospitalization for surgery are admitted and remain on the ship for the balance of its trip up-river, and are dropped off at their villages on the return down-river voyage. Major medical and surgical cases are referred to the closest hospital. Normally there are 11 days of up-river travel to three days of down-river travel, with a 7 to 10 day stopover in Kinshasa for resupply and overhaul between trips. In general, the plan has been to have the ship visit each village twice a year. In 1973, "Mama Mobutu" hospital ship made eight trips for a total of 188 operating days, from Kinshasa up the Zaire River and its major tributaries, covering a total of 15,560 kilometers and examining and treating 33,548 patients in the various villages enroute. A total of 375 operations (with four deaths) were performed; 325 patients were hospitalized on board for varying periods of time. Six deliveries were attended. In addition, 20,400 persons were vaccinated against smallpox, tuberculosis and polio.

Despite the ship's successes in providing health care to many previously unattended population groups, several factors may ultimately mitigate against its continued operation. Purely from a financial viewpoint, the rising price of marine fuel on the world market for a country which has discovered only a very small domestic supply of oil to date may simply price the ship out of operation. It has been estimated that given an average of 100 patients' visits per stop, the average patient visit costs \$17.00, of which the ship is recovering just \$0.40 in direct patient charges. Overall, the total operating budget for "Mama Mobutu" amounts to approximately \$1 million annually, or about one-tenth of the annual budgetary allocations from the Office of the President to FOMECO. The high cost per patient visit is even more striking, given the typical patient-mix examined by the ship's medical staff. Of each 100 new patients, the doctor in charge has estimated that half have just trivial illnesses, 30 have treatable medical diseases, and 20 have surgical problems, most commonly hernias, external lesions, or orthopedic difficulties.<sup>26</sup>

The variable climatic conditions and most notably severe fluctuations in water levels common to the Zaire River and rendering it unnavigable for extended lengths of time preclude efficiencies of operation only achieved through precise long-term planning for trips. Low river levels, coupled with an unexpected major overhaul of the ship, forced the cancellation of four scheduled trips in 1973 alone. Importantly, cancellation of a trip may mean that some of the villages enroute will receive medical attention only once for an entire one-year period.

Clearly, the fact is that a hospital ship is a costly approach to health care delivery and may need to be reexamined in light of other alternatives, including fixed-site rural health clinics and with a view to the long-range benefits to accrue.

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<sup>26</sup> Medical Survey of Zaire, Section 3, pp. 4-5.

## Department of Labor

Administrative responsibility for labor affairs was officially vested in the Department of Labor in 1971. Within the Department, occupational health and safety matters are handled by two principal Directorates -- the General Inspectorate of Labor Directorate, and the Social Security Directorate. The latter, which controls the National Social Security Institute, is discussed separately below.

The General Inspectorate of Labor Directorate is comprised of three sub-sections, two of which are health related. The Labor Safety Section of this Directorate prepares and directs implementation of labor safety regulations for Zairian industry; conducts technical research on occupational safety; and, maintains records on work accidents. The Labor Health section of this Directorate prepares studies on health conditions in enterprises and on means to avoid occupational-related diseases in mining, etc. The Labor Safety section is also responsible for formulating employee health legislation and for collecting data on occupational diseases. It also advises the National Institute of Social Security on appropriate amounts of compensation to be paid workers for work accidents and/or occupational diseases.

## National Social Security Institute (INSS)

The Institut National de Sécurité Sociale (INSS) was created on June 29, 1961 as an outgrowth of the worker's groups formed during the Belgian administration. It is a financially autonomous agency charged with collecting social security contributions and disbursing benefits to retired workers. The management, administrative organization and functions of the INSS are controlled by the Department of Labor. This Administrative section prepares eligibility requirements for social security benefits; and, institutes new social welfare benefits; acts on health and social measures related to the social security system; and, makes determinations regarding voluntary insurance. The Financial Section of the Social Security Directorate has primary responsibility for preparing regulations on social security deductions; publishing data for the public on the INSS; managing financial policy and finances of INSS and consults with the Administrative Section on INSS management and organization.

Representatives from management, government and labor direct the INSS operations under the supervision of a Director General. INSS field offices are located in Kinshasa and all eight regional capitals. The field officer registers employers and workers who mandatorily or voluntarily affiliate with the national social security system; establishes the amount of and collects employer and worker deductions; validates requests for and disburses social security benefits; and, serves as statistical recorder of INSS activities.

Only workers employed within the private sector are eligible for INSS membership. Government workers and armed forces personnel have their own social security systems. Approximately 75 percent of the working revenue of INSS comes from contributions as follows: 30 percent from the employee; 35 percent from the employer, plus an additional 10 percent usually paid by the employer for additional workman's compensation insurance.

The INSS does not have a medical branch. Workers who are injured and/or disabled must use public health facilities. Formal regulations require that if an employee has a work-related accident, the employer notify INSS which will then make disability payments directly to the employee. In actuality, many such INSS disability payments have not been forthcoming, and once employers discontinue their salary, many disabled workers and their families have remained without income. Occupational health programs are discussed in Chapter IV.

#### Department of Social Welfare

The Department of Social Welfare has had major responsibility for formulating and implementing the nation's social assistance and advancement programs.<sup>27</sup> It is administratively divided into a General Secretariat and two general directorates -- one focusing on social action programs and the other housing, each of which is subdivided in turn into several small directorates. The Secretary General is in charge of administrative services, personnel and the budget. The General Directorate for social action concentrates on social assistance (welfare and advancement oriented activities, including manpower training and adult literacy programs). The planning of and development of financing mechanisms for construction of national housing are the primary functions of the General Directorate for Housing.

At the local level there are eight regional directorates for social assistance and welfare which report directly to the Department of Social Welfare. In addition, the city of Kinshasa has its own urban director who is in charge of all social centers within the capital. This urban director is attached to the General Directorate of Social Action at the national level. For a description of the activities of the Department, refer to Chapter IV.

#### Armed Forces

The Medical Department of the Zairian armed forces (FAZ) administers a network of 144 dispensaries, eight infirmaries with 120 total beds, four hospitals with 500 total beds, and one health clinic at Camp Kokolo in Kinshasa. This system of health facilities is responsible for meeting the needs of approximately 300,000 persons (48,000 military men plus their dependents). Further, the FAZ voluntarily extends care to some 600,000 civilians living in areas of Zaire in which military forces are located and no other health care facilities exist. The provision of health services to military and dependents by FAZ facilities is complemented by the services of Department of Health and mission hospitals either through direct patient care or the provision of physical space in which military medical personnel can operate.

Given the relatively small size of the military health structure vis-a-vis the number of persons they must serve, the delivery of health services is limited to curative aspects, primarily that of pediatric and obstetrics/gynecological care. The Camp Kokolo clinic alone handles 75,000 outpatient visits per month, referring those who need hospitalization to Mama Yemo Hospital in Kinshasa. There is no formal preventive health program although there is a strong emphasis on health education, especially in the areas of prenatal care and child health.

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<sup>27</sup> As of mid-1975 the Department was being reorganized into a Committee of Social Works. The effects of this reorganization on the nation's social programs are still unclear.

## Parastatal Organizations

### National Office of Research and Development (ONRD)

Established by President Mobutu in 1968, the ONRD is attached directly to the Office of the President and has major responsibility for all national research activity, including that in the area of health. Its extensive laboratories which are among the best-equipped in the country, include one for food chemistry and microbiology, and a small medical laboratory in Kinshasa. It has a small but comprehensive library and a small printing plant for publishing a bi-yearly journal and several notable mimeographs on various subjects. The ONRD since its inception has been involved actively in conferences and workshops with other national and international organizations working in the health and health-related areas. Currently ongoing collaborative programs in these areas with the U.S. National Academy of Sciences, National Research Council include: (1) a demography/population statistics study in conjunction with Princeton University; (2) a nutrition based study of infant feeding habits and of manioc composition in conjunction with MIT and Harvard Universities; (3) the establishment of two primate study/breeding centers as a source of medical research animals in cooperation with Stanford, Harvard Universities and the Smithsonian Institute. With the technical assistance of the National University of Zaire, the ONRD is conducting studies on vector control of onchocerciasis; on sickle cell anemia; and, on an extensive study of native remedies in use in traditional medical practice. Collaborative studies are under way with Governmental/university scientific groups in Belgium on parasitic diseases in children and in France on census sampling techniques for the city of Kinshasa.

### Centre Régional d'Etudes Nucleaires (CREN)

A scientific research body attached to the National University of Zaire, CREN's activities are focused in the areas of agriculture including earth/soil and plants; and, medicine.

### Action Kusaidia (AKU)

A parastatal organization created by Presidential decree in August 1972, Action Kusaidia operates an integrated rural development program in the Kivu region of east Zaire. The program, which is under the Office of the President, has been closely followed by President Mobutu because it is concentrated in the approximately 200 kilometer area of Uvira-Fizi-Baraka, one of the hardest hit areas during post-independence civil rebellions and consequently an area of especially poor standard of life relative to other regions of the republic. It is a potentially powerful political arena with an estimated 70,000 Zairian residents now present who fled the country during the period of political upheaval and 15,000 more Zairians are expected to return from Tanzania to this area in the near future. To date, activities have focused on the reconstruction of localities through development of community work projects.

Administratively, AKU is directed by a Superior Council with a President and Director General supported by a General Directorate in Kinshasa, a regional directorate in Bukavu and an operational base at Uvira headed by a Chief Coordinator. As of late 1974, its employees included 21 Zairians, three expatriates, three Peace Corps volunteers, and 379 local villagers.

The diversity of its work has ranged from establishing fishing cooperatives, construction and repair of routes, bridges, schools, dispensaries, to digging wells and setting up plant nurseries. In health-related areas, its support to the Department of Social Affairs has included the construction or reconstruction of five social centers; ongoing construction of a potable water system at Swima-Mboko and projected construction of one at Fizi for the Department of Political Affairs; ongoing construction of a dispensary at Bukavu and projected construction of a dispensary at Uvira for the Zairian armed forces; construction of numerous fresh water wells for the Department of Public Works. As of July 1974, AKU had reconstructed and equipped seven dispensaries, reconstructed and equipped the medical center at Baraka, reconstructed doctor's housing for the Zone of Fizi, was in the process of renovating the Medical Center at Uvira; had provided financial support to the Hospital at Kirinzi and was in the process of reconstructing the Hospital at Fizi -- all in support of the Department of Health. Although these activities have been arranged separately at the request of the given Departments and AKU has had no real programmatic orientation to date, a comprehensive development plan is being completed for the region which would integrate these various types of projects.

AKU has also been assisting the Catholic Relief Service, which is operating 18 nurses training centers and an estimated 110 clinics.<sup>28</sup>

Since its inception, AKU has received more than \$2 million from the United Nations in support of its rural development projects and additional financial allocations are to continue, although the exact amount is not known.

While its work in the area of health has been largely peripheral, that is, construction, reconstruction and/or equipping of health and health-related facilities, AKU has expressed an interest in expanding its involvement to more direct patient care operations. Given the success of its work to date, the potential of linking new health programs to this existing infrastructure should be explored.

#### Fonds Médical et Social

A parastatal organization related to the Department of Health, the Fonds Médical et Social has also provided financial support to several social assistance programs of the Department of Social Affairs, as described in Chapter IV. The Foundation is responsible for conducting an annual health survey of the republic. In an attempt to gather information on endemic disease in the country, Foundation teams pass through each village once a year collecting data on morbidity and mortality. The potential use of the survey data for health planning activities is not clear, however, given the fact that it covers only an estimated nine percent of the total Zairian population and thus may not be representative of the nation as a whole.

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<sup>28</sup> Conversation of Zaire Desk Officer and Mr. Lawson Mooney, Director, AKU, 14 August 1974.

## The Private Sector

### Private Practice

Knowledge of the nature of private medical practice in Zaire is scarce. It is generally conceded that private medical care is superior to that provided in the public facilities. Providers are usually personnel employed in the public health sector who supplement their wages through private practice, especially in the capital city of Kinshasa. Given the low average family incomes and the lack of a truly visible middle class, it can be assumed that the private clinics attend to only the small percentage of Zairians in the upper classes.

The major industrial companies operating in Zaire, most notably the diamond mines and the numerous extractive industries, are probably the largest private health care providers, given the sheer volume of their size and the fact that, as requested by the National Labor Code, they must provide medical care free of charge to their employees and families.<sup>29</sup> The ability of these companies to attract and retain qualified health personnel, many of whom are foreign nationals, through relatively high salary levels, good fringe benefits, excellent working conditions results in their providing above average quality of care.

### Church Groups/Missions

Protestant and Catholic missions have traditionally provided a substantial, and in the rural areas, the most significant, part of health care to the Zairian population. While their exact population coverage is not known, mission health services have been estimated to provide more than 75 percent of total national health services delivery in the rural areas. Currently these missions operate approximately 700 hospitals, maternities and dispensaries with a total bed capacity of 25,000 staffed by some 2,000 health personnel including about 80 physicians, most of whom are expatriates. In addition to delivery of primary and preventive care, many missions have been upgrading the national health manpower situation through operational on-site training programs for nurses and auxiliary personnel. While these Protestant and Catholic missionary programs may be integrated with other public health programs in their immediate areas, more commonly they have tended to substitute for Government health inputs; the Government does provide subsidies, however, to assist financing of many missionary health programs.

In an attempt to relate their programs more closely to national health priorities, many missions have organized central coordinating agencies based in Kinshasa. The failure of the Government to clearly define national health goals to date has, however, resulted in most church groups having to develop their own initiatives and direction in the delivery of health care.

The 18 national Protestant missions are the largest health care providers, with 437 health facilities and 14 health manpower training schools in Zaire.<sup>30</sup> They have been organized since 1962 into a single body under the overall direction of the Eglise du Christ Zaire (ECZ). Despite the apparent realization of the need to improve the work of the previously independently operated missions that underlies the creation of a central coordinating body in Kinshasa, no real sense of unity has yet emerged within the Protestant group. In an attempt to address the continued fragmentation of the ECZ groups and at the same time reexamine the basic role of the church missions within the health sector and in view of Government priorities, a workshop was held in early

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<sup>29</sup> See Chapter IV, Occupational Health section.

<sup>30</sup> For a detailed description of a typical Protestant rural health/outreach program, see Chapter IV.

December 1974, for nine medical/health personnel from the ECZ missions (one person from each region plus Kinshasa). The central theme of the five-day conference was to emphasize the responsibility of the Protestant missions to support public health goals, most notably in the preventive, ambulatory care area.

Despite its lack of direction from Government authorities, the ECZ importantly views itself as part of the national health structure and in fact received 2343,070 or approximately \$686,000 from the National Government to subsidize its various programs. This amount was funneled to those dispensaries operated by the Protestant missions which are recognized by the National Government and have specifically requested support.

The Protestant missions' health programs are generally organized around a central health facility at the mission, usually a hospital, tied to a substantial outreach program extending primary care into surrounding communities by means of mobile teams. These mobile teams, led by auxiliary level nurses, have made significant inroads in extending primary and preventive health care to many rural persons previously entirely outside the formal health care delivery system. The services provided range from basic maternal/infant care including under-5 and prenatal consultations; desired births program and family counseling; epidemiological studies to ascertain nature and extent of illness in villages; to general health education at the village level.

Overall the ECZ philosophy with regard to health varies markedly with that traditionally espoused by the Government of Zaire. The basic idea behind Protestant mission operations has been that health care should start at the village level, expanding to the immediate region, then several contiguous regions in building-block fashion, until the national health care system is completed. In contrast, the National Government has traditionally focused on the establishment of a delivery system from the national level, namely Kinshasa, outward. The ECZ hopes to present its "sparks in different regions" idea which evolved out of the December workshop to the National Government as an alternative approach to national health care. In addition, the ECZ plans to make a formal recommendation that rural nurses be brought to various national training centers and then returned to their villages to work in primary care and as health educators, rather than current policy of training medical/health personnel and then seeking incentives to get them to work in these areas.

The Catholic missions work has been focused primarily in the numerous towns and cities. Operations have been coordinated for years through the CARITAS headquarters office in Kinshasa which provided both budgetary and direct program development support to the 46 dioceses across the country. The CARITAS headquarters was closed down in early 1975 with the termination of the supplementary feeding program. The CARITAS organization was led by a Director General with staff support through the administrative office. In the area of nutrition, CARITAS provided food to all the Catholic missions in the interior of the country for distribution to children, mostly orphans. The majority of the foodstuffs were donated by private organizations in Europe. CARITAS also had a pharmacy service which bought and distributed medicaments to the various missions. The drugs, the majority of which were of European-manufacture, were sold to villagers in mission areas at low CARITAS-subsidized prices. Those who are physically handicapped were provided pharmaceutical products free of charge.

While individual Protestant and Catholic missions often concentrate in specialized health fields such as maternal/child health, welfare, or leprosy, almost all provide some type of basic medical services to the surrounding communities. In addition many have extensive programs to train medical assistants which offer some of the best practical health training in the country.

The other major religious group participating in the health sector is the Kimbanguist, which operates 28 dispensaries distributed across the country. Their health operations receive support from the Oxford Committee for Famine Relief (OXFAM).<sup>31</sup> The sect is named after its founder, Simon Kimbangu, a Christian convert who began touring the Congo in early 1921, effecting what he felt were divinely directed miraculous cures of the sick. As the sect grew in popularity it established its own church. In June 1921 the colonial Government, feeling the security of the country was threatened by the increasingly anti-European character of Kimbanguism, banned the sect and ordered the leaders jailed. Voluntarily turning himself in to the authorities in September 1921, Kimbangu was subsequently tried, convicted and sentenced to life imprisonment; he died in prison in 1951.

Although the sect was forced to meet clandestinely, it flourished particularly in rural areas. In 1959 the Belgian Government lifted sanctions and granted the church legal recognition. Its adherents have continued to increase in the post-independence period and while exact membership is not known, estimates are approximately one million persons. Many villages are entirely Kimbanguist particularly in the area south and west of Kinshasa. A large temple was constructed in Kinshasa in the mid-1960's and in August 1969 the Kimbanguist church was admitted to the World Council of Churches.

New developments augur a change in the important role missionaries have played in Zaire since the mid-twentieth century. In recent years many missionary doctors, most of whom were newly qualified, have been leaving the country and are not being replaced. Others have been lured from villages by both financial and cultural incentives to work in the urban health programs, especially in Kinshasa. Some of the key personnel in FOMECA, for instance, were recruited from missions. An increasing number of church-related personnel are working outside mission institutions in both public and private health facilities. In light of these trends, and as the National Government assumes more control and support of the health sector, it is widely believed that these church-based medical programs will be phased down and eventually closed over the current decade.

It is not yet clear what impact recent political developments increasing Governmental control over activities formerly run by religious organizations will have on the church groups in Zaire. Following measures announced in December 1974, President Mobutu in his February 1, 1975 speech, definitely delineated the supremacy of the State over the church, declaring that all churches which engaged in political activities would be closed. Further, missionary schools have been nationalized. A takeover of the extensive and widely distributed system of mission hospitals and rural dispensaries is consequently viewed as a real possibility by church leaders. If such nationalization occurs, the question of Governmental ability to step in to provide the necessary financial and cultural incentives to attract and retain Zairian health personnel to rural areas becomes of paramount concern.

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<sup>31</sup> For a description of OXFAM's program, see Chapter IX.

## Pharmaceutical Industry

The pharmaceutical industry represents a \$20 million annual investment in the health sector of Zaire. The pharmaceutical sector is separated into a private commercial sector and a public sector and this division is strictly delineated. The public sector, which accounts for approximately 25 percent annually of the drug market is centered around the Government's Depot Central de Médicaments Pharmaceutique (DCMP), the nation's principal drug "pipeline." By law the DCMP is responsible for supplying the Department of Health, the military, other government, quasi-governmental and non-profit organizations in the country. It is prohibited from dealing with the private sector for production.

Prior to independence, the Belgian controlled DCMP had a highly efficient distribution system. With the loss of much technical and management personnel in the immediate post-independence period, DCMP suffered large financial inefficiencies due to costly purchases of drugs, mostly from Europe-Belgium noncompetitive high market prices, overstocking and concurrently understocking of needed drugs etc. In an attempt to reorganize DCMP activities, the National Government entrusted its management under contract to a Belgian non-profit organization, the Fechimie. Severe financial and political constraints, however, severely hampered its ability to redirect DCMP operations. Budgetary allocations from the National Government were too small to permit purchasing of sufficient quantities of drugs and medicaments to adequately supply the nation's public health facilities. Many facilities, especially in rural areas, remained without any supplies whatsoever. Further, slow movement of appropriated monies to purchase drugs from international pharmaceutical companies eroded confidence in financial viability of DCMP. Traditional hostilities directed against ex-colonial Belgium and reborn with the 1973 "Zairianization" directive issued by President Mobutu, also put public pressure on Fechimie to withdraw control. An editorial in the Department of Information's official magazine, Zaire, accused the Belgian organization of blatantly violating the terms of its technical assistance contract with the Government by its failure to train a core of Zairian nationals leaving the national universities to take over the operation. In fact, it was charged that no Zairians were placed in even supervisory roles within Fechimie.<sup>32</sup> Under continual political and economic pressure, Fechimie withdrew its personnel in March 1974 and left the DCMP in Zairian hands.

Any transfer of management of an operation representing one-fourth of the annual pharmaceutical activity in the country would have been difficult, but in the case of DCMP, problems were compounded by insufficient number of trained management personnel, lack of adequate operational funds, the inability to forecast needs so that inventories could be planned. The new Zairian managers have also had to work amidst an extremely weak national communication and transportation system, including poor road maintenance, shortages of transport vehicles, lack of spare parts -- all of which have impeded the medical supply distribution process.

Continued low budgetary allocations to the DCMP from the National Government after Fechimie withdrew for purchase of drugs, have resulted in severe shortages of even basic pharmaceutical supplies throughout the public health sector. Prior to independence, the annual budget of the DCMP amounted to some 25 million, or approximately \$10 million. Yet with significant population

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<sup>32</sup> Zaire, "Une Maffia Pharmaceutique?" March, 1973.

increases and rampant inflation, the budget has not increased incrementally. In fact, the Z2 to Z3 million annually now allocated to the DCMF only covers an estimated half of its budgetary requirements to assure full stocking of needed drugs and supplies. Overall estimates are that current Government expenditures for drugs amount to about 10K, or approximately \$0.20 per person annually, an extremely low figure.<sup>33</sup>

The massive shortages of essential pharmaceutical products for use in the health sector, due to low budgetary allocations for purchases by DCMF, are compounded by pilferage throughout the pharmaceutical distribution system. Theft is pervasive from the loading point, along the transport route, to the actual delivery at the health facility. At the health facility, three levels of pilferage are common: by the administrator of the hospital, by the physicians, and by the nurses on the wards. Low salaries characteristic throughout the public health sector, encourage corruption. Money received from sales of these drugs provides a substantial income supplement.

The commercial pharmaceutical sector in Zaire is headed by the Warner-Lambert Company, which represents about 45 European and American pharmaceutical companies. Its scope is extensive and represents a completely vertically integrated company from a manufacturing plant and laboratory in Kinshasa, two wholesale warehouses in Kinshasa, a warehouse in Lubumbashi and Kisangani to the operation of 12 pharmacies across the country. Domestic production at its Kinshasa plant is expanding rapidly, with a 100 percent increase in production in 1974 and an anticipated 40 percent increase in 1975. The success of its operations has resulted in requests from DCMF officials for technical assistance in reorganizing their own operations. Such cooperation between the public and private pharmaceutical sectors is encouraging. Notably, the DCMF is considering recommendations to establish a warehouse in each of the eight national regions which would receive drugs directly from international companies and serve as a drug distribution center. Each local health facility and dispensary could then define its own needs and forward inventory requirements to its regional warehouse. Such a system would also reduce substantial losses during extended periods of transportation from pilferage and decomposition which now plague the distribution system. In addition to management problems, legislative constraint hampers the effective operation of the pharmaceutical sector. In total there are only 240 pharmacies in Zaire, 116 or approximately half of which are in Kinshasa. Zairian law requires that each pharmacy in the country be managed by a trained pharmacist, despite the fact that the only pharmacy school in the country, UNAZA in Kinshasa, began graduating about 30 pharmacists per year just two years ago. Further, officially at least, all pharmaceutical products must be sold in a recognized pharmacy. Supermarkets or local stores cannot sell even such simple products as aspirin, cough syrup, etc. Although the local pharmaceutical industry urged the Government to reconsider its stand and permit distribution of non-strictly pharmaceutical products in the commercial sector, it has refused to date to modify existing laws.

Traditionally the National Government has provided all Government employees with a prescription card which entitles them to pick up pharmaceutical products at commercial pharmacies free of charge. Direct disbursements to cover the cost of the drugs were made from the Government to the given pharmacies. Over the past year, a substantial number of pharmacies are no longer honoring the Government employee prescription cards because the Government has defaulted in pay-

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<sup>33</sup> WHO Zaire Mission estimates.

ments to them. It is clear that if this trend continues, Government employees will find it increasingly difficult to obtain needed drugs to support their medical care. In the long term this could have a detrimental effect not only on their health, but on the already generally low morale of the civil service.

Imports account for 90 percent of the total market, with the remaining 10 percent local production of 50 basic pharmaceutical products, the raw materials for which must also be imported. While imports are selected from the competitive international market, Belgian companies have traditionally been preferred because of facility of transport with straight shipments from Brussels subsidiaries of the major drug producers, and regularly scheduled direct daily flights from Belgium to Zaire which guarantee constant flow of supplies. All imported drugs must be patented and registered in Belgium and must carry certification that quality is approved in the country of production.

The economic feasibility of purchasing the majority of products from Belgium must, however, be reexamined. A professor from the National University of Zaire in Kinshasa has noted that in comparison to other Common Market countries like France and Holland, Belgian products are very expensive, principally due to the fact that 90 percent of the primary products used to manufacture Belgian medicaments must also be imported. The already expensive and constantly rising cost of pharmaceutical products has repercussions throughout the public and private sector of national life, as both individuals and businesses employing them must expend an increasingly large portion of their budgets on the purchase of medicaments. Importantly, the consumer price of drugs and supplies could be substantially lowered if more competitively priced products were purchased by the major pharmaceutical importers and the deliberate orientation of the market toward the more expensive Belgian products discontinued. Such reorientation of purchases to provide the country with the best products at the lowest prices possible will probably require the formation of an integrated team of economic and pharmaceutical specialists within DCMP capable of adjusting purchases as fluctuations in international prices occur.

The development of a domestic pharmaceutical industry will be a necessary corollary to reductions in prices of imported drugs, in easing the national pharmaceutical situation. The 1970 reduction of import duties on raw materials to three percent, as contrasted to nine percent on finished pharmaceutical products, has in fact given a needed impetus to local production. Concurrently, the National Government has continued to encourage private domestic production of pharmaceuticals and maintains a good working relationship with the private drug companies. In fact, the pharmaceutical industry was specifically excluded from the "Zairianization" process announced in the President's 1973 annual policy speech. This exclusion can be viewed as recognition by the Government that: (1) it would be impossible to completely substitute domestic manufactured pharmaceutical products for imports at this time; and, (2) that the foreign companies producing drugs in the country at the present time should be supported in their efforts, rather than forced into leaving the country. In fact, in contrast to other industries, the operations of the pharmaceutical industry in Zaire have not been affected at all by the November 30, 1973 Zairianization decree. The development of a domestic drug industry can also produce important side-benefits. The resultant lower prices for drug supplies will not only release more financial resources for other national development priorities, but importantly, the new industries will provide a potentially expansive source of employment for the Zairian people.

### Traditional Medicine

Despite this broad spectrum of public and private health facilities, it is estimated that more than 75 percent of the population remain outside the formal health care delivery system. Thus, traditional medical practice, which is closely tied to the animistic and supernatural beliefs of the Zairian tribes, is still widely used, especially in the rural areas.

Any discussion of traditional medicine is meaningless without a basic understanding of the milieu in which it operates for in the rural areas of Zaire, indigenous medicine and culture are intricately interwoven.<sup>34</sup> To the extent that all illness and death are rooted in witchcraft and sorcery induced by wrongdoing on the part of the victim rather than physiological causes, traditional practice focused on the "curing" through a process of resolution of family feuds, personal jealousies, etc.

In the case of minor ailments, guérisseurs, or healers prescribe local medicines to relieve the physical symptoms of distress. Incantations and the consumption of village-grown herbs are encouraged to drive out the evil forces and thus return the "patient" to good health. If the illness continues over an extended period of time, the source of the problem -- the "witch" who has placed the curse -- is sought so that the wrongdoing can be reconciled and the hex thus ended.

Although drugs are used in the treatment of illnesses, no drug is considered to be effective solely because of its medicinal powers, but rather also due to interaction with supernatural forces which concomitantly attack the disease at its root -- the initial witchcraft. Further, due to guérisseurs' inherently limited knowledge of physiology, diseases, and thus medicines prescribed for their cure are determined by symptoms, such as fevers and chills, rather than causes such as malaria or parasites.

A formal study of traditional medicine in Zaire is currently under way by the National Office of Research and Development (ONRD).<sup>35</sup> Impetus for the study has come from current public opinion atmosphere throughout Zaire which is urging the immediate legalization of traditional medicine as a recognized form of health care. The study, which seeks to extend work done over the past two years by the biomedical research section, will determine the characteristics of traditional medicine, notably through identification of the anatomical and physiological conceptions of guérisseurs and how their practices vary between urban and rural areas. To this end, the study has five goals: (1) to establish objective data on the functioning of traditional medicine; (2) to collect all research on the subject undertaken to date; (3) to engage in a systematic collection of medicinal plants which will be studied under a collaborative agreement between the Faculty of Agronomy of UNAZA, the National Institute of Agricultural Research, and the Medical Research section of ONRD; (4) to effect cooperation between the nation's physicians and the guérisseurs in different villages; and, (5) ultimately to develop an objective idea of guérisseurs' work.

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<sup>34</sup> For a discussion of these health attitudes, see Chapter III.

<sup>35</sup> Office National de Recherche et Développement, Projet de Recherches sur la Médecine Traditionnelle du Zaire (Citoyen Ngwete).

The study will view traditional medicine practices in at least seven ethnic groups which together will represent the spectrum of cultural traditions of Zaire. The work of at least 12 healers will be followed over the course of one year to determine their form of diagnosis, therapeutic techniques, etc. At the same time, data will be collected on the socioeconomic characteristics of healers and their clients. The comprehensive study will be entirely financed by the ONRD.

Despite the fact that advanced nations have essentially condemned traditional medical practices, the Government of Zaire views the study as a potentially valuable complement to the international medical and pharmaceutical knowledge. Thus, as announced by the Zairian delegate to the 27th WHO Assembly in May 1974, the results of the study will be presented to the WHO.

#### HEALTH MANPOWER

##### Manpower Levels

Up until the time of national independence in 1960, the entire corps of doctors in the then Belgian Congo were foreigners. In fact, while numerous Zairian personnel participated in the provision of health care as nurses and other medical assistants, not even one trained Zairian doctor operated in the health system. Thus, with the disorder following independence and the massive exodus of trained health professionals, a serious vacuum was created in the manpower situation. In fact, in the immediate post-independence period it is estimated that only some 200 European doctors, about 150 national medical assistants, and approximately 1,000 national male nurses were available to provide for the medical needs of the rapidly growing population. With the medical situation of the country in complete chaos, the Secretary General of the United Nations sent out a massive appeal for medical assistance to the country from the developed nations. In response, over 150 doctors and nurses from some 25 countries under the auspices of the International Red Cross, the League of Red Cross societies, and the World Health Organization (WHO) arrived in the country to provide urgent medical care. Although the Red Cross organizations withdrew their personnel in June 1961, the WHO has continued to provide trained medical personnel for technical assistance to the country.

In contrast to the colonial period, in which health manpower levels were accurately recorded, current manpower statistics are varied and contradictory. In the absence of a national health manpower data collection system, accurate statistics on the number or distribution of physicians, nurses, and other health and health-related personnel in Zaire have been difficult to obtain.

A Department of Health manpower survey conducted in 1973 with WHO technical assistance is the only such survey conducted in the post-independence period. Comprehensive questionnaires were sent to each of the health regions requesting detailed information on all health personnel in that region. Logistical problems precluded processing of the data, however, until early 1975. The processing delay was attributed to lack of keypunching and computer facilities and more recently an extended waiting period for official Government permission to analyze the data.

Table 10

National Health Manpower Resources by Geographic Distribution and Nationality  
Republic of Zaire, December 31, 1973

<u>Manpower Category</u>	<u>Geographic Distribution</u>				<u>Nationality</u>		<u>Total</u>
	<u>Kinshasa</u>		<u>Balance of Nation</u>		<u>Zairian</u>	<u>Foreign</u>	
	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>			
Physicians	339	41.4	479	58.6	317	501	818
Medical Assistants	62	66.7	31	33.3	86	7	93
Dentists	21	77.8	6	22.2	4	23	27
Dental Assistants	3	60.0	2	40.0	5	—	5
Trained Midwives	224	64.7	122	35.3	229	117	346
Auxiliary Midwives	205	25.0	684	75.0	889	—	889
Graduate Nurses	574	29.4	1380	70.6	638	1316	1954
Auxiliary Nurses	884	12.1	6447	87.9	7192	139	7331
Pharmacists	95	72.5	36	27.5	*	*	131
Pharmaceutical Preparers	19	46.3	22	53.7	37	4	41
Veterinarians	—	—	30	100.0	*	*	30
Assistant Veterinarians	—	—	108	100.0	*	*	108
Sanitation Technicians	10	100.0	—	0.0	10	—	10
Environmental Engineers	37	34.9	69	65.1	104	2	106
Auxiliary Technicians	2	3.4	57	96.6	59	—	59
Physiotherapists	29	100.0	—	0.0	24	5	29
Laboratory Technicians	54	70.1	23	29.9	55	22	77
Radiological Technicians	30	29.7	81	70.3	*	*	101
Other Scientific Specialties	—	—	4	100.0	2	2	4
Other Paramedical Technicians	15	16.5	76	83.5	83	8	91
Health Aides	820	70.1	349	29.9	1169	—	1169

\* denotes nationality unknown

Note: Figures include all health personnel in both the public and private sectors. For a disaggregation by public and private sector, see Appendices IV and V.

Source: Department of Health/World Health Organization, Health Manpower Survey, December 31, 1973. (Unpublished report)

Table 11  
Personnel Per Population Ratios for Select Health Manpower Categories  
Zaire, December 1973

<u>Manpower Category</u>	<u>Total Number</u>	<u>Number per 10,000 Population</u>	<u>Number of Population per Each Personnel</u>
Physicians	818	0.38	26,650
Medical Assistants	93	0.04	234,409
Dentists	27	0.01	807,407
Trained Midwives	346	0.16	63,006
Auxiliary Midwives	889	0.41	24,522
Graduate Nurses	1954	0.90	11,157
Auxiliary Nurses	7331	3.36	2,974
Pharmacists	131	0.06	166,412
Sanitation Engineers	10	0.00	2,180,000
Laboratory Technicians	77	0.04	283,117
Health Aides	1169	0.54	18,648

Source: Calculations are based on manpower levels reported in the Department of Health/World Health Organization Health Manpower Survey of December 31, 1973 and an estimated population of 21.8 million persons.

The reliability of the data, outlined in Table 10, is difficult to assess. Clearly, several infrastructural problems bring accuracy into serious question. The sale of false health diplomas by numerous non-official groups working out of Kinshasa has not only endangered patients by the possibility of being treated by untrained personnel, but has severely inflated actual health personnel levels. In 1974 alone it is estimated that over 500 nurses' diplomas were bought in the capital. Further, it should be cautioned that these statistics reflect estimates of the total number of health personnel in the country as of December 31, 1973, without regard for the important qualitative factors such as level of training, quality of medical education, whether the personnel are actually practicing in the health sector, or importantly, their willingness or ability to provide quality health care to the acutely ill. Another principal data limitation is that, as Table 10 notes, information on the precise distribution of health personnel is limited to Kinshasa and the balance of the nation. Given the fact that less than five percent of the total population reside in Kinshasa, exact geographic availability of personnel for providing health care to the remaining 95 percent is not available. Nevertheless, the data represent the most current overview of the national health manpower situation.

Examining the report, several salient features emerge. At least in terms of physicians, the country has been moving markedly toward regaining the population to personnel ratio reported in existence prior to independence. In contrast to a medical density of approximately one physician per 20,000 population in the colonial period, it is currently reported that there are 818 doctors in Zaire, or about one physician per 27,000 population. Moreover, whereas there were no Zairian physicians prior to 1960, Zairians now comprise more than one-third -- 38.8 percent -- of national physician levels. And, the overwhelming majority are working in the public sector. While the upward trend in physician/population ratios is encouraging, the number of doctors remains extremely low relative to Zaire's large population. The current medical density of 0.38 physicians per 10,000 population is only approximately one-fourth of the average for the African continent. The shortage of physicians is highlighted still further by the fact that as noted in Table 12, the physician/population ratio for Africa of 1.36/10,000 is the lowest ratio worldwide.

Table 12

Worldwide Physician/Population Ratios for 1970

<u>Region of the World</u>	<u>Number of Physicians per 10,000 Population</u>
Africa	1.36
Asia	2.83
Europe	14.90
Latin America	6.54
Global	7.90

Note: Although the ratios were derived from data with known statistical shortcomings, they are nevertheless considered to be an acceptable approximation of the actual physician/population situation.

Source: WHO Chronicle, "Trends in Medical Manpower," Vol. 29, February 1975, World Health Organization, Geneva, pp. 46-48.

Maldistribution of physicians between geographic regions precludes the extension of the national health care delivery system, at least in the short term. Approximately two-fifths of the total physicians in Zaire -- 339 -- are concentrated in the capital city of Kinshasa. While the exact distribution of the balance is not known, it is estimated that they are somewhat unevenly distributed over the other eight regions of the country, with greater concentrations in the regional capitals. A large cluster is in Shaba, notably in Lubumbashi, serving health facilities for miners working for GECAMINES, the national copper company. This substantial concentration of doctors in urban areas is responsible for significant inequalities in access to medical care. The rural areas, in which 74 percent of the population reside, have almost no physician-provided care. Further, despite inroads in nationalizing the health manpower base and constantly growing numbers of Zairian physicians, foreign physicians continue to comprise the overwhelming majority -- over 60 percent -- of doctors in the nation. Over half of these -- 272 -- were working in the public sector.

There have been some recent challenges to the traditional primacy of European physicians practicing in Zaire. As of mid-1970, the right of all foreign nationals to practice medicine in Zaire became subject to approval of special committees set up by the Department of Health. Foreign doctors, who form the majority of physicians in the country, were not represented on the board. All doctors practicing were required to submit requests for registration, copies of their diplomas, police and tax certificates, and fingerprints. They were also required to pay registration fees and contributions. Despite their acquiescence to the process, many foreign doctors were not formally accredited. Thus, many of these doctors continue to work although their private practices may be closed by the Department of Health at any time. Such suspension of practice has reportedly happened at least twice to all foreign and West African doctors working in Kinshasa.<sup>36</sup>

"Zairianization" of the national health corps is essential if the national goal of decreased dependence on foreign technical assistance outlined in the 1973 Annual Policy Speech of the President is to be achieved. Nevertheless, the Government of Zaire and its Department of Health will likely continue to utilize the cadre of foreign physicians until adequate numbers of Zairian nationals have been properly trained to replace them.

Serious shortages exist in all complementary health manpower categories, as highlighted in Tables 10 and 11. While the number of physicians per population served has shown steady improvement over the past several years, medical assistants to support physician activities are still scarce, with approximately one medical assistant for every eight physicians in the health sector. There are approximately 2.4 graduate nurses per physician and 9.0 auxiliary nurses per physician.

While in relative terms, the ratio of nurses to physicians is generally adequate, in absolute terms the number of nurses is still small given the substantial health needs of 22 million people. As noted in Table 10, in contrast to physicians who are heavily concentrated in Kinshasa, the vast majority of nurses are located outside of the capital. In fact, in the absence of sufficient numbers of physicians to serve rural areas, nurses have major responsibility for operating the rural health care delivery system. At the same time, however, their largely inadequate health training, discussed below, precludes their optimum utilization.

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<sup>36</sup> Editorial, British Medical Journal, 16 December 1972, pp. 670-71.

The manpower situation is especially critical with regard to two key personnel categories - dentists and sanitary engineers. With a national average of just one dentist to serve approximately 800,000 people, dental care in the Republic of Zaire is almost nonexistent. The poor dental health of the population is compounded by the lack of health education on proper dental hygiene in the school curriculum so that children are not taught proper care of their teeth. Importantly, of the 27 dentists in the sector, 23 or 85.2 percent are foreign nationals. Given the low enrollments in dental programs in the National University, the nation will continue to have to rely on these few foreign dentists to provide for the dental needs, at least through the foreseeable future.

There are only 10 sanitation engineers, all of whom are practicing in Kinshasa. The lack of trained sanitation engineers remains a major technical constraint in expanding the national water and sewerage systems, as is discussed in the Environmental Sanitation section of Chapter III.

The shortage of these various trained health manpower categories remains one of the major impediments to extending the national health care delivery system. And, the lack of an adequate national health manpower training system is the principal obstacle to alleviating this situation at least in the short term.

#### Medical Education

##### Medical School

The nation's medical education is concentrated at the National University of Zaire (UNAZA) in Kinshasa, which holds the faculties of Medicine, Pharmacy, Dentistry and Nursing. Only veterinary medicine is separate, with its faculty located at UNAZA's Lubumbashi campus.

The history of the Medical Faculty dates to 1956 when the then Lovanium University of Kinshasa opened a Medical school as a branch of the University of Louvain in Belgium. While the main preparation of doctors was at Lovanium in Kinshasa, students could attend the first two-year introductory level medical programs at Kisangani and Lubumbashi campuses as well. In 1971, the National Government, as part of its overall attempt to pull together and redirect the nation's superior education system, centralized all medical training at the Kinshasa campus and concurrently significantly weakened ties of the Medical Faculty with its "parent" Belgian university. The medical school encompasses three large buildings on the UNAZA Kinshasa campus, all of which have air-conditioned lecture rooms and laboratories. Operationally, the school is divided into five departments: surgery, medicine, pharmacy, public health, and basic sciences.

The library, located on the second floor of the main medical school building, is small but includes a large selection of current journals, notably from the United States and Europe. Although an estimated 70 percent of the collection is in English and three years of medical English language training is a mandatory part of the medical curriculum, very few of the students actually do speak English, and it can be assumed that the vast majority have a difficult time at best reading the library materials available to them.

The predominant share of the cost of medical education is carried by the National Government. An estimated 90 percent of the medical students receive some form of scholarship or Government assistance in studying. Tuition is extremely low -- Z8 or \$16 per year for Zairians, and double that amount, or \$32 for foreign nationals. Lodging amounts to approximately Z5 per month and food Z34 per month, the latter of which is almost always provided to the student by the Government.

The National Government also provides numerous scholarships for medical study abroad. Unlike many developing countries, however, there is no real problem of a "brain drain" as all students are required by law to return to Zaire upon completion of overseas studies. The failure of the Government to place these persons in positions in which their newly acquired skills can be utilized, has resulted in the scholarships achieving less than their cost would warrant.

The problems confronting medical education range from the basic selection process itself to finances, and the type and quality of education received. The university admission procedure is based on a national quota system in which specific admission levels are set for each region, largely through political influence. No standard admission or entrance examination is required, which would permit an evaluation of the student's aptitude for advanced study in general or medical studies in particular. Further, the student selection is made by the university, not the medical school. Given the wide variation in the quality of secondary education from one region to another, with notable deficiencies nationwide in mathematics and science preparation, the quota system does not permit assurance that only the most qualified students will be admitted. In fact, many academically excellent students from areas with low quotas are never afforded the opportunity to study medicine or other related health fields, while conversely, numerous students with poor secondary education records yet from high quota areas and/or political influence are enrolled.

Once enrolled in the Medical School, retention of a student is relatively assured, regardless of academic progress, because of resistance by university officials to fail registered students. Given the generally poor secondary school preparation of the typical entering student, the Medical School has a high retention rate. In the 1973-74 academic year, for instance, 45 percent of the total entering class passed into the second year, and by the time the end of the second year had been reached, 95 percent continued.

The large size of the first-year student enrollment, coupled with the high retention rates once enrolled, have resulted in an excessive number of medical students relative to the teaching and physical capacity of the Medical School. In the 1973-74 academic year, there were 1,655 students in the Medical Faculty with 464 students enrolled in the first-year medical program alone. (Women comprise approximately 20 percent of new students annually.) While an increase in the number of doctors in the nation is imperative for extension of the health care delivery system, enrollments have in fact been augmented without consideration of their effect on the qualitative aspects of medical education. The resultant excessive increment in the total number of students per class has had an extremely negative impact on the type of education UNAZA can provide them.

The Zairianization process has left its mark on the Medical School in the form of a "brain drain" of faculty. Already faced with a severe shortage of Zairian nationals for teaching even many of its most basic courses, the Faculty staffing problems were compounded when many such staff left in the last few years to enter more lucrative jobs in private industry vacated by foreigners, or pick up foreign businesses abandoned by expatriates. Thus, despite stated goals of Zairianizing the medical faculty, the School continues to be heavily dependent on foreign faculty members, most notably those furnished by WHO.

Table 13

Student Enrollment in Faculty of Medicine and  
Pharmacy, National University of Zaire  
Academic Year 1973-1974

<u>Year of Student</u>	<u>Number</u>
1st year (medicine, pharmacy, dentistry)	464
2nd year medicine	268
3rd year medicine	272
1st doctorate <sup>§</sup>	152
2nd doctorate <sup>§</sup>	157
3rd doctorate <sup>§</sup>	101
4th doctorate <sup>§</sup>	50
2nd year pharmacy	43
3rd year pharmacy	36
4th year pharmacy	56
5th year pharmacy	45
2nd year dentistry	4
3rd year dentistry	5
5th year dentistry	2
TOTAL	1,655

§ Reflects students enrolled in former seven-year medical program. With 1971 university reform, medical studies was reduced to six years.

Source: UNAZA Faculty of Medicine

In terms of sheer faculty-to-student ratios, at least one indicator of the probable quality of education, there were 158 faculty members as of the 1972-73 academic year, in contrast to over 1,500 total students, or a ratio of about 1:10. The faculty included 106 Zairians and 52 foreign nationals. These figures do not reflect the important qualitative aspects; for instance, of the 106 Zairian faculty, 51 were physicians' assistants, not doctors, and an additional 18 were non-medical assistants.

The faculty teach a total of 26 diverse areas of medicine in the basic curriculum, ranging from such traditional courses as internal medicine, anatomy, biochemistry, microbiology, and surgery, to parasitology and public health.

A report by a study group from the Rockefeller Foundation reviewing national medical education practices suggested that the high student-faculty ratio could be partially ameliorated through the introduction of alternative teaching techniques, including self-instructional programmed texts and/or audio-visual aids such as closed circuit television.<sup>37</sup> The adoption of such innovative approaches to medical education has been minimal to date.

Overall, the approximately 2100 million, or \$200 million annual budget of the Medical School has been insufficient to cover the needs of the more than 1,700 students and faculty members.<sup>38</sup> Scarce financial resources which have severely limited purchases of essential medical supplies to complement course work, have also negatively affected the quality of medical education. As the 1974-75 academic term began, several main classrooms remained closed because there were no light bulbs available. Such basic equipment as microscopes and test tubes, are in extremely small supply, and two to three-month waiting periods for requisitioned supplies are not uncommon.

The dire shortage of laboratory equipment for research work at the Medical School has effectively precluded the possibility of extending medical education beyond the basic six-year period. Low budgetary allocations and consequently lack of books, etc., has also severely hampered the possibility of developing in-service training courses to upgrade doctors' skills or provide them with a means for acquiring information on the present state of the art in the medical profession.

In 1971, a major reform of the medical curriculum was undertaken. The medical program was substantially reformed from the traditional seven-year course instituted by the Belgians which included six years of theoretical training and one year of clinical practice, to a new six-year curriculum with five years' theoretical/one year practical study mix. Because of this change, there are currently two separate medical classes in each of the last three years of study. The last group from the old seven-year program will graduate in 1976, at which time all students will be enrolled in the same program. The pharmacy and dental programs require a total of five years of study. For all three programs, the first year of study is taken together and devoted to a combination of general studies and basic medical orientation courses -- medical psychology, African sociology, civilization and development, introduction to public health, physics, chemistry, biochemistry, general biology, mathematics and statistics, and medical English. The ratio of theoretical to practical work is approximately 2:1, with 480 hours theory and 210 hours devoted to clinical work.

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<sup>37</sup> Rockefeller Foundation. The Role of the National University of Zaire, 1973.

<sup>38</sup> The \$200 million budget does not include allocations for operation/maintenance of the University hospital, which is budgeted separately.

Despite these significant changes, the curriculum continues to reflect traditional European approaches to medical education which are not really applicable to the health problems of Zaire. Although the ratios of theoretical to practical teaching were improved, theoretical lectures continue to form the core of the curriculum. There is little actual clinical work until rather late in the educational process, and then only in limited scope and responsibility. The incorporation of required courses in public health and parasitology are notable improvements to the course mix, but the major emphasis of teaching favors medical practice in urban rather than rural areas, and private rather than public health facilities. The current course structure also fails to incorporate course work which would lead to the development of adequate ancillary managerial, administrative, supervisory and evaluative skills, all of which are critical to the performance of doctors as leaders of community health teams -- a role that they have been increasingly called upon to play.

The existing program structure also allows for numerous inconsistencies in rational and integrated timing of course work. The physiotherapy course, which outlines physical treatment methods, is given in the third year of study, before students have studied the diseases which result in the need for physiotherapy. Further, gynecology, obstetrics, stomatology and ear-nose-throat have been incorporated into the fourth year program, despite the fact that at that point in time, the students will not yet have studied basic internal medicine and surgery, or other numerous diseases such as infectious and endocrine diseases, normally taught in the last year of study, which can have profound effects upon the above noted areas of the fourth year of study.

At present, practical teaching takes two forms: clinical courses and training courses. The clinical courses are essentially those traditionally conducted at the bed of the ill person under the direct supervision of the senior staff doctors. Classically, such activities are in four phases: the professor questions the patient in front of the students to teach proper interrogation techniques; he examines the patient, permitting the students to participate in the exam in order to discover clues as to the nature of the illness; the professor requires that students enumerate the different laboratory tests necessary to confirm the diagnosis, discussing the exact or probable cause of morbidity; and, the professor and the students discuss the various methods of treatment available. This clinical practice is critical to forming the standards of procedure which the new doctor must follow daily to assure a correct diagnosis and select the most beneficial treatment. This method of teaching, to achieve these ends, requires a small number of students so that each can participate in the examination and diagnosis/treatment process with the professor. Clearly, the high enrollment precludes such a situation, and thus adversely affects the quality of medical education.

The University hospital and outpatient clinic is located one block from the Medical School. The hospital is a modern, 450-bed facility with excellent clinical laboratories and X-ray facilities and a cardiac catheterization laboratory. The senior staff is largely comprised of European expatriates, although the number of Zairian personnel has been increasing significantly in recent years. Until the past few years, it was the major base for students' clinical practice. The excessive number of students enrolled in the Medical Faculty in 1974-75 has resulted in over 500 students requiring practical assignment in the university, the hospital, and its clinics.

Enormous difficulties are therefore foreseen in realizing clinical practice in the 1974-75 academic year. It is impossible for over 400 students to examine an ear or a tooth or give a physical examination. If the group were to be divided into smaller units, it would require the full time of the faculty each week just to provide the practical course work, leaving to relative neglect the treatment of hospitalized patients or conduct of specialized consultations with which they are also charged.

In an attempt to ameliorate the strains of providing clinical practice for all the enrolled students, requirements for participation in "stages" has been introduced. In addition to obligatory practical field work during the annual vacation periods, the students are now required to complete 60 hours of practical work in medicine and pediatrics in the fourth year of study and 60 hours in surgery and gynecology-obstetrics in the fifth year of study. The health personnel to supervise these "stages" as well as the actual work which students should do during this practical exercise have not, however, been clearly defined.

In addition, emphasis has been placed on the increased exposure of the medical students to national health service activities outside the University and its clinic setting. Students are currently doing rotational assignments through the various services of numerous national health facilities including the Mama Yemo Hospital complex in Kinshasa and a broad spectrum of both urban and rural public health activities.

Overall, the reduction in the total number of students in the Faculty of Medicine and Pharmacy is the most essential task, and will have the most rapid effect in ameliorating the currently poor quality of medical education. The introduction of newer teaching methods utilizing audio-visual aids will serve to reduce the pressure on an already overtaxed faculty. Ultimately, formation of teaching assistants in the various sub-specialties would be beneficial to absorb some of the teaching load.

Thus, despite the pragmatic principles on which the reform was based, the majority of doctors coming out of the National University have had only a minimum of practical training, especially with regard to surgical procedure. Most have never even participated in a surgical intervention, remaining solely observers. This dire lack of practical experience is especially critical when viewed in light of the fact that many have taken over entire responsibility for a hospital's operations in the interior of the country upon graduation, with its entire core of not only medical and surgical problems, but administrative, logistic, personnel management, preventive medicine and public relations responsibilities as well.

#### Nurses' Training

Formal training programs currently exist in Zaire for the following complementary health personnel categories: male and female graduate and auxiliary nurses, laboratory technicians, radiology technicians, sanitary engineers, and hospital administrators. The shortage of trained nursing personnel to complement physicians is the most serious national health manpower problem. Historically, throughout the numerous Congo tribes, the female curer in the local village was the principal health care provider. With colonization by Belgium, and the establishment of an extensive national health care delivery system, male physicians' assistants replaced the female curer in the health structure. The male-dominated health infrastructure was reinforced by the fact that the Belgian educational system restricted almost all of secondary education schools to boys, and the entire university enrollment was comprised of males. Since education was a requisite to working in the health sector, females were thus excluded.

The present disincentives to entering the nursing profession in Zaire are great. The profession as a whole has no prestige within existing societal values. The typical salary of approximately 25Z or \$50 per month, is about equal to that of the average laborer, despite the fact that nurses must attend numerous years of schooling to qualify for their positions. Opportunities for advancement are scarce and tied to stringent academic requirements. These disincentives have largely served to reorient the profession to women, as males enter other more prestigious fields. Even among females, however, there has been an increasing tendency to leave nursing and enter the more profitable area of private business.

Because of the low status afforded nurses in the health sector, the vast majority entering the nursing profession, whether at the auxiliary or graduate level, have been coming from the lower classes. The low quality educational system and weak academic environment of their home villages has thus resulted in the typical nursing school candidate having extremely poor academic preparation for study. In addition, the nursing curriculum established by the Department of Education is very theoretical and academically demanding of extensive study. In such a setting, the failure rate in the diverse nursing programs has been extremely high, and the actual number of graduates per year has actually been decreasing. In contrast to the 1967-68 academic year in which there were a total of 144 graduates from 12 diploma nursing schools, there were only 66 graduates in the 1970-71 academic year.<sup>39</sup> This slowdown in the number of nurses produced by the medical education system each year, coupled with a rapidly expanding population, has placed a severe strain on the health sector in staffing facilities. In fact, many new facilities constructed by the National Government in the rural areas remain inoperative because of insufficient numbers of health personnel, most notably nurses.

The present nursing education is based on a three-level nursing structure -- A-1 or graduate nurse, A-2 or diploma nurse, and A-3 or auxiliary nurse. The principal national A-1 graduate nurse education program is conducted at the Nursing School of the National University of Zaire (UNAZA) Kinshasa campus. All nursing students must meet the general university admission requirement of having successfully completed full secondary education program prior to enrollment, and then attend a complete four-year nursing program. The Nursing School, nevertheless, has been described as the "poor stepchild" of the university. It has not gained any respect within the University academic community, and its students are not granted any university credit for their four years of study. The faculty, the majority of whom are European, have developed an essentially Western oriented theoretically based curriculum which provides inadequate time for practical nursing experience. Students' clinical work is centered at the University clinic on campus. In the 1973-74 academic year at the UNAZA Kinshasa campus, the A-2 level students were distributed as follows: 86 in the first year, 44 in the second year, and 34 in the third year of the program. The graduate nurse program included 54 students in the first year, 44 in the second, 16 in the third, and 14 in the fourth year of A-1 study.

The Protestant missions alone operate 14 schools for training nurses and auxiliaries, nine of which are accredited by the Department of Education. Two of the 14 are at the registered nurse, A-1 level, and the remaining 12 at the practical A-2 and A-3 levels. Men comprise 50 percent or more of each of the classes. In contrast, the Catholic missions only train women. Five programs are of four years' duration each to train A-1 level, and 11 programs are of two years' duration at the A-3 level. In addition, the Catholic missions headquarters office, CARITAS, supports a four-month course for expatriate A-1 level nurses in tropical medicine offered at the National Nursing School at the National University of Zaire in Kinshasa.<sup>40</sup>

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<sup>39</sup> Rockefeller report.

<sup>40</sup> Medical Survey of Zaire, Walter Reed, 1972. In light of the fact that the Catholic Relief Services closed its Zaire office, the continuation of support for this course is uncertain.

According to regulations set by the Department of Education, all candidates for A-2 nursing training must have a minimum of three years of secondary education prior to admission. The standard three-year curriculum is heavily concentrated on general education courses and all students receive a secondary education equivalency diploma upon graduation. The focus on general education courses severely limits the time for actual nursing training or clinical practice. Most of the education consists of lectures and rote memory-based examinations rather than a problem-oriented approach to medical problems.

Nurses who have completed A-2 training have relatively no mobility to A-1 level without completing the entire A-1 program, despite the fact that many have already gained valuable practical experience working in the health sector, and could theoretically fill in academic deficiencies in certain key areas in a year or less. Even at the UNAZA Kinshasa campus, no formal lines of communication exist between the A-1 graduate and A-2 diploma nursing schools. A program operated by the Danish Red Cross Hospital to prepare A-2 nurses for A-1 status is not approved by the Department of Education. Most nurses find it economically unfeasible to give up their jobs and salaries for four years to complete graduate nurse education in Kinshasa. Thus, they either become locked into their current positions, or more commonly leave nursing fields for other more lucrative employment outside the health sector.

In the last year of both the A-1 and A-2 programs, students choose one of three elective areas for concentration -- hospital nursing, public health, or midwifery. The latter, because of cultural considerations, is limited to female students.

Numerous schools and training programs exist throughout Zaire for the A-3 nursing level. In the absence of Government regulations prohibiting the establishment of such schools without meeting specific requirements, they have proliferated, notably among organizations seeing them as business ventures and with no thought for actual nursing education needs. The vast majority are not accredited by the Department of Education, but continue to operate. Thus, although a prescribed curriculum for A-3 training has been set by the Department of Education, in actuality, the content and quality of training vary markedly according to the physical and human resources available at each such school.

In general, the only admission requirement is that students have completed primary school, or through the eighth year of study. The duration of study for an A-3 certificate is two years. The diversity in curriculum makes it impossible to speak of an A-3 standard curriculum *per se*. In many instances, in fact, absolutely no actual nursing training is included in the two years of study. It is, therefore, not uncommon to hire certified A-3 nurses only to find that they do not know even such basic nursing procedures as measurement of temperature, pulse, and blood pressure. The lack of preparation in nursing, especially at the A-3 level, places a heavy burden on the other professional staff of the hospital, who must devote inordinate amounts of time to teaching and supervision which should have been acquired in the nursing school itself.

Overall, existing nursing education programs reflect little relationship or thought to the utilization of the three levels in the health sector. The focus has been largely on the preparation of nurses to do delegated functions, basically in the area of curative care. There is no emphasis on initiative or sense of professionalism inherent in the program. Curriculum content generally includes no basic medical education which would permit a nurse to diagnose or

treat a patient without a doctor's supervision, despite the fact that many nurses, even at the A-3 level, are the only health personnel at a given health facility. This is especially true in the case of rural dispensaries which are often entirely operated by one A-3 auxiliary nurse, and must handle the entire health needs of villages within a substantial radius.

Throughout the nursing education programs, there is a serious shortage of qualified teachers to imbue managerial or leadership skills. Once they have completed studies, there are no post-graduate programs to assist graduate nurses in keeping up with the current state of the art, or qualify them for additional responsibilities as nurse clinicians or practitioners as are now operational in several other countries.

A report of a consultative group from the Rockefeller Foundation suggested that throughout the area of nursing training, the Government of Zaire establish wider incentives to attract and retain qualified personnel.<sup>41</sup> This will have to include not only the creation of an improved image of the nursing profession as a whole within the health community, but importantly, recognition and encouragement of quality performance by nursing personnel through relaxed career mobility. Institutional changes to permit the possibility of horizontal movement from one nursing level to another without the current requirements of several additional years of training will be a positive step in this direction.

#### Other Health Personnel Training

Food sanitation inspectors are presently trained at the Institute d'Enseignement Médical in Kinshasa, which to date has graduated 140 students. The health sector presently includes 106 sanitation technicians, many graduates of this Institute. The teaching program is generally considered to provide less than adequate preparation in food sanitation. Its weakness can be attributed to the fact that, as in the other areas of health manpower training, the program is under the control of the Department of Education with no coordination with the Department of Health.

Despite their important supportive role in the health sector, until the last few years there were no formal training programs in the country for laboratory technicians. Current training is centered at the Kananga-Tshikadji laboratory technician school and at Kimpese. Both schools receive technical assistance from Peace Corps volunteers.

Up until January 1973, hospital administrators were trained at the Medical Training Institute of Kinshasa. Between 1968 and 1973 this Institute trained 137 hospital administrators. In 1973, the National Government, in collaboration with the World Health Organization, established an Institute of Hospital Techniques and Administrative Sciences to train hospital administrators at the National University of Zaire. Because of the lack of teachers in this area, the degree program in hospital administration has been temporarily discontinued and students are currently studying in a three-year diploma program. As of FY 1973, there were 73 students in the first year and 28 students in the second year of this diploma program.

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<sup>41</sup> Rockefeller Foundation. op. cit.

It is hoped that the dental health training center set up at Mama Yemo Hospital in Kinshasa with WHO assistance will provide a core of dental assistants to ameliorate the poor dental health of the population. As of 1973, eight trained dental assistants were running a dental clinic at Mama Yemo, and eight others were being trained in school dental health.

In addition to training afforded by these in-country health professional schools, the majority of which have received substantial technical assistance from WHO, there is an active WHO-funded fellowship program for Zairian nationals to study abroad. In 1974, WHO provided two one-year fellowships for study in public health in France; one eight-month fellowship for study in vaccine production to be carried out in Belgium, France and Guinea; two three-month health planning fellowships for study in France; and, a two-year fellowship in the area of pediatrics for study in France.

The key problem in health manpower education has been that until formation of the National Health Council in 1974, all such education has been under the administrative control of the Department of Education. With no coordination or even minimal input by the Department of Health on curriculum requirements, it is not surprising that overall medical education programs had little relevance to the health needs of Zaire. From the Medical Faculty of UNAZA to the diverse public and private health technicians and paramedical training schools, emphasis was on theoretical lectures, with practical training held to a minimum, if existent at all.

The provision of high quality health manpower education was further impeded by the fact that many of the training program did not even meet the limited criteria set by the Department of Education. In fact, in some cases, as President Mobutu pointed out in his 1973 policy speech, complete disorder in health training reigns. Given the tremendous variation in the quality of training in the various health professional schools nationwide, paper credentials remain an unreliable means of assessing the capability of graduates. Throughout the various programs, particularly at the paramedical level, serious gaps exist in the curriculum, particularly in the area of disease prevention, health promotion, public health education, and family planning -- all of which are essential components of training for personnel working in the health sector of Zaire. Clearly, the setting of uniform standards of education are critically needed to reduce the serious inefficiencies existent in a health delivery system operating with a cadre of personnel with widely disparate preparation and thus skill in patient care.

Further, examining the structure of the numerous schools and training programs, there is a significant underutilization of existing health manpower training resources to obtain maximum benefit in the education of personnel. Recently instituted programs to rotate UNAZA's medical students through health facilities other than UNAZA Hospital and clinic facilities for clinical practice are encouraging trends. Nevertheless, much potential remains unexploited in utilizing the substantial number of mission, private industry, FOMEKO, and Department of Health facilities as a forum for teaching practical health concepts at all health manpower training levels.

## Overview

In summary, examining the health infrastructure as a whole, several major problems can be identified. There has been a critical lack of effective national, regional and local mechanisms to coordinate or integrate activities of the numerous public and private organizations providing inputs to the health sector. In both facilities and manpower, there has been a severe maldistribution of resources favoring Kinshasa and the other regional capitals, to the relative exclusion of the rural areas in which the majority of Zairians live. At the same time, in the urban areas, severe shortages of health manpower effectively hamper extension of the health care delivery system. Further, the lack of relevant curricula in the nation's health training programs has precluded the optimum use of the various health manpower levels in the various health programs. Present wage scales also have an adverse effect on the quality of health manpower, especially in the public sector. The salary differentials not only between public and private, but within the public sector itself, are great. FONECO pays on the average almost double the salaries to its staff as the Department of Health. Differentials based on geographic location encourage concentration of personnel in the major cities to the relative neglect of the more populous rural areas. The imbalance in salaries between the public and private sectors results in the public sector's loss of the most qualified and highly motivated personnel. Even at Mama Yemo Hospital at Kinshasa, which is clearly viewed as the model hospital for the nation as a whole, the average length of employment of the typical nurse is just three months. Given the high cost of in-service training and orientation this high turnover rate exacts a high operating cost on the public health facilities. The creation of the National Health Council can therefore be viewed as holding vast potential for pulling the sector together. The centralization of policy-making and planning in this body will provide leadership missing to date and at the same time ensure optimization of scarce health resources. Further, its control over medical/health education programs will provide an opportunity to reorient health manpower training so that it is more in line with the needs of the health sector. Clearly, its success will be dependent on the ability to obtain financial, technical, and human resources adequate for administering a health sector which will meet the needs of the 22 million Zairians.



## VII. NATIONAL HEALTH AND DEVELOPMENT PLANNING

### The Setting for Planning

The Government of Zaire has traditionally attached relatively low priority to national planning. Thus, in contrast to most African countries, since independence Zaire has not formulated an official national development plan, nor plans for the various sectors, including health. While a variety of planning organizations were established in the post-independence period, the Government's decision-making process has worked largely outside them.

In the absence of plans, national policies and priorities have been relatively unclear. Further, the absence of official support of general planning activities has notably led to an overall lack of integration of such interrelated national activities as agriculture and health. The existing mode of operations which concentrates on each Department basically setting programs independently has, on the national level, resulted in a fragmentation of resources for the development process. Importantly, the Government has been unable to see the broad configuration of national problems or identify integrated approaches to dealing with them.

Faced with a generally slow development process over the last decade, and mounting problems throughout the agriculture, transportation, education and health sectors, President Mobutu announced in his 1973 policy speech that these sectors were to be the four Government of Zaire priority development areas. In support of this prioritization of development goals, he announced in 1974 plans to strengthen national planning activities. The National Planning Office -- Service du Plan -- was placed directly within the Office of the President, or significantly, at the executive level. Further, President Mobutu adopted the title of Minister of Planning. The formulation of a National Development Plan is now viewed by the National Government as critical to setting action programs for accelerating improvements in these key sectors and at the same time for demonstrating the viability of the Government, critical for attracting loans and assistance from foreign governments and international lending institutions.

Impetus to the Service du Plan in carrying out its planning functions was sparked by the assignment of an eight-man team of experts from the World Bank.<sup>1</sup> This team is to serve as a catalyst for building a "spirit" for, and extending and upgrading the total, planning process within the Government. Their work, which began in mid-August 1974, is still in the preliminary stages. Nevertheless, several Governmental departments are already writing plans and outlining projects to implement them. In all of these activities, it is envisioned that the World Bank group will play an essentially coordinative role, although in actuality it will have to provide more structured guidance to several departments which have no planning capabilities. The United Nations Development Program (UNDP) will provide an input of \$900,000 over the 1974-76 period to these Service du Plan functions and views the financing of the team as its most important project in the country to date in terms of its potential for providing a firm foundation for the development process. The Service du Plan will undertake the funding and guidance of surveys to gather baseline data essential for the planning process but will not conduct surveys itself.

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<sup>1</sup> This planning team has no formal, official ties with the World Bank mission in Zaire; rather, it is an independent group charged with this special planning consultation task.

While the formal structure for establishing a planning capability now exists, the lack of a viable national data collection system remains a major impediment to effective planning activities. Prior to independence, the Belgians operated a sophisticated statistical reporting system which constantly keyed Government leaders to changes in all sectors. The failure of the colonial government to train an indigenous core of statisticians, coupled with the mass exodus of expatriate demographers, statisticians, etc., led to a serious void in national information.

The current statistical gathering process on a national level is centered in two organizations -- the Department of Health and the National Institute of Statistics. A Civil Registration Department within the Department of Health is responsible for issuing identity cards to all Zairians in which all family births, deaths, divorces and marriages are recorded. The serious shortage of trained manpower and adequate funding, however, have effectively precluded effective operation of the Civil Registry and in fact, records are partial at best.

To date, the National Statistical Institute within the National Office of Research and Development, Office of the President, has conducted several surveys, the latest of which were eleven socio-demographic city studies. As with the Department of Health, however, manpower and financial shortages severely limit the Institute's statistical capability.

Several other Departments of the National Government have been assigned responsibility for data gathering in their particular area despite the fact that they do not have the institutional capability to conduct, process, or evaluate statistical information. Overall, there is a critical need for centralization of the national data collection process in one organization, such as the National Statistical Institute, which would be provided sufficient human and financial resources by the Government to assure availability of accurate and timely statistics on the various sectors.

The most encouraging trend in improving the national statistical data gathering and evaluation process to date clearly is the establishment of a separate Demographic Department in the Faculty of Economics of the National University of Zaire (UNAZA) Kinshasa campus. The program is staffed by three professors, six associates and has a five-year operating budget of 7322,000 or \$643,000 at the present exchange rate. Currently 15 students are enrolled in the program. The new Department head, a Ph.D., trained Jesuit Belgian priest, also works closely with the National Institute of Statistics. This duality of roles should provide an ideal avenue for academic exchange between the university teaching and research activities, and the actual development and execution of programs for national statistical gathering.

## Health Policies and Priorities

Traditionally, health planning in Zaire per se has been nonexistent. Government actions were largely confined to the issuance of generalized statements about the need to ameliorate poor health conditions. Such statements commonly contained no programmatic recommendations for achieving these broad objectives. Even with greater Governmental attention to the concept of planning, however, such activities have been seriously hampered by the lack of even a small core of basic information essential for assessing the current health situation. Morbidity and mortality information is scarce, incomplete and largely unreliable. The absence of accurate, timely information on the health infrastructure including comprehensive manpower, facility data, status of physical structures and equipment clearly precludes effective planning. The few medical censuses which have been conducted have been limited to small geographic areas and thus cannot be viewed as representative of the nation as a whole.

There is at present no official national health plan. The most formal statement of Government priorities in health is that outlined in a preliminary report called "Ten-Year Plan for National Health Services" prepared in the fall of 1973 for a consultative visit of the World Bank (IBRD) to Zaire. Overall, the "Plan" calls for human and financial inputs equivalent to 10 to 15 percent of the Gross National Product to extend health care to the entire population over the 1970-1980 period. Specifically the Plan seeks:

1. Reduction in major causes of mortality and morbidity throughout the country, with emphasis on mothers and children who together comprise 75 percent of the population through:
  - a. improvement of environmental sanitation, including provision of potable water;
  - b. relieving malnutrition and overpopulation in highest density areas; and,
  - c. preventive care against malaria, tuberculosis, measles, sleeping sickness and leprosy.
2. Creation of a desired births program within the context of a national network of Maternal Child Health Centers.
3. Reorientation of medical and paramedical training programs to produce manpower able to meet national health needs.
4. Creation of Medical-Social Centers for training and provision of health care in highly populated and high mortality areas supported by satellite centers and small rural units.
5. Creation of a national transportation and radio-telex communication system to provide essential support to the national health system.

These basic goals are to be implemented in two stages of five years each; the first of which will establish necessary infrastructure, including a network of MCH facilities and notably a National Health Council, and at the same time collect baseline data to develop a national health profile and to explore alternative health financing mechanisms. The second stage will concentrate on actual execution and extension of a broad spectrum of health programs designed to achieve the priority goals outlined above.

Prior to the creation of the National Health Council, in late 1974 a project proposal was pending between the Department of Public Health and WHO to provide a two-man team to the Department to form the core for a health planning unit. It is not certain now whether this health planning unit will still be established or if its proposed functioning has been superseded by the National Health Council.

Legislatively, as of November 1974, all responsibility for national health planning activities rests with the new National Health Council. The challenge before the Council in developing an effective, viable health plan for the nation, is great given the existing infrastructural problems.

In the area of health, the strengthening of national planning capability will require the development of technical competence in collecting baseline data on health status and infrastructure, in setting appropriate and realistic targets to ameliorate health problems, in identifying resources to effect essential changes and in designing short and long term programs to produce physical and human resources necessary for efficient and effective implementation and evaluation of those programs.<sup>2</sup> Capabilities in all of these areas have been exceptionally weak. As of mid-1975, the Council was just beginning the development of an official National Health Plan.

Nevertheless, the broad health policies outlined to date by the Council, if translated into effective programs on a national scale, promise a significant redirection of the entire health sector. The maldistribution of scarce health resources has been a primary cause of poor health status. Thus, in order to assure more equitable distribution of resources, the Council is committed to the goal that all public health resource inputs including finances and personnel be targeted on the areas of greatest need -- rural Zaire and the poorest segments of urban communities. While the Council has expressed the need to include all of the Zairian population in the health planning/decision-making process, priority attention is to be given to the three most vulnerable sub-groups -- unborn babies, preschool children, and their mothers. Toward the attainment of a better quality of life for these largely unserved population groups, programmatic action will focus on the following activities: (1) the establishment of an integrated preventive-oriented maternal child health/desired births/nutrition program nationwide; (2) the upgrading both quantitatively and qualitatively of the medical and paramedical training programs throughout the country; and, (3) the development of community-based, self-help oriented health delivery systems for the rural and the unserved urban areas of the country. The development of water and sewage disposal systems for all Zairians is viewed as a critically needed complement to any direct health activities. These immediate objectives are consistent with the "Ten-Year Health Plan for National Health Services" outlined above, and if implemented, will inherently result in significant improvements in national health status.

In order to achieve these basic objectives, the Council has specifically committed itself to the establishment of a national health policy. Such a policy would focus on the development of standardized systems of health care delivery and medical and paramedical education. Given the scarce health resource base, alternative approaches to health care and manpower education will be carefully reviewed in light of their cost-effectiveness.

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<sup>2</sup> Rockefeller Foundation. Report on Medical Education and the Health Needs of Zaire, 1973, p. 17.

The exact model for the proposed national comprehensive health care delivery system is still being defined. Overall emphasis, however, will be on the creation of rural and urban "zones of health sector development," thus linking advancement of the health sector to the development process as a whole. Henceforth, it is anticipated that all health activities, whether at the urban or rural level, will commence within the community itself. It is firmly believed that community involvement is essential not only for the initial establishment of health facilities, sanitation systems, etc., but more importantly, to assure their ongoing maintenance and replacement, as necessary. Therefore, the Council views itself as playing a largely supportive role, stimulating interest in and providing technical and financial assistance as needed to each community's own initiatives for improving their health and general living conditions.

It is notable that the proposed focus on zones of development significantly reorients the basic action unit for health activities nationwide. While the traditional pattern of development of the health sector has been from the center outward, e.g. from Kinshasa to the regional capitals, to the cities, towns, etc., the Council seeks to make each individual community responsible for the health of its residents. Within each community, a new personnel type -- the health promoter -- chosen by the members of the community, will be the vital link between the community health care and the sector as a whole. To support the health promoter at the basic community level, national medical and paramedical training programs will be completely restructured. All health manpower education will be coordinated with a view toward each personnel type's utilization in the sector.

The highly inflationary trends in the cost of health care delivery are major impediments to extending the system's coverage in the short term. Therefore, in order to reduce cost, the Council has recommended the adoption of standardized treatments for diseases nationwide, utilizing a core of pharmaceutical products which could be produced domestically, thus cutting down on the prices of imported drugs. The development of a health care pricing system is envisaged which would, by its very structure, encourage the health consumer to seek initial care at the community level, with referrals to higher levels of care, e.g. dispensaries, hospitals, only as needed. In addition, Government controls on charges for health care by the private sector will continue, with fees fixed by category of income of recipient in order to assure that all Zairians, regardless of socioeconomic class, can obtain health services.

Achievement of improved health status cannot be brought about by efforts within the health sector alone. Rather, it is inherently tied to, and dependent upon, the institution of other social programs: housing, extension of social welfare centers, the advancement of Zairian women, improvements in adult literacy rates, development of programs for the physically handicapped and an accelerated fight against widespread poverty. Therefore, the Council will undertake the development of comprehensive programs in all of these areas in the future as integral components of health sector advancement.

Clearly, the Council's outlined course of action for restructuring the health sector represents not just a substantial reform, but in essence a revolutionary transformation of the whole health delivery system of Zaire. At the same time, the outcome of the Council's programs may largely determine the very quality of life of the Zairian people.



## VIII. THE ECONOMICS OF HEALTH IN ZAIRE

### Expenditures and Financing

Total national health expenditures in Zaire are difficult to ascertain. The fragmentation of the sector with health care dispensed by a broad spectrum of public and private organizations, coupled with the absence of any one organization assuming the leadership of the sector and monitoring its financial outlays, have resulted in a virtual void in the knowledge of the economics of health care.

Prior to independence, public health expenditures represented nine to ten percent of the regular national budget. In contrast, health expenditures by the Government of Zaire since 1970 have been considerably lower in absolute amount, although they have been increasing as a percentage of the total budget. As noted in Table 13, official figures for 1973 budgetary allocations to the Department of Health and the Office of the President place total public health expenditures at Z10,344,000 or approximately \$20 million -- about six percent of the total national budget. These figures clearly underreport total public health expenditures, however, to the extent that they exclude Government allocations to the National Medical School, to parastatal organizations involved in health activities such as the National Office of Research and Development (ONRD), to other Government departments which are involved in health and health-related activities such as the Departments of Social Affairs, of Education, and of Agriculture, the medical services of the Armed Forces, and expenditures by the national copper company, GECAMINES, and other Governmental institutions which, by law, are responsible for providing comprehensive health services to their employees. These figures also exclude the substantial subsidies by the Government of Zaire to the numerous church mission groups operating health programs. In 1973 alone such subsidies to the Eglise du Christ du Zaire, the central coordinating body of the Protestant church group, amounted to Z343,070 or approximately \$686,000. Data on health expenditures in these areas would significantly increase aggregate public health expenditure figures. Overall, however, one can assume that Governmental allocations to the health sector have been low relative to rapid population growth rates, and increasing inflationary trends in the cost of health care provision.

Examining the distribution of Government allocations over the 1970 to 1973 period, as outlined in Table 13, the Department of Health allocations in the regular budget have exceeded that of the Office of the President, with the notable exception of 1972 when they were approximately half. In the capital or investment budget, the Department of Health allocations have declined significantly between 1970 and 1973; the 1973 figure amounts to approximately one-third of the 1970 allocation. The substantial reduction in the investment budget of the Department of Health led to an inevitable deterioration in permanent health facilities, equipment, etc. As a result, overall maintenance is cursory at best. At the same time, the Department has had limited resources for constructing new facilities to expand the population coverage of medical services.

In contrast, the Office of the President allocations over the 1970 to 1973 period have been uneven in the regular budget but it has received an increasing amount of all credits earmarked for investment. Both the Fonds Médical de Coordination (FOMECCO) and the Depot Central Medicament Pharmaceutique (DCMP) have been the principal beneficiaries of these supplementary allocations. These capital allocations, while important for upgrading and extending DCMP and FOMECCO programs, have, however, served to reinforce the imbalance in the distribution of health resources. While the DCMP, though somewhat inefficient, does provide pharmaceutical supplies to public health fa-

Table 14

Select Government Expenditures for Public Health 1970-1973  
(in millions of Zaires\*)

	<u>Regular Budget</u>			<u>Capital Budget</u>			<u>Total Regular and Capital Budget</u>		
	<u>Department of Health</u>	<u>Office of President</u>	<u>Total</u>	<u>Department of Health</u>	<u>Office of President</u>	<u>Total</u>	<u>Department of Health</u>	<u>Office of President</u>	<u>Total</u>
1970 <sup>1/</sup>	3.439	2.625 <sup>2/</sup>	6.064	1.136	.118 <sup>3/</sup>	1.254	4.575	2.743	7.318
1971 <sup>1/</sup>	4.360	1.000 <sup>2/</sup>	5.360	.411	1.583 <sup>4/</sup>	1.994	4.771	2.583	7.354
1972 <sup>1/</sup>	2.389	4.264 <sup>5/</sup>	6.653	.291	1.838 <sup>6/</sup>	2.129	2.680	6.102	8.782
1973 <sup>1/</sup>	4.702	3.600 <sup>5/</sup>	8.302	.399	1.643 <sup>7/</sup>	2.042	5.101	5.243	10.344

\* Z1 = \$2  
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- 1/ Actual expenditures  
2/ DCMP  
3/ Kinshasa hospital and houses for doctors  
4/ FOMEKO  
5/ DCMP and FOMEKO  
6/ FOMEKO, Gombe clinics, psychiatric center, Buta Hospital  
7/ DCMP, Buta Hospital, NeuroHospital-Kinshasa and public health program

cilities nationwide, the greatest share of this investment money has gone to FOMECO activities, which are largely limited to Kinshasa and the Bas-Zaïre.<sup>1</sup> The remaining regions of the country, therefore, have since 1972 received a disproportionately small share of total national health resources.

The increased financial support of the Government of Zaïre for FOMECO's activities over the current decade appears to be attributable to several factors. First, organizationally it is directly in the Office of the President and thus has a greater potential for making its needs known. Further, FOMECO's widely reputed success in setting up an efficient and effective model health care delivery system for Kinshasa, particularly with regard to the provision of improved maternal and child health care, established Government confidence in FOMECO and led to the filtering an increasing amount of funds to them in order to extend their programs. Thus, in 1973, the latest year for which expenditure data are available, total allocations to the Office of the President which were largely distributed to FOMECO exceeded that of the Department of Health by \$142,000.

Throughout the 1970's the Department of Health has demonstrated an incapacity to effectively manage or absorb even the relatively small budgetary allocations from the Government of Zaïre. In 1971, it only used 58 percent of the Z3.4 million allocated to it. In 1972, the Department overspent its budget by 300 percent for salaries alone. Reviewing the Department's use of the 1974 budget, indications were that many problems still existed. As of June 1974, the Department had failed to absorb Z538,000 of the Z2.6 million allocated to it for the first half of the year in the current budget, and Z46,000 of the Z166,000 available in the capital budget -- a dollar equivalent of \$1.2 million. With the pending formulation of a detailed integrated health sector development plan, the Department is expected to request an increase in National Government funding for its proposed operations. Clearly, however, the infrastructure of the Department must be substantially strengthened to provide capacity to effectively use additional funding for health.

Despite the inequitable distribution of resources between geographic regions, with a large concentration of financial resources in the capital city of Kinshasa, all areas of the country suffer from largely unmet health needs.

In Kinshasa total budgeted expenditures for health services alone have been exceptionally small relative to total budget allocations. In 1973, for instance, as highlighted in Table 14, the Z28,251 expended on health represents just 0.5 percent of the total Kinshasa budget. If, however, allocations for sanitation and veterinary services are considered, the aggregate health and health-related expenditures account for 10 percent of the total budget, or about equal to the percentage of total national funds allocated to health prior to independence. In addition, it is impossible to disaggregate the proportion of other categories of expenditures which were used for health-related activities or had a definite impact on health status, e.g. agriculture and its effect on nutrition levels or inputs for public roads which might have reduced the excessively high incidence of automobile accidents. It is clear, however, that these inputs would have substantially increased the total portion of the budget actually expended on "health" in Kinshasa.

The decline in public health expenditures as a proportion of the total national budget since the pre-independence period has served to significantly reduce the Government's impact on national health status; importantly, it reflects the low priority given to health vis-a-vis other development objectives prior to the 1973 Presidential policy speech. The assignment of health as one of the key national development priorities in President Mobutu's speech of November 30, 1973, coupled with the creation of the National Council of Health and Welfare, augur well for increased Govern-

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<sup>1</sup> For a discussion of these FOMECO health activities, refer to Chapter VI.

Table 15

Budgetary Expenditures in Kinshasa, 1973

<u>Category of Expenditure</u>	<u>Budgeted Expenditure (in Zaires*)</u>
Administration <sup>1/</sup>	767,662
Sanitation and Veterinary Services	514,559
Health	28,251
Fire Control	81,789
Youth and Sports	131,325
Agriculture	242,781
Public Works and Roads	1,543,100
Urbanization	85,107
Economic Affairs	168,330
	Sub-total
	3,562,903
Communes	<u>2,012,497</u>
	TOTAL
	5,575,400

\* Z1 = \$2

<sup>1/</sup> Includes the cabinet of the Governor, the personnel of the Secretariat of Urban Affairs, Urban Administrative, Juridic and Financial Affairs.

Source: International Bank for Reconstruction and Development - 208 Etude du Sector Urbain, Republique du Zaire - au 3 vol. II Rapport General 7-08-73.

ment of Zaire allocations to the health sector over the next few years. While the exact level of expenditures since 1974 is not available, anticipated increased financial outlays, if complemented with qualitative changes in health manpower training and the establishment of a viable administrative infrastructure, will inevitably lead to significant improvements in national health status.

The source of revenue for public health allocations from the general budget is taxes, export earnings, etc., supplemented by the money obtained by the various Government institutions providing health care and health-related services.

No accurate information is available on the total economic value of the contributions of private organizations, of religious missions, foreign technical assistance programs or the industrial sector to the health sector of Zaire. It has been estimated that these organizations employ approximately 30 percent of total national health manpower.<sup>2</sup> It can be assumed, therefore, that if the financial outlays for health by these organizations were known, health expenditures as a percentage of Gross Domestic Product would be substantially higher than currently reflected.

The financing of health care services provided by the Protestant missions in the rural areas is covered by a combined fee per person served and substantial subsidies from the parent churches overseas allocated through the central office in Kinshasa. While this fee-for-services charge provides only minimal input to operating expenses, it is based on the concept that each person should contribute toward his own health care, even if only nominally. In fact, missions involved in health care delivery found that demand for services was lower when no fee was charged than when a token payment was required. This fact may be due to a general belief that anything valuable, e.g. health care, should have a cost.

#### Cost of Health Care

The National Government has determined that the establishment of sensible and equitable fees for professional health service and the closing of private dispensaries which did not abide by these standard fees were essential to assure that all Zairians, regardless of their social or economic status, would have equal access to health care when it was needed. Therefore, the fees charged for the professional services of doctors, surgeons and medical specialists in private practice in the Republic of Zaire have been controlled under a Public Ordinance of August 13, 1971. Fixed fees have also been set for health care provided by various public, private and parastatal facilities. In all such facilities, the fees to be paid for care and the cost of food in case of hospitalization are fixed according to the following categories of recipients (including their immediate families);

- 1st: indigents
- 2nd: independent, nonsalaried workers
- 3rd: salaried workers (including artisans, and small commercial business employees)
- 4th: private individuals
- 5th: Government of Zaire employees<sup>3</sup>

Among these five categories of recipients, fees also vary according to the type of health intervention received. A schedule of the latest available fee schedule, by type of intervention and category of recipient, is provided in Table 15.

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<sup>2</sup> FAO/IBRD Rapport de la Mission d'Identification du Projet concernant l'Education en vue du development agricultural au Zaure, 7-74.

<sup>3</sup> All individuals carrying an identification card which verifies their status as employees of the National Government are provided all in- and out-patient medical services and medicaments free of charge.

Table 16

Schedule of Fixed Charges for In- and Out-patient Health Care  
(Fees in Z\*)

	<u>Categories of Recipient</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
	<u>General ambulatory consultations</u>				
1st consultation	0	0.15	0.30	0.50	0
following visits	0	0.10	0.15	0.30	0
	<u>Special Consultations</u>				
1st consultation	0	0.30	0.50	1.00	0
following visits	0	0.10	0.15	0.30	0
	<u>Hospital: Room Fees</u>				
1 person per room	3.00	3.00	3.00	3.00	0
2 or 3 persons per room	2.50	2.50	2.50	2.50	
Ward	0	0.10	0.20	0.20	0

\* Z1 = US\$2

Source: Profils du Zaire, Bureau du President, 1972.

Despite the fixing of prices for medical care, the highly uneven income distribution clearly delineates accessibility to medical facilities. A study conducted for the Office of the President revealed that in Kinshasa of the 55 percent of the population falling into the lowest socio-economic category, only 19 percent had access to medical facilities in contrast to 100 percent of those in the highest socio-economic group having such access.<sup>4</sup> The main exception to the influence of income on access to medical care is the case of Government employees, who are provided medical care by the Government of Zaire and families of wage and salary earners whose medical care as required by the National Labor code is entirely paid by their employers.<sup>5</sup>

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<sup>4</sup> From FOMECC data.

<sup>5</sup> For a description of the occupational health programs, see Chapter IV.



## IX. EXTERNAL ASSISTANCE

The work of the Government of Zaire in the health sector over the post-independence period has been significantly augmented by financial, physical and human resource inputs from numerous governments, as well as private and public domestic and international agencies and organizations. These agencies have, through their ongoing programs, served to fill much of the void in preventive health focus in Zaire.

### Bilateral Aid

#### Foreign Governments

Between July 1, 1972 and June 30, 1973, the latest year for which such information is available, the number of foreign technical personnel provided to the Government of Zaire declined substantially. Nevertheless, their numbers are impressive and they continue to provide significant support to the national health sector.

The Belgian Government has remained, since independence, the largest provider of bilateral assistance. Over the reported period, their assistance included 1,573 personnel, of which 155 or 10 percent were engaged in the health sector. In total, Belgian aid represents 71.3 percent of all bilateral aid to Zaire. Further, a significant proportion of these Belgian health professionals -- approximately half -- are physicians who provide a much needed health cadre in the absence, to date, of sufficient numbers of trained Zairian doctors to replace them. The Belgian Government is spending approximately \$550,000 annually for chemicals, equipment and technical services for trypanosomiasis control alone. New Belgian projects include work in gopher control in Northern Zaire, nutrition education, and population activities.

The Danish Government has supplied 47 medical personnel to staff a large Red Cross hospital in Kinshasa. These personnel are expected to be phased out by 1980. The staff of Kitanbo Hospital in Kinshasa has been augmented by 18 health personnel supplied by the People's Republic of China; most are teaching the art of acupuncture. In the health-related area of nutrition, the People's Republic of China is also providing technical assistance to the agricultural sector in expansion of national rice production. Since rice is a staple food, their work can have a significant impact on national nutritional status. The Government of France has provided 324 technical personnel to the Government of Zaire, 11 of whom are working in the health sector.<sup>1</sup>

#### U.S. Agency for International Development (AID)

While AID has been active in development assistance in Zaire for many years, its direct involvement in the health sector is relatively recent. AID provided a major impetus to the development of a pilot integrated maternal child health/family planning program in Kinshasa when, in cooperation with the Fonds Médical de Coordination (FOMEKO) in the Office of the President, it let a contract in April 1973 with the Geneva-based Organization for Rehabilitation

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Le Loi Budgetaire, Republique du Zaire, 1974.

through Training (ORT). The contractor was charged with comprehensive start-up task from training of personnel to staff MCH centers, development of the centers' structures and actual program operations. To date, three MCH centers have been opened with the AID grant funds, and three more are scheduled to be operational by the end of FY 1976, the termination date of the original grant. The possibility of a new MCH/family planning grant to the Government of Zaire to extend the work initiated under the present assistance agreement is currently under discussion.<sup>2</sup>

In the area of nutrition, AID, through the provision of Title II foods, has been a major contributor to national supplementary feeding programs. The numerous ongoing Title II food feeding programs, which were administratively handled by the Catholic Relief Service, were abruptly ended in early 1975 when CRS closed its offices in Zaire. USAID's Zaire Mission currently has an ongoing dialogue with the Government of Zaire to explore possible alternatives to the CRS-operated program if the Government decides to continue supplementary feeding activities.<sup>3</sup>

The lack of a national policy on and strategy for nutrition remains a major impediment to any rapid reduction in widespread malnutrition in Zaire. In an attempt to establish a viable institutional framework for effective and timely nutrition planning, and at the same time formulate the first official national nutrition strategy, AID, at the request of the Government of Zaire, is in the process of obtaining final approval for a nutrition planning project. The project, which will be carried out over a five-year period, will be cooperatively financed with an estimated total \$3.3 million input from AID and \$1.0 million from the Zairian Government.<sup>4</sup>

Two additional technical projects to assist the development of the health sector are currently under preparation by AID. The first is to concentrate in the area of endemic disease control and would include human and financial resource inputs to eradicate or at least sharply reduce malaria, trypanosomiasis, onchocerciasis, schistosomiasis and other major diseases which continue to have an adverse effect on the productivity/output of the Zairian labor force.

In order to strengthen the health infrastructure, particularly in the area of administrative reform, management, data collection and analysis within the Department of Health, AID is planning a project in health systems management. Both of these planned projects are viewed as complementary to the existing MCH/FP and the proposed nutrition planning projects and essential keys to ameliorating the generally poor national health status.

In addition to the abovementioned formal projects, AID is presently providing short-term public health consultant services to the newly formed National Council of Health and Welfare to assist in organizational and operational development. In undertaking these project emphases, AID does not negate other pressing health sector needs such as improved environmental sanitation systems and the reform of the existing national health manpower medical/paramedical education programs, but rather assumes that such activities will be supported by other donors such as the International Bank for Reconstruction and Development and the World Health Organization.

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<sup>2</sup> For a detailed discussion of the MCH program, refer to Chapter IV.

<sup>3</sup> The Title II program is explained in full in Chapter V.

<sup>4</sup> See Chapter V. for a discussion of the project design.

### Peace Corps

As of December 1974, there were 245 Peace Corps volunteers (PCV) in Zaire. Historically the Peace Corps played an active role in the health sector through the provision of manpower to the Department of Health/WHO activities in smallpox eradication campaigns. The large-scale use of PCV in health ended with the winding down of the smallpox campaign since 1970. Currently, 15 PCV's are involved in health projects as follows: one laboratory technician in the Kananga Tshikadji Laboratory Technical Training School, seven working for FOMECO's Mama Yemo Hospital complex (two lab technicians, two X-ray technicians, one drug inventory specialist, one bio-medical equipment engineer, and one audio-visual technician to develop training aids). One PCV is working in sterile supplies in the Kimpese Hospital, one is conducting nutrition rehabilitation and education training at Bulape, where the incidence of kwashiorkor is extremely high. Two PCV's are working with Baptist missionaries at Vanga in the Bandundu Region on a rural sanitation project which purpose is to reduce the high incidence of parasitism; and at the auxiliary nursing school, teaching public health and concomitantly working in the nutrition rehabilitation program.

The Northern Zaire area around Ubangi has traditionally been the site of endemic goiter, with an estimated 60 percent of the population affected. The high prevalence of goiter has been attributed to low consumption of iodine in the local diet, coupled with the fact that the main staple food consumed in the area -- manioc -- binds iodine. Three PCV's (two nurses and one operations officer) are working on a goiter control program run by the National Government through European IRSAC. IRSAC is providing the vehicles and the salary of the Belgian doctor on-site, as well as the cost of housing in Gemena, to be the regional headquarters of IRSAC. The projected five-year, \$0.5 million program, is to be based on use of two mobile teams, one of which is currently in operation. OXFAM is providing vaccine for the project. In total, there will be three doctors assigned to the project -- two in Belgium and one in-country -- who will be rotated each six months. Information gathered over the course of the project is to be sent to IRSAC headquarters in Europe for analysis and future goiter programs development.

In the health-related area of agricultural development, two PCV's are working on chicken and rabbit breeding and crop production at Vanga Mission.

In addition to these PCV's, nine persons were in training in the Bukavu for other health projects. These include the projected assignment of two PCV's to the laboratory technician training school in Kimpese, of two PCV's to the Kananga Tshikadji lab technician school (one is already on the staff), of one PCV to a tuberculosis program in Bulape, one PCV to a family planning program in Bulape, and two additional PCV's to Mama Yemo Hospital in Kinshasa - one male nurse and one nurse anaesthetist. This work will provide an important vehicle with which the Peace Corps can continue to upgrade its image in Zairian official circles.

Oxford Committee for Famine Relief (OXFAM)

A British non-profit organization, OXFAM has been programmatically active in Zaire since 1960. Three public health/nutrition projects were operative in 1969 in Igidunga, Kananga and Bulape. While their work was successful in the immediate area, there appeared to be no transfer of knowledge from the specific projects to the outlying areas. Therefore, OXFAM decided to reorient its work via an interdisciplinary three-person advisory team. An essentially pilot project, the advisory team is comprised of an agriculturist, a livestock specialist, and a public health nurse. Each visits various missionary projects in rural areas nationwide, most of which are being entirely financed by OXFAM, to evaluate ongoing work, reorganize programs as necessary, and assist in the training of local villagers through conduct of in-service courses. In the area of public health, experimental programs for the short-term training of public health nurses who would in turn train other villagers in health practices are presently operational at Vanga, Gadinga and Kananga. Both the Vanga and Gadinga courses are based on a six-week training period, two of which are theoretical and four weeks practical experience in local health facilities. The project pays the nurses' salaries while in training. Vanga has trained 32 nurses to date in this program, and Gadinga a total of 18 per year, or six each in three training programs annually. At Kananga, training has focused on the art of teaching nutrition education to mothers. This four-week program has trained an average of 11 people at each of three sessions per year.

The three programs require a minimum of primary school education through the 8th grade, and the ability to read, write, and speak French. The training, which is open to both males and females as long as they are from a local village, has generally attracted persons from the lowest socioeconomic classes. While its success to date can largely be attributed to the high motivation of the villagers already trained to teach others, the pilot project has not been without major problems. First, the failure to orient other local leaders and health personnel, for whom the newly trained people were to work, to the training objectives, etc., resulted in considerable resistance to the adoption of ideas from these junior staff. Inevitably, morale among newly trained personnel fell and jeopardized the continuation of the training program. In an attempt to address this problem, OXFAM has introduced a complementary one-week orientation program for village leaders, project directors and supervisors. As of December 1974, two such programs of eight persons each had been held at Vanga.

Second, the training system as presently organized, provides for no evaluation of how well a student has learned either by meaningful tests during his course or observation at work. The incorporation of evaluation mechanisms such as follow-ups on students' quality of work in the health project will be essential to assuring relevance of courses.

Third, many persons entered training in order to work for a specific new project, only to find that upon completing the course, the project was still not operational due to lack of funding. In fact, some of these large numbers of trained personnel have been unemployed for one year or more. Having trained health personnel sitting idle in rural areas exacts a high social as well as financial cost on the republic in terms of lost opportunity to improve rural health status. Much of the lag between completion of training and commencement of health projects has

been due to typical bureaucratic practices in OXFAM, as in the case of many international organizations, which require long processing time to release funds. As of December 1974, the inactivity of several projects with already-trained personnel had spurred the interest of both the United Nations Development Program and the U.S. Agency for International Development program personnel, and decisions on short-term funding for initial stage operations until full financing was released by OXFAM headquarters were under way.

Further, approximately 40 of the people trained to date have attended courses oriented toward mobile team health care delivery. Given the expensive nature of mobile teams, there has recently been much pressure to abandon the mobile concept and focus on local villages' community-development oriented health projects.

Ultimately, the high operational cost of the advisory team threatens continuation of the program. Clearly, the fact that initial groups of personnel have already been trained will cut down on total cost. But it has proven almost as difficult to get a trained nurse to stay in the bush as a doctor, and the question remains whether the majority of the people trained to date will remain on to teach others or leave the village after training for more lucrative employment in urban areas.

#### Multilateral Aid

##### United Nations (UN)

The United Nations has no precisely defined program approach in Zaire. Rather, it has responded to varying requests from the Government of Zaire through the financing of several not necessarily interrelated projects.

Overall, U.N. technical assistance has been able to be more flexible than bilateral aid since it is less political, not being tied to any given country. At the same time, it can play a potentially important role in serving as a link between the Government of Zaire health organizations on the one hand, and the other international donors and lending institutions on the other.

Although no money has been expended in health to date, the new resident representative is committed to health and anxious to support the sector. The U.N. Development Program (UNDP) is providing \$900,000 over a three-year period to finance the newly formed Service du Plan, national planning office, to be staffed by an eight-man advisory team from the World Bank. While this is viewed as its most important input, in the area of health, the UNDP is also providing \$5 million for technical assistance in the conduct of feasibility studies with IBRD, REGIDESO and WHO on water and sewerage systems in six major urban areas. The UNDP is willing to expand into complementary health areas such as financing of health censuses, agricultural censuses, etc., as the need is established. In addition it has expressed considerable interest in providing "seed money" for a national malaria control program.

The UNDP was considering formation of a program in collaboration with the Department of Education to offer fellowships to train paramedics and laboratory technicians overseas. It is hoped that the National Health Council which has taken over control of national health education from the Department of Health, will redirect UNDP financial inputs in manpower training to national facilities in order to assure relevancy of study to Zaire health needs. Overall, approximately \$3 million in financial aid are available to the Government of Zaire from UNDP for health activities through 1976 if suitable projects can be identified.

#### World Health Organization (WHO)

Zaire has been one of the most important operational areas of WHO work in Africa over the last decade. The WHO, with its in-country offices situated in the Department of Health, provides technical assistance to Zaire in five key areas -- basic strengthening of health services, communicable disease control, smallpox eradication, health manpower training, and the provision of fellowships for study abroad. Overall, there are 44 WHO posts for Zaire over the 1974 to 1977 period. The proposed budget to support these five activities is \$1.4 million for CY 1975, \$1.4 million for CY 1976 and \$1.5 million for Cy 1977.

Historically, WHO personnel played a key role in maintaining the health sector's operations after the turmoil of the immediate post-independence period threatened a complete breakdown in the delivery system. WHO-sponsored professors also comprise a significant proportion of the Medical Faculty of the National University of Zaire, Kinshasa. A detailed description of WHO's ongoing health activities is given in Appendix II.

#### International Bank for Reconstruction and Development/World Bank (IBRD)

Two ongoing IBRD activities in Zaire impact on the health sector. In the area of population, at the specific request of the National Government, an IBRD team went to Zaire in March 1975 to conduct a population sector survey and identify appropriate projects in this area for potential Bank funding. The team, which was an interdisciplinary group including four World Bank staff members and four consultants, was expected to focus attention on maternal/child health and desired births programs as they affect the demography of the country.<sup>5</sup>

In 1973 the World Bank, in collaboration with WHO and REGIDESO, the national urban water supply company, carried out an extensive national water and sewerage sector study of Zaire. The Bank is now participating in conduct of feasibility studies in six major cities with a view toward extending the system. While the details are still being worked out, it is expected that upon the completion of these studies, the IBRD will provide a \$10 to \$15 million project loan to the Government of Zaire for the extension of the water and sewerage system in the major urban areas. The selected cities are those in which population growth has been the most pressing in terms of placing excessive demands on existing environmental sanitation facilities.

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<sup>5</sup> A trip report and recommendations should be available by mid-1975.

### Other Donors

Numerous voluntary agencies, missions, foundations and other non-profit organizations are providing the Zairian population with material aid and technical and financial assistance in medicine and public health, nutrition, population and family services, and other related community development activities. The fact that time and data gathering limitations have precluded detailed descriptions of their activities does not negate the importance of their inputs to improving health status or concomitantly to accelerating the development process. A chart of the principal agencies and the nature of their development assistance activities is given in Appendix III. In general, their health and health-related programs are limited to a small geographic area of the country; in many cases they are the only source of health services to the local population. To date, the work of these numerous organizations has been highly fragmented and uncoordinated. In the absence of clear national health priorities, each organization has had to formulate its own health focus. No mechanism existed for the interchange of ideas or programs' successes or failures. It is expected that the newly formed National Council of Health and Welfare will provide the heretofore missing leadership for these agencies in assuring that their substantial inputs correspond to the most pressing national health needs. <sup>6</sup>

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<sup>6</sup> For a discussion of church missionary health programs, refer to Chapter VI.



## APPENDIX I.

### THE REPUBLIC OF ZAIRE IN PROFILE

#### Geography

The Republic of Zaire is an almost totally landlocked country straddling the equator in the heart of Central Africa. Embracing a total area of 2,345,000 square kilometers, Zaire is the third largest country in Africa and is roughly equivalent to the size of the United States east of the Mississippi River. The country's sole outlet to the sea is a 20-mile strip of land leading to the Atlantic Ocean acquired during the rule of Leopold II. Zaire is bounded on the west by the People's Republic of the Congo and the Cabinda enclave of Angola; on the southwest and south by Portuguese Angola and Zambia; on the east by Uganda, Rwanda, Burundi, and Tanzania's Lake Tanganyika; and, on the north by the Republic of Sudan and the Central African Republic. Its proximity to these nine African countries has facilitated large refugee movements in and out of Zaire over the course of its history. These continual migrations have also served as a vehicle for transmission of diseases from other countries to Zaire.

The topography is diverse, ranging from the large mountains of the Rift Valley in the east, among the highest mountains in Africa, marshes in the northwest, savannahs in the north and south highlands, and scattered woodlands in the southeast, to a dense equatorial rain forest in the central basin of the country, covering approximately 1,060,000 square kilometers.

The Zaire River, from which the country takes its name, is the principal body of water in the nation. By volume, it is among the largest rivers in the world, second only to the Amazon. Flowing at an average rate of 40,000 cubic meters per second, it holds vast hydroelectric power potential for this developing nation. In fact, the complex at Inga alone will soon be producing more electric power than any other single site worldwide. Upstream, the Zaire River is navigable to Kisangani. Rocky channels and waterfalls along the west and south of the river make these sections unnavigable as it flows toward the Atlantic. The Zaire River is navigable year-round, however, from Matadi, the nation's main port, to the point where it empties into the Atlantic Ocean.

#### Climate

Two principal climatic zones can be distinguished in Zaire: the equatorial and the tropical. Average rainfall in the area surrounding the equator is high, an average of 1,800 to 2,000 millimeters annually and the temperatures are generally equally warm year-round with a mean average temperature of 24°C, varying up to 1° annually. The tropical climate zone, which covers the major part of the Zaire River system basin, has two main seasons: rainy, with high temperatures and rainfall averaging 1,000 to 1,500 mm, and dry with generally gray skies, no rain and mild temperatures. Although exceptions do occur, the seasons are generally reversed in the two hemispheres: the dry season usually extending from November 1 to March 30 north of the equator is concurrent with a rainy season south of the equator. This phenomenon plays an essential role in assuring regularity of flow of the Zaire River. Since the river covers an area both north and south of the equator, rain falls in its basin all year round. Line squalls, violent and potentially destructive winds are common throughout the Zaire River basin where they may occur up to 10 times per month during the rainy season.

## Historical/Political Background

The history of Zaire has been marred by years of violent political upheavals and traditional tribal antagonisms. The years of Belgian rule of the then Belgian Congo led to substantial political, economic and social improvements in the country. In the social sector alone the Belgian government established one of the most extensive health/social welfare programs then existent throughout all of Africa. But their stabilization programs were not conducted without great social cost to the native Congolese. The educated class of Africans, the so-called évolués were held back from complete assimilation into the European-oriented Belgian dominated society by the desire of the colonial administration to maintain ultimate power over the nation. No Congolese were allowed to hold leadership positions in government services or the growing number of national enterprises such as plantations and small industries. It was in this educated class of Congolese then that the seeds for independence were firmly planted.

On January 5, 1959 the growing aspiration for the right of self-determination led to a violent uprising in Kinshasa. As a result the Belgian rulers announced the creation of a colonial policy emphasizing a certain emancipation of the native Congolese and future elections. The new national leaders, both regionalists and unitarians in outlook, sought a more precise timetable for decolonization. Therefore, the diverse national parties, rallying around the issue of independence, decided to boycott the elections.

Overall it can be said that the intransigence of the national parties accelerated the process of change. The Belgian government held round tables with Congolese in January-February and again in March through May 1960 to work out steps leading to independence.

Legislative elections held in May of that year led to the victory of the Unitarist party and their leader Lumumba set out to organize the first government. The first parliament in this new government elected Kasavubu as President. However, unrest was widespread and amidst continued calls for complete freedom from the colonial government administration, the Belgian King proclaimed national independence on June 30, 1960. The Democratic Republic of the Congo (Kinshasa) was formed.

The tragedy of the immediate post-independence history is well-known worldwide. Internal strife, coupled with massive emigration of the large core of foreign managerial personnel which had been providing the political, social and economic leadership to the country, led to a serious breakdown in all sectors of national life. The nation entered a dark period of civil rebellions and economic decline, the scars of which still exist.

The administration of President Mobutu, who came to power in 1965, has concentrated on restoring civil order and building national unity. Since the appointment of Lieutenant General Joseph-Désire Mobutu, Commander-in-Chief of the Congolese National Army as President by the Military High Command on November 24, 1965, the nation has been essentially transformed from one torn by insurrections and deep-rooted tribal divisions into a unitary state.<sup>1</sup> The country was strongly ruled by the President himself during 1966 and 1967 through a series of presidential decrees which centralized all authority in the Presidency. The bicameral parliament adjourned. In an attempt to provide the country with a sense of unity, one national political party -- the Mouvement Populaire de la Revolution (MPR) -- was formed, which cut across previous regional and political allegiances. This party, of which all Zairians automatically become members at birth, has become the focal point for planning and implementing the national development process.

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<sup>1</sup> President Mobutu uses his African name, Mobutu Sese Seko, rather than this Christian name.

After five years in office, President Mobutu was elected to the presidency for a seven-year term in the first nationwide election since independence, held October 31 and November 1, 1970. A new unicameral body, the National Assembly was elected by the public in November 14 and 15 elections.

On October 27, 1971 the national political party, MPR, rebaptized the nation "the Republic of Zaire." The national government is legally defined in a Constitution of August 15, 1974. In accordance with its constitution, the Republic of Zaire is a democratic and social state. The President and members of the National Assembly are chosen directly by the citizens through universal suffrage for five-year terms. The Constitution guarantees, within limits, protection of basic liberties including equality before the law, individual liberty, liberty of opinion and expression, the freedom to move about the country as desired, the inviolability of the home and freedom of association. Within the social sphere, all Zairians are assured the right to marriage and protection of the family, the right to education, the right to work and mutual obligations of employers and workers, including the right of grievance.

The President is assisted by a presidentially appointed National Executive Council which includes the heads of 21 ministerial departments and by a 31-man political bureau. The Departments of Public Health, of Labor and of Social Welfare, of Agriculture and of National Education all play important roles in the provision of health and health-related programs to the Zairian population.

In a move to centralize the nation and coincidentally abolish the powers of the regional and local governments, the Republic has reduced the formerly 21 provinces to 8 regions and the capital city of Kinshasa. The governors of each region are civil servants appointed directly by the President rather than elected. Kinshasa is administratively divided into 24 zones administered by zonal commissioners. Several of these zones have some health/social service programs as well as centers for sewing, cooking and other recreational activities. The strong centralization of the government holds much potential for reorienting the health sector.

In his November 1973 policy speech, President Mobutu announced the nationalization of all enterprises essential to the national interest, with the notable exception of the pharmaceutical industry. As a complement to this "Zairianization" process, and in an attempt to foster national identification, the President has also launched an "authenticity" campaign. This "authenticity" focuses on the rooting out of influences which are not authentically African, and discarding the vestiges of the colonial past. To this end, Mobutu has banned neckties and Western suits (emphasis is on traditional costumes), Christian names (all persons are addressed as "citizen" and last name only), the two-gun salute (tom-toms are now in use), and colonial designations (old Belgian names were changed to authentic African ones including the change of Congo River and country to Zaire).

Zaire's participation in and sponsoring of African conferences and seminars have increased its visibility and President Mobutu is clearly viewed as one of the principal leaders in Africa today. After a trip to Red China, President Mobutu announced plans to "radicalize the revolution." While the exact impact of this radicalization is still unfolding, it is certain that significant changes in national life will be accelerated.

## Economy

The Republic of Zaire has a substantial and diversified economic base which permits the functioning of a dual economy centered around agricultural production of a wide variety of crops and a substantial mining and extractive industries sector. The present foreign exchange base is closely tied, however, to copper and thus makes the economy significantly vulnerable to fluctuations in world prices. In recent months, the economy has taken a substantial downswing and Zaire currently faces a fiscal and balance of payments crisis.

Table 17

The Gross National Product of Zaire in 1969 was distributed as follows:

<u>Sector</u>	<u>Percent of GNP</u>
Noncommercialized agriculture	9.1
Commercialized agriculture	11.0
Mining	10.0
Metallurgy, energy and construction	18.6
Manufacturing	5.1
Transport, Communication, Commerce, Banking, Services	26.7
Indirect Taxes, subsidies	9.2
Administrative services	<u>9.0</u>
Defense	98.7*

\* Distribution of the remaining 1.3 percent of GNP is not reported.

Source: Banc du Zaire

Unlike many developing countries, generally adequate rainfall year-round and rich soils provide Zaire with a vast potential for diversifying its agricultural sector. In actuality, land is greatly underutilized. Currently less than one percent of total land area is under cultivation or approximately 0.6 acres of productive land per person. Approximately 30 percent is used for meadows and pastureland. Fifty-five percent is forest. Although the balance of the land is largely swamp, sand or mountainous areas, at least part could be used for production of subsistence and/or export crops.

The traditional economy of Zaire is based firmly in subsistence agriculture including fishing, forestry and hunting, upon which an estimated 70 percent of the national labor force depends. Agriculture's contribution to GNP is relatively small, however. More than half of agricultural output is subsistence production, principally ground nuts, manioc (cassava), maize, rice and plantains -- the nation's staple foods -- and some vegetables for local consumption. Although variations occur, exports are primarily coffee, palm oil, and palm kernel oil, the production of which is almost exclusively centered in large modern corporation-owned plantations and ranches across the nation.

The agricultural sector was severely affected by the civil disorders and rebellions across the country over the 1960-67 period. The large-scale exodus of Belgians in the post-independence period left a serious void in economic managerial talent. Insurrections across the nation, disruptions in the existing transportation and trade systems led to substantial production losses and declining export earnings in agriculture. The production declines were accompanied by large deficits in the national budget. As a result of widespread inflation the real income of the rural peasant declined markedly. Serious peasant uprisings occurred, further impeding recovery of the agricultural sector. Although the Government of Zaire's 1967 monetary reform economic stabilization program, did result in growth of agricultural exports over the 1967-69 period, overall agricultural production fell relative to the growth of the power, mining and industrial sectors of the economy and is continuing to fall. Food prices held below true market price and a breakdown in transportation systems resulted in disincentives for farmers to expand agricultural output or to maintain production levels.

The natural resources of the country are among the richest in the world. Its mineral wealth exceeds any other African nation. Zaire ranks seventh in copper production and is presently the world's largest producer of cobalt and industrial diamonds. Cadmium, coal, gold, silver, tin and zinc are also abundant. Formerly the Union Minière de Haut Katanga under Belgian government, the copper industry was nationalized into the GECAMINES complex in 1969, concentrated in the southern Shaba region. Some reports are that the requirement that all personnel be Zairian nationals has had detrimental effect on efficiency of operations, most notably management. The copper industry has significant vertical integration. In the last two years, GECAMINES has also taken over control of several companies complementary to copper company, e.g. services and supplies. Under government pressure to extend public welfare in its area, GECAMINES is also responsible for Sendwe Hospital in Lubumbashi; and, is currently providing health care, drinking water, garbage collection, canteens and corn farming for its employees and to the general public living in surrounding areas as a substitute for public services which have deteriorated in recent years.

The nation has a vast hydroelectric potential which has scarcely been tapped. A petroleum deposit has been found in the country, and extraction will begin by Gulf-Zaire in the next few years. A refinery operating at Banana produces enough petroleum to meet the nation's needs and still export a small surplus. Zaire has extensive forestry resources and the numerous rivers

and lakes are generally abundant with fish. While the fishery resources have the potential to significantly augment the protein needs of the Zairians, the poor transportation/distribution network results in only those people living near the rivers and lakes being able to obtain nutritional benefit.

Despite its rich resource base, Zaire is a relatively poor country with current per capita income estimated to be \$112. Unemployment is substantial and is increasing amidst rapid population growth and large-scale rural-urban migration. At the same time, imbalanced distribution of Government resources has led to growing regional income inequality. The national labor force of persons 14 years of age and older was estimated to be 8.3 million in 1968 or less than half of the total estimated population in that year. Females comprised 52 percent of the labor force but with the exception of a few wage and salary earners and those engaged in independent trades, the vast majority were confined to subsistence agriculture. Overall, the dependency ratio is high.

While there are no national data on underutilization of manpower, a study of one rural tribe showed that 80 percent of the potential worktime of males was not being used. Part of this wasted potential can be attributed to traditional societal patterns in which adult males' only input to subsistence agricultural activities is that of clearing land and women and male children have complete responsibility for cultivating, harvesting and processing crops. The decline in tribal activities such as settling of inter-tribal disputes, reduction in religious ceremonies -- all of which traditionally occupied much of adult male time -- has also led to much idle time among this group. The perceived employment and social opportunities of the cities remain an impetus for the massive exodus of rural villagers, especially the young. To the extent that the creation of jobs in urban industry and services has not been able to keep pace with population growth, a slowdown in rural-urban migration is essential to preclude further pressures on the development process. Ultimately rural life will have to be made more attractive.

#### Education

Education, because of its multiplier effects throughout all levels of society, is an essential key to the accelerated development of Zaire. The priority attached to education by the Government of Zaire is highlighted by the fact that education receives almost one-fourth the total national budget -- more than 10 percent more than defense, the next highest ranking budget item.

The Belgian colonial government left an extensive primary school system, largely run by missionaries, a small secondary education program and limited higher education system restricted to males. Recognizing the harmonious development of Zaire required a balanced distribution of schools at all levels, President Mobutu effected a major reform of the nation's educational system in the post-independence period, including compulsory 8 years of education for all citizens. The Department of Education was substantially reorganized in 1967.

The national educational system is divided into three levels -- primary, secondary and superior. At the primary level, program focus is on teaching basic reading, writing and mathematics and orienting the child to the environment. Primary education is divided into 3 levels of 2 years' duration each, at the end of which the student receives the elementary degree, the middle degree and the terminal degree, respectively.

Formation of a general cadre of manpower for all sectors is the main goal of secondary education, which focuses on the study of general culture. Although French instruction begins in the third year of schooling, actual teaching in French forms a major component of secondary education.

The superior education programs of the country have since August 1971 been reorganized by the Government into two principal branches: the National University of Zaire (UNAZA) and various higher teaching institutes (including technical and normal schools), all of which exercise a relatively large degree of autonomy. During the Belgian government's rule, Catholic and Protestant affiliated universities existed at Kinshasa (then Leopoldville) and Kisangani. Their programs were highly selective and provided educational opportunities for a very small and elite segment of the national society. The reorganization of the national university structure was therefore viewed as an important step in assuring more equitable distribution of education in the post-independence period.

The current National University of Zaire (UNAZA) unifies all previous university level programs in the country, except those for religious clergy training. It is directed by one rector and a sole administrative council for both university and non-university teaching, in contrast to highly fragmented pre-independence organizational framework. The old universities became campuses of UNAZA directed by vice-rectors and the faculties were consolidated and distributed among three campuses at Kinshasa, Kisangani and Lubumbashi through a regrouping procedure based on the major vocations of the particular regions in which each is located: e.g. medicine at Kinshasa. No faculty has yet been duplicated on a second campus. In addition to these major modifications in structure, UNAZA leaders are actively instituting curriculum changes in an attempt to "Africanize" the nation's superior education.

Recent trends in education in Zaire are encouraging. The system has demonstrated an impressive growth. In the period between 1959, the last year of Belgian rule, and the 1973-74 academic year, primary school enrollments increased from 1.4 million to 3.0 million students; secondary school enrollments from 29,000 to 342,000 and university level enrollments from 749 (only 303 of whom were Zairian) to over 16,000 Zairian nationals. Much emphasis has been given in the past few years to capital investment projects, financed both from within the Government of Zaire and through external sources. These projects which include the construction of laboratories for the study of veterinary medicine at the Lubumbashi campus of UNAZA, have important potential for effecting needed quantitative and qualitative changes in the nation's manpower.

Nevertheless, the educational system is not without problems. There is a substantial maldistribution of facilities resulting in unequal access to education, not only between regions, but between urban and rural areas. Opportunities for female students are still limited despite expansion of physical plants and increasing student enrollments. Illiteracy continues to be a major problem. No national data exist on current national literacy rates because no single literacy standard exists and any measure of literacy is in one of four major languages other than French. Nevertheless, illiteracy is estimated to be between 35 and 58 percent. Further, although the national educational system provides comprehensive three-level training, the distribution of students is highly skewed to primary education. For every 100 students in primary school, only 11 are in secondary and 0.5 in superior levels. This imbalance results in a serious shortage of people with adequate educational background to draw upon for advanced training in health. In addition, of those students in primary education, the majority are in the first two

years. Since a vast number leave school after the first two years' instruction, literacy is marginal at best and is frequently lost through disuse. For those students successfully completing the secondary level, opportunities for superior education are limited.

Despite post-independence curriculum reforms, the educational system is still largely a European-oriented one with little relevance to national manpower needs. Students continue to concentrate studies in humanities and social sciences, rather than technology and agriculture -- two pressing national areas. Until the February 1975 nationalization, churches operated approximately 75 percent of schools, although they did receive Government subsidies. Shortages of qualified teaching personnel, of supplies and of financial resources to build new classrooms, etc., severely limit extension of the education system. All of these factors will inherently impede any rapid improvements in the health manpower situation.

#### Transportation

Despite the substantial dispersion of the Zairian population, there is no adequate public transportation system. The national railroad system provides a vital bypass for goods on non-navigable river sections or as extensions of waterways carrying products into the interior of the country. The rail system deteriorated badly during the period of civil turmoil following independence, however, and is only slowly being restored.

The poor national road system is a major impediment to moving goods and persons across Zaire. With the exception of the few major paved roads linking principal cities, the transportation system is poor and highly dependent on the unstable climatic conditions common throughout the republic. At the same time the low population density in rural areas inherently limits the ability of the government to extend the national transportation system, most notably the road network, in the short term. The lack of an adequate road network to transport food from production areas to the markets remains a primary contributing factor to the failure of Zaire to enjoy a real revival in agricultural production. It also indirectly contributes to the widespread prevalence of malnutrition. At the same time, inadequate road transportation severely limits access to the nation's health facilities. Both employees and patients have considerable difficulty in reaching the nation's hospitals, clinics and dispensaries, and it is not uncommon for people from the rural areas to begin walking to facilities for employment or health care at 3 or 4 o'clock in the morning.

The World Bank gave Zaire \$6 million credit for road improvement in 1969 under which the Belgian consulting firm Recherche et Developpement provided technical assistance to the Office of Roads. This initial work was reinforced in March 1972 with an additional \$46.4 million loan from the World Bank. Furthermore, the President specifically designated 1974 as a national road improvement year. This impetus, plus the substantial external inputs mentioned above, should help alleviate the road problem in the near future.

The commercial airlines are of questionable reliability in serving as a complement to the health system, given their numerous documented deviations from official schedules or from prescribed routes. Medical missionary groups and other health-related organizations have therefore become heavily dependent on private airplanes for mobility around the country. The Protestant Missions Missionary Aviation Fellowship (MAF) aircraft operations are headquartered in Kinshasa and hire private pilots to fly supplies and personnel between headquarters and the dispersed missions nationwide.

## Communication System

The Department of Information plays an important role in the national education process through use of the nation's radio and television stations. There are currently three radio stations broadcasting 24 hours a day. Throughout the week, much program emphasis is on family life including broadcasts focused primarily on proper child care techniques, on methods to improve the quality of work, and on better techniques and methods to cultivate new crop varieties. In addition, since 1966 two national television stations have been in operation -- one in Kinshasa and the other in Lubumbashi. This national mass media system has the potential to provide an important complement to the national health care delivery system, particularly in the area of health education.

## Language

Over 200 principal languages, each of which may have between 20 and 30 dialects, are spoken in Zaire. Traditional inter-tribal associations, for trade, etc., necessitated the development of common languages. As a result, almost all Zairians speak at least one of four principal languages -- Lingala, Kingwana or Kiswahili, Tshiluba and Kikongo -- in addition to their own dialect.

French, inherited from their Belgian colonizers, has been adopted as the official language of the Government and is required for all parliamentary activities, official documents and all laws and decrees. Only a small percentage of the total population have working knowledge of French, however. It is rarely spoken in the families because few women are fluent, having had only limited educational opportunities in Zaire to date. Even within the general male population, its use is limited because a large percentage have completed only the first two years of primary school and French instruction does not begin until the third year. Further, actual teaching in French does not begin until secondary education, a level relatively few achieve. Thus, there appears to be little possibility of French superseding the local dialects as the primary language of communication in the near future. And it is obvious that extended participation in the national educational system to develop French language capability will remain a prerequisite for complete assimilation of the typical Zairian into the upper stratum of national society.

APPENDIX II. World Health Organization (WHO)  
Ongoing Health Projects in Zaire, 1974

Development of Health Services  
(1968 - present)

1. Objectives: To (i) strengthen the integrated health services, (ii) develop a long-term sanitation programme, (iii) study malaria epidemiology and organize malaria control measures, (iv) strengthen MCH activities and (v) train personnel.
2. WHO provided the services of two medical officers (public health, malaria), a sanitary engineer, two public health nurses, two laboratory technicians and a sanitarian, and supplies and equipment.
3. Project activities in the Kinshasa operational area were enhanced by training of health staff at the N'Djili centre. Development of health services continues in Kisangani (Mangobo and Kabondo health centres). Plans were made for improving health services in the Haut-Zaire (Benganisa, Yanonge and Yayomela) and Kivu.

Mangobo and Kabondo laboratories are supervised regularly and their activities are being extended and improved. Development of Kubunga laboratory is under way.

An emergency programme was prepared for sanitation in Matadi, and recommendations were made for sanitation in Kinshasa and water supply in Boma. Health conditions in Kivu were studied (Kusaidia mission).

Recommendations were submitted for improving antimalaria work.

Maternal and child health activities continue at the N'Djili, Mangobo and Kabondo centres. Assistance is given in the nutrition programme.

Practical training, including instruction in environmental health, was provided at N'Djili and Mangobo for nursing students.

Ten sanitarians qualified in 1972.

Nutrition Programme  
(1968 - present)

1. Objectives: To (i) assess the nutritional status of the population, (ii) integrate nutrition activities into the health services, (iii) promote health education in the nutrition field and (iv) train personnel.
2. WHO provides the services of a medical officer and two nutritionists, and supplies and equipment.

3. The nutrition and food research centre continues its work. The survey on the nutritional status of children aged 0-3 was concluded and followed up with assistance from the epidemiological services project.

Nutrition training continues at the National University of Zaire and at various schools, institutions and medicosocial centres in Kinshasa, Kisangani and Kananga. Further training was organized for health staff, teachers and social workers. Project staff took part in a seminar on nutritional problems in relation to maternal and child health, held at Lwiro (Kivu).

Use of soya for feeding was extended to localities near Kananga.

#### Training in Health Sciences (1970 - present)

1. Objectives: To (i) develop training in health sciences at the National University of Zaire, (ii) train all categories of health staff and (iii) assist with in-service and further training.
2. WHO provides the services of 13 teachers (anatomy, pathology, anaesthesiology [2], dermatology, otolaryngology, surgery, microbiology, dentistry, orthopaedics, pharmacy, hospital administration, radiology), and equipment.
3. Instruction was given at the School of Medicine, Pharmacy and Dentistry, and the Higher Institute of Paramedical Training (ISEP). The instruction includes lectures, practicals and hospital training.

#### Nursing Education (1968 - present)

1. Objectives: To (i) study the needs for and resources in nursing and midwifery personnel, (ii) develop nursing services, (iii) train nurses and midwives and (iv) train teachers.
2. WHO provides the services of three nurse educators: two in Kinshasa and one in the Kisangani region.

3. The project for establishment of a central nursing unit is being studied at the Ministry of Health.

The nursing sciences section of the National University of Zaire (UNAZA) provides three-year courses for nurses in three fields: hospital care, midwifery and anaesthesia. In 1973-74 there were 86 students in the first year, 44 in the second and 34 in the third.

At the UNAZA campus professional nurses are trained in four years: there were 54 students in the first year, 44 in the second, 16 in the third and 14 in the fourth.

At the Medical Training Institute there were 118 professional nursing students, in the four years of the programme, and 98 trainee nursing auxiliaries, in a three-year programme.

At the Kisangani nursing school 76 students were enrolled in the four years of the programme.

At the Kinshasa school a three-year course for nursing administrators and inspectors started in October 1973, with 19 students.

A workshop on nursing education was held for 69 nurses from three provinces.

One-week seminars on educational methodology were conducted in seven regions, with the participation of physicians and nurses.

WHO awarded two fellowships for postbasic nursing education.

Medical Training Institute, Kinshasa  
(1968 - 1973)

1. Objectives: To (i) train administrators for hospitals and general health administration, (ii) train X-ray technicians and (iii) train dental health nurses.
2. WHO provided the services of two hospital administrators, a dentist and an engineer (radiology).
3. The 137 hospital administrators trained under the project were assigned to the national health services. In 1972 an Institute of Hospital and Administrative Sciences was established at the university and the programme was revised accordingly; 73 students were enrolled in the first year ("graduat") and 28 in the second.

From 1968 to 1973, 49 X-ray technicians were trained and postbasic courses were organized. A three-year course in X-ray techniques at the "graduat" level began in 1973-74 at the National University of Zaire.

Seventeen dental health nurses and nursing auxiliaries were trained; 15 are stationed in Kinshasa, including 7 in the school dental service. The training centre at Mama Yemo Hospital can train 15 dental nurses per year.

Activities continue under the project for training in health sciences at the National University of Zaire.

#### Fellowships

Public Health Two 12-month fellowships for study in France.

Vaccine production An 8-month fellowship for study in Belgium, France and Guinea.

Health Planning Two 3-month fellowships for study in France.

Paediatrics A 24-month fellowship for study in France.

#### Epidemiological Services (1966 - present)

1. Objectives: To (i) improve epidemiological services, (ii) develop health statistics, (iii) organize laboratory services and (iv) train personnel.
2. An epidemiologist, a microbiologist and a statistician assist in the activities.
3. The establishment of laboratory services continued. A committee composed of government representatives and health laboratory specialists was set up in the Third Directorate of the Ministry. The organization of laboratory services at different levels was determined, and the place of laboratory technicians in the civil service defined. A course for laboratory assistants was prepared.

Assistance was given in the work of the planning committee; the health services in Kivu were studied. A nutrition survey was made among children aged 0-3 and the results were processed. The health statistics services are being reorganized. Three statistical clerks received further training and instruction in statistics for trainee sanitarians and nurses continued.

#### Smallpox Eradication (1967 - present)

1. Objectives: To (i) maintain smallpox and tuberculosis immunity at an adequate level, (ii) improve the system for epidemiological surveillance of smallpox and (iii) train staff.
2. WHO provides the services of three medical officers and four technical officers, and supplies and equipment.

3. The attack phase of the smallpox eradication and BCG vaccination campaign ended in 1971. The last case of smallpox was reported in August 1971. Since then, however, laboratory tests have revealed human cases of monkeypox; out of 15 cases known in Africa, nine were reported in Zaïre. BCG vaccination coverage for children aged 1-14 is satisfactory (over 80 percent); but maintenance-phase activities must be strengthened, as only 48 percent of infants have vaccination scars.

Twelve teams carry out epidemiological surveillance, containment vaccination and coverage assessment. The surveillance teams, for which five leaders have been trained, are also responsible for organizing the participation of health units in the maintenance phase: they train staff and assist in supervising techniques and supplying equipment. The static units help with epidemiological surveillance by sending a weekly bulletin, and the national smallpox eradication centre prepares a monthly report which is sent to all static and mobile health units. During the year the static units performed 4,960,815 smallpox and 1,458,417 BCG vaccinations.

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Source: World Health Organization, Regional Office for Africa. Annual Report of the Regional Director to the Regional Committee for Africa, Twenty-fourth Session, 1974.

APPENDIX III. DEVELOPMENT ASSISTANCE PROGRAMS OF U.S. NON-PROFIT ORGANIZATIONS IN ZAIRE, 1974

AGENCIES	1974															
	Communications	Community Development	Construction, Housing & Planning	Cooperatives, Credit Unions & Loans	Economic & Development Planning	Education	Equipment & Material Aid	Food Production & Agriculture	Industrial Development	Medicine & Public Health	Nutrition	Population & Family Services	Public & Business Administration	Social Welfare	Women	Youth
AFL-CIO, African-American Labor Center	•					•				•			•			
Africa Inland Mission						•				•						
Africa Inter-Mennonite Mission	•					•		•		•						
American Baptist Churches in the U.S.A.		•						•		•				•		
American Leprosy Missions						•				•						
American ORT Federation			•			•				•						
Assemblies of God										•						
Berean Mission	•					•		•								
Paul Carlson Foundation								PP		•						
Catholic Medical Mission Board						•				•						
Catholic Relief Services-USCC						•								•		
Christian Church (Disciples of Christ)			•					•		•				•		
The Christian and Missionary Alliance						•				•						
Conservative Baptist Foreign Mission Society						•				•						
Divine Word Missionaries	•	•				•				•						
The Evangelical Covenant Church of America						•				•						

Note: PP denotes proposed program; a dot indicates an ongoing program.

APPENDIX III. (Cont'd.)

AGENCIES	Communications	Community Development	Construction, Housing & Planning	Cooperatives, Credit Unions & Loans	Economic & Development Planning	Education	Equipment & Material Aid	Food Production & Agriculture	Industrial Development	Medicine & Public Health	Nutrition	Population & Family Services	Public & Business Administration	Social Welfare	Women	Youth
Evangelical Free Church of America					•					•				•		
FCH Services													•			
Ford Foundation					•								•			
Free Methodist Church of North America					•					•						
Heifer Project, International							•									
International Voluntary Services			•										•			
Missionary Sisters of Our Lady of Africa					•									•	•	•
Medical Mission Sisters		FP			•					•					•	•
General Conference of the Mennonite Brethren Church					•					•						
Mennonite Central Committee					•		•			•						
General Conference Mennonite Church	•				•		•			•						
Mennonite Economic Development Associates, Inc. (MEDA)			•				•	•								
Mill Hill Missionaries		•			•		•	•		•						
Mission Aviation Fellowship	•	FP								•						
The Pathfinder Fund										•						
The Population Council												•				

APPENDIX III. (Cont'd.)

AGENCIES	Communications	Community Development	Construction, Housing & Planning	Cooperatives, Credit Unions & Loans	Economic & Development Planning	Education	Equipment & Material Aid	Food Production & Agriculture	Industrial Development	Medicine & Public Health	Nutrition	Population & Family Services	Public & Business Administration	Social Welfare	Women	Youth
	Rockefeller Foundation		5			2										
Salesians of St. John Bosco					2		4							1		2
The Salvation Army					2					1						
Seventh-Day Adventist World						2				1						
Unc evangelized Fields Mission					2					1						
United Church Board for World Ministries							1			1				1		
United Methodist Church	2				2		2			2			1		1	
United Presbyterian Church in the U.S.A.		1										1		1		
Worldwide Evangelization Crusade					2					1						
Xaverian Missionary Fathers					2					1						
Source: American Council of Voluntary Agencies for Foreign Service, Inc., Technical Assistance Information																
Clearing House, TAICI Country Report. Development Assistance Programs of U.S. Non-Profit Organizations																
in Zaire, July 1974. New York: 1974.																

**APPENDIX IV. National Health Manpower Resources, Public Sector**

	<u>Geographic Distribution</u>		<u>Nationality</u>		<u>Total</u>
	<u>Kinshasa</u>	<u>Other</u>	<u>Zairian</u>	<u>Foreign</u>	
Physicians	280	297	305	272	577
Medical Assistants	38	27	61	4	65
Dentists	4	5	3	6	9
Dental Assistants	3	2	5	0	5
Trained Midwives	207	34	206	35	241
Auxiliary Midwives	205	580	785	0	785
Graduate Nurses	504	776	1,135	145	1,280
Auxiliary Nurses	572	5,071	5,643	0	5,643
Pharmacists	11	8	18	1	19
Pharmaceutical Preparers	8	10	16	2	18
Veterinarians	0	0	0	0	0
Assistant Veterinarians	0	0	0	0	0
Sanitation Engineers	8	0	8	0	8
Environmental Engineers	27	54	81	0	81
Auxiliary Technicians	2	54	56	0	56
Physiotherapists	20	0	16	4	20
Laboratory Technicians	6	9	7	8	15
Radiological Technicians	-	-	-	-	-
Other Scientific Specialties	0	1	1	0	1
Other Paramedical Technicians	15	59	72	2	74
Health Aides	681	232	913	0	913

APPENDIX V. National Health Manpower Resources, Private Sector

	<u>Geographic Distribution</u>		<u>Nationality</u>		<u>Total</u>
	<u>Kinshasa</u>	<u>Other</u>	<u>Zairian</u>	<u>Foreign</u>	
Physicians	59	182	12	229	241
Medical Assistants	24	4	25	3	28
Dentists	17	1	1	17	18
Dental Assistants	0	0	0	0	0
Trained Midwives	17	88	23	82	105
Auxiliary Midwives	12	92	104	0	104
Graduate Nurses	70	604	503	171	674
Auxiliary Nurses	312	1,376	1,549	139	1,688
Pharmacists	84	28	-	-	112
Pharmaceutical Preparers	11	12	21	2	23
Veterinarians	0	0	0	0	0
Assistant Veterinarians	0	0	0	0	0
Sanitation Engineers	2	0	2	0	2
Environmental Engineers	10	15	23	2	25
Auxiliary Technicians	-	-	3	0	3
Physiotherapists	9	0	8	1	9
Laboratory Technicians	48	14	48	14	62
Radiological Technicians	0	0	0	0	0
Other Scientific Specialties	-	-	1	2	3
Other Paramedical Technicians	-	-	11	6	17
Health Aides	139	117	256	0	256

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