HEALTH AND DEVELOPMENT IN SOUTHERN AFRICA

VOLUME VIII

A Review of Health Care in Botswana: Issues, Analyses, and Recommendations

This sector assessment was undertaken in conjunction with the Southern Africa Development Analysis Project and has been used extensively, but not totally, in the Main Report and Country Papers

Submitted to:

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December 31, 1978

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I. INTRODUCTION

A. BACKGROUND AND ACKNOWLEDGEMENTS

This review of the health sector in Botswana was conducted as part of the comprehensive assessment of the health sectors of all Southern Africa countries which is being carried out for AID's Southern Africa Development Analysis Program (SADAP). Performing the review and analysis that are contained in this report was a collaborating team of professionals from the staffs of Family Health Care, Inc. (FHC), and Africare.

The field visit phase of the review and analysis effort was performed by the following team (days spent in-country are in parentheses):

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During the total of 31 person-days spent in-country, the team collected an extensive variety of data and materials, and conducted many interviews with officials of the Ministry of Health and of other branches of the government, and with USAID Mission staff, as well as provider, program, and administrative personnel from the private sector and foreign donor agencies. A list of persons interviewed

and institutions visited is included in the Appendix, along with a bibliography of materials used or referred to in the preparation of this report.

The principal author of this report is Jeremiah Norris. Dr. William Bicknell of Boston University's Health Policy Institute, and Robert N. Grosse, Ph.D. of the University of Michigan's School of Public Health, served as technical reviewers. In addition, Mr. John Pielemeier, USAID/Gaborone, provided critical comment on the September 1978 draft paper.

B. SUMMARY STATISTICAL PROFILE OF BOTSWANA

GENERAL	Most Recent Estimate
Per capita GNP (US $ at current prices)	230(1)
Population (midyear, in millions)	.7(1)
Land area (thousands of square km)	600.4
Arable land area (thousands of square km)	30.0(4)
Population density per square km	1.17
Urban population (% of total)	11(11)
Labor force in agriculture (%)	87(3)
Age structure (%)	
0-14	48(3)
15-59	N/A
60+	N/A
Adult literacy rate (%)	20(1)
Electrical energy generated (Kwh/year/capita)	82
Km paved roads	600(4)
HEALTH STATUS	
Life expectancy at birth (years)	56(1)
Male	52.5
Female	58.6
Crude birth rate (per 1,000 pop.)	47(1)
Crude death rate (per 1,000 pop.)	21(1)
Population growth rate	
Total (natural)	2.6(1)
Urban	
Number of years for population to double	27(1)
Infant mortality rate (per 1,000 live births)	97(1)
HEALTH RESOURCES	
Total Per capita health spending (private and public, estimated)	28.40
% of GNP	5.3
Population per physician	8,824
Populatin per nurse	928
Hospitals (population per bed)	392
Community water supply (% pop. served)	40(2)
Urban	-
Rural	-

UNITS OF VALUATION

The official unit of currency in Botswana is the Pula.

CURRENCY EQUIVALENTS

Current value is US $1.00 = .813 Pula or P1 = $1.23 US

B. SUMMARY STATISTICAL PROFILE OF BOTSWANA (cont'd.)

SOURCES FOR STATISTICAL SUMMARY

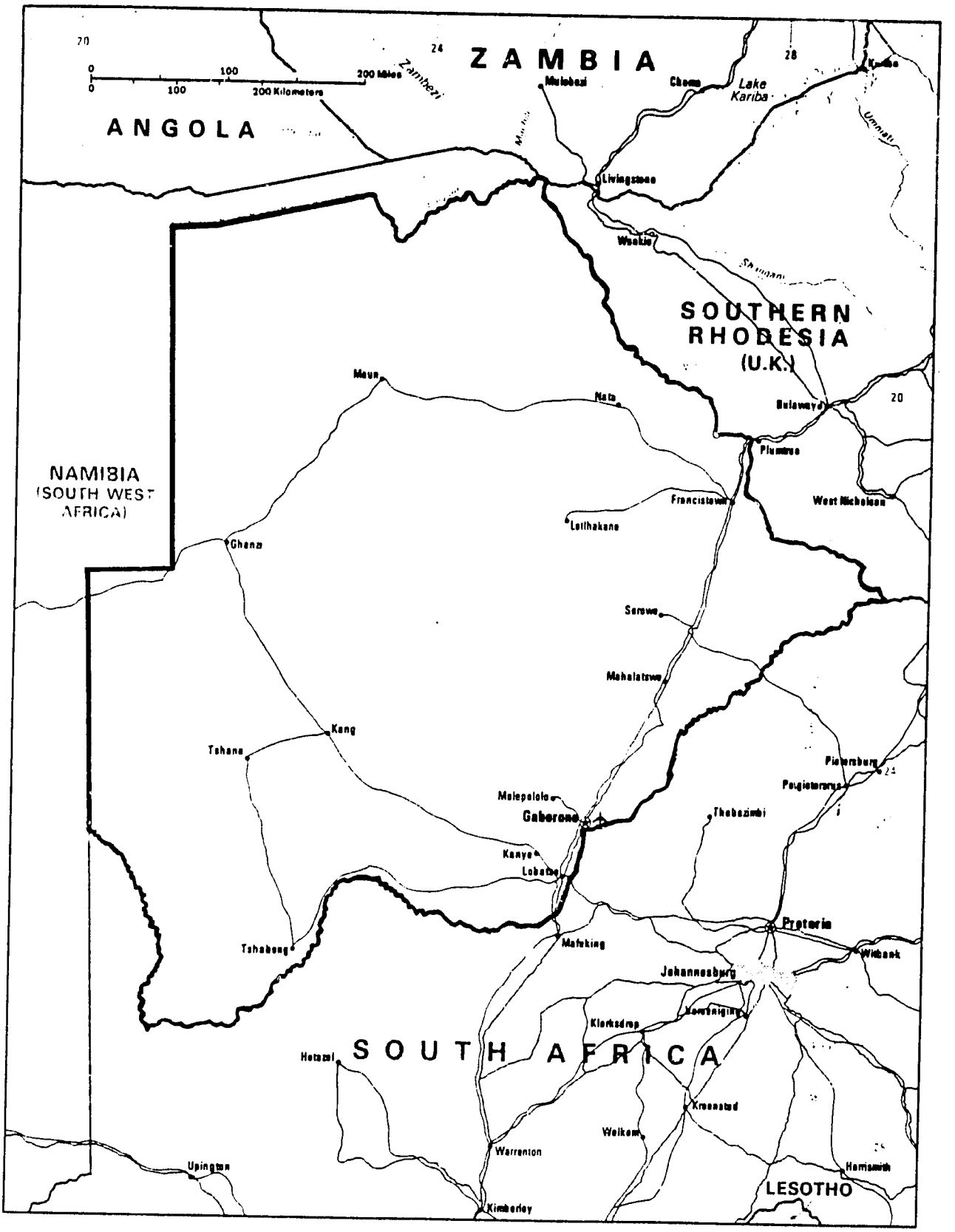
1. Population Reference Bureau, World Population Data Sheet 1978

2. World Bank, World Development Indicators, June 1978

3. Aid, Framework for U.S. Assistance Programs, March 1977

4. Republic of Botswana, Ministry of Health, Report of the Ministry of Health for the year 1976

Botswana



Lambert Conformal Projection
Standard Parallels 6° and 30°
Scale 1:6,500,000

II. A PROFILE OF BOTSWANA: THE CONTEXT OF HEALTH AND DEVELOPMENT

A. PHYSICAL FEATURES

The Republic of Botswana is a landlocked country in the center of the Southern African Plateau at a mean altitude of 1,000 meters above sea level. Much of the country is relatively featureless with gentle undulations.

The climate is continental and semi-arid, with an average annual rainfall of 475mm, which is highly variable, especially in the south, and unevenly distributed. More than 90 percent of the rain falls in the summer months between November and April.

More than two-thirds of the land surface is covered with Kgalagadi sand, of which a large part is known as the semi-arid Kgalagadi (Kalahari) Desert. The land supports a low, savannah-type vegetation. Rainfall is normally held within the top few meters of soil and is largely lost through evaporation and transpiration.

The Okavango and Chobe drainage systems represent the only perennial surface water, other than a few springs, dams, and pools, mainly in the east. The availability of water is a dominant influence on the pattern of human settlement: more than 80 percent of the population lives in the catchment area of the Limpopo River, in the eastern part of the country, where there are reasonably fertile soils and where the rainfall is sufficient to produce good pasturage and to permit agriculture.

B. DEMOGRAPHIC PROFILE

Table 1 sets out the de facto population (physically present in Botswana) and the de jure population (total citizens, including absentees) for the years 1964, 1971, and 1976. According to the 1971 Population Census, the de jure population, adjusted for undercoverage, was 636,379, of which 45,735 were absentees. The population is young, with 57.3 percent of the de facto population below the age of 20. The migrant labor absenteeism is concentrated among younger men in the 20-34 age bracket, of which 35.7 percent are absent. This has several observable consequences of a demographic nature: the potential domestic labor force has lost about one-third of its most able-bodied men, and the de facto population age-sex pyramid has the truncated look of a war-ravaged nation, with sex ratios as low as 60.6 men per 100 women in the 25-29 age bracket.

The intercensal growth rate implied by the 1964 and 1971 censuses was 1.87 percent per annum, compared to an average annual growth rate of around 2.6 percent during the 1971-1978 decade. Crude birth and death rates of 47 and 21, respectively, are listed in the 1978 World Population Data Sheet, yielding a rate of natural increase of 2.6 percent per annum. The fast increase in the population of the towns--their de facto population increasing from 2.4

TABLE 1

De Jure and De Facto Population of Botswana

	1964	1971	1976 Estimate
Total De Jure Population	549,510	636,379	725,500
Less Absentees	53,132	45,735	46,000
De Facto Population	514,378	590,644	679,500

percent of the total de facto population in 1964 to 8.2 percent in 1971 and to 14.9 in 1976--commands special attention. Half of the 1964-1976 de facto national population increase has in fact been drawn into the towns. The government's demographic projection indicates that annual population growth will average 3.3 percent between 1971 and 1991, and will result in a 1991 population of 1.18 million.[2] However, given the current average annual growth rate of 2.6 percent and the government projection of 3.3 percent, this would imply (if the figures were correct) an actual annual growth rate of 3.7 percent between the years 1978 and 1991 to reach a population of 1.18 million.

It is questionable whether such a high rate of population growth is desirable. It means, for instance, that only yearly economic growth above 3.3 percent (the government projection) will represent an increase in average living standards. This projection assumes that internal migration will boost the urban population nearly five-fold during the 1971 period, bringing the proportion of Batswana who live in towns up to 26 percent of the total population. Despite rapid urbanization, however, the non-urban population will also grow by 313,000, requiring the rural economy in 1991 to support 50 percent more people as it did in 1971. [2]

C. HISTORICAL AND CULTURAL CHARACTERISTICS

The present nation of Botswana is an outgrowth of historical events and colonization patterns of the nineteenth century. The British first adopted the territory

as a protectorate in 1885. At this time, there was no central local authority, as the Batswana are composed of eight different tribes to which other tribes are affiliated, including some of different origins. Local tribal government evolved over the years until 1934 when the power of the chiefs and functions of the native courts were clarified and defined. In 1966 the nation of Botswana became independent, and the new capital of Gaborone was created.

Although classified by anthropologists as eight separate tribes, the Batswana have many common attributes. They share a tradition of friendship, hospitality, and mutual aid, as well as a common language, Setswana. This tradition of tribal harmony differentiates Botswana from much of the rest of black Africa and provides an enormous advantage.[3]

Outside of the basic tribal structure lie the Bushmen who are regarded as the aboriginal inhabitants of most of Southern Africa. Ethnically, culturally, and linguistically they are quite distinct from the rest of the population. Although they have, historically, been nomadic hunters and gatherers, engaging in no cattle raising or cropping, many have recently become wage laborers on ranches, or clients of cattleraising tribes.

Despite the relative homogeneity of Botswana's African population (apart from the Bushmen), tribal influences and distinctions seem to have some political importance. Each group has its own separate territory and thus remains fairly

distinct geographically. The Ngwato tribe, of which the President of Botswana is a member, made up about one-third of the population in 1971 and has important political significance.

In addition, tribal chiefs have formal power in the House of Chiefs, the same house of Parliament which advises the Parliament on tribal and other issues. Chiefs have no veto power; however, in terms of implementing programs that need local cooperation, it is likely that they retain a good deal of influence.

D. THE POLITICAL SYSTEM

Under the Constitution, which became effective in 1965, the legislative branch of government is vested in a unicameral National Assembly composed of 31 directly elected and 4 specially elected members. The executive powers are vested in the President (Chief of State and Head of Government), elected from and by the National Assembly for a five-year period. Cabinet members are also chosen from the National Assembly. The House of Chiefs advises the government on tribal affairs, and a code of fundamental human rights is enforced by the High Court of Botswana. The Botswana Democratic Party, formed in 1962 by President Seretse Khama, won the majority of elected seats in the 1969 and 1974 elections.

There are nine districts for local government which follow tribal boundaries as well as three township areas (Gaborone, Lobatse, and Francistown). District and town

councils have responsibility for primary education, public health, water supply, and maintenance of district roads.

The political and economic course followed by Khama's country over the ten years since independence reflects his commitment to a western-oriented, essentially capitalist, multi-racial society. His apparently pragmatic approach is best illustrated through Botswana's relationship with neighboring countries. Khama has vocally opposed the Smith and Vorster regimes and has agreed to grant assylum to political refugees. At the same time, he has stated that he would not allow his country to be used as a staging area by guerrillas and has maintained economic relations with both Rhodesia and South Africa, in deference to Botswana's high degree of economic dependence on its white-ruled neighbors.

The Khama administration is deeply committed to the creation and maintenance of a nonracial democracy. The course which his Government has set for the country heightens the contrast between Botswana and its neighbors. More than that, many political analysts in the early 1970s thought it would bring them into conflict. In a very real sense, two diametrically opposed systems, two mutually antagonistic experiments are being implemented in southern Africa in sharp juxtaposition. Two of the richest and most powerful states on the continent are striving, through the imposition of the will of a minority of their people, to

create a lasting separation of races and ethnic groups. In their midst, one of the least developed countries in the world is attempting simultaneously to surmount a legacy of neglect and disadvantage, to achieve a national unity and identity, without regard to race or tribe, and to build a durable democracy.[4] In this sense, it is important to note that of the nine southern African countries included in the SADAP review, only Botswana, on the basis of the political and civil rights extended to its citizenry, is considered as a "free nation." In reference to its continental neighbors, Botswana shares this ranking with only one other country: Gambia.[5]

E. THE ECONOMY

Since independence, Botswana's economy has grown dramatically. In ten years, its gross domestic product (GDP) has expanded at a compound annual rate of almost 20 percent in nominal terms, a probable 15 percent per year in real terms, reaching over $330 million in 1976/77. Primarily responsible for this growth are major developments in mining, particularly within the last six years, and sizeable increases in cattle production and prices during most of this period (see Table 2 for rate of increase in GDP between 1965-1975).

Botswana's agricultural sector (predominantly cattle raising), despite sizeable growth (16 percent per annum from 1965 to 1976-77), produces a much lower share of

TABLE 2

Gross Domestic Product (GDP)

1965 - 1975/6[1/]

(millions of Rand)*

	1965	1966	1967/8	1968/9	1971/2	1973/4	1974/5	1975/6
GDP	32.8	36.8	43.8	51.2	103.6	190.9	202.3	234.17
Annual Rate of Growth[2/]	-	12.1	-	16.9	23.5	30.9	6	16

Average Annual Rate of Growth (1965-1976/77): 19.7%

1/ 1965 and 1966 are on a calendar year basis; years after that are on an accounting year basis (July to June). Data for 69/70, 70/71 and 72/73 are missing.

2/ Rates of growth between years for which intervening year(s)' data are missing are taken as an average annual growth rate over the period. No rate is calculated for 67/68 since the figure before is not comparable.

* Until 1976, Botswana used the South African Rand as legal trade. On August 23, 1976, the Government introduced its own currency, the Pula (1 Pula = 100 Thebe). For the next three months, the Pula was convertible with the Rand, one for one.

GDP, having dropped from 45 percent in 1968-69 to 25 percent in 1976-77. Mining has increased its share concomitantly. The obvious result is diversification of the economy, reducing somewhat the country's dependence on cattle, which nonetheless remains extremely important.[1]

Recent growth in real GDP, however, has slowed down. Real GDP probably did not increase at all in 1974-75, and probably increased by only 6 percent in 1975-76. This resulted from increased oil prices and the failure to bring the newly constructed Selebi-Pikwe mine into production.

Over the next five years, the economy is expected to continue growing, but at an average rate of 9.6 percent per year in real terms. Mining is expected to continue growing quite rapidly, expanding its share of GDP to over 20 percent by 1981. Agriculture's share, in turn, is projected to fall to around 20 percent, while the shares of the other sectors will probably remain fairly stable.

Thus, the dependence on two main sectors, cattle and mining, is expected to continue, with their relative importance in terms of GDP equalizing over the next five years. In terms of personal incomes, however, cattle will remain predominant, since a sizeable proportion of mining income accrues to noncitizens.

Between 1965 and 1975-76, per capita GDP grew at an annual rate of 17 percent, from $71.1 in 1965 to over

$396.7 in 1975-76. GDP figures should, however, be treated with caution, as the distribution of income in Botswana is highly unequal between groups of people. Food, petroleum products, vehicles, and capital goods have predominated. The increase in export share reflects the export-led growth that has been occurring in Botswana, while the increased share of mining in exports from 17.7 percent to over 50 percent in 1975 reflects the mining-led growth in exports. Beef exports are still of substantial importance.

It is estimated that about 75 percent of Botswana's imports come from South Africa. The rest come from other African countries and from Europe. Almost all imports either enter through South Africa or are produced there.[3]

F. AGRICULTURE AND LIVESTOCK

Prior to independence, virtually the entire resident population of Botswana depended for its livelihood on livestock and subsistence agriculture. Despite rather remarkable mineral-led economic growth during the last ten years, that situation has not radically changed. In 1975, 80 percent of the population lived in rural areas, 80 percent of whose income depended directly or indirectly on agricultural production. In addition, numerous Batswana who live in urban areas own cattle and crops. Agricultural products are also quite important in Botswana's balance of payments.

The significance of Botswana's agricultural sector is not likely to diminish greatly in the foreseeable future.

Although its importance has diminished, agriculture remains the largest single industry in Botswana, accounting for about one-third of GDP. The government estimates that by 1981 only 20 percent of the work force will be able to find employment in the modern sector. Even by the year 2000, the percentage is expected to increase only to 25 percent. The rest will have to earn their livelihood in the traditional sector (urban or rural) or will have to emigrate (to South Africa or elsewhere). However, there are already moderately large squatter settlements around the cities, and the government is not anxious to see them grow. At the same time, the absence of a large number of young males (between forty and sixty thousand currently work in South Africa mines) creates a family structure in Botswana's villages which the government is probably not eager to foster. Thus, from the government's viewpoint, the rural sector, i.e. agriculture, will have to productively employ the bulk of the population for many years to come.

Over the next decade and a half, Botswana's rural population is expected to increase by 40 percent. This increase will occur in a sector where over 45 percent of the rural households currently live on incomes below the poverty level, and where the distribution of income is among the least equitable in the world. Furthermore, it will not be easy to increase agricultural production, due to

the dearth and erratic nature of rainfall, poor livestock management, overgrazing and range deterioration, and uncertainty as to continued access to Botswana's major beef export market, the European Economic Community (EEC).

Cattle raising remains the dominant agricultural activity. Cattle account for about 80 percent of the marketed agricultural output and for 55 percent of the total agricultural production. Crops comprise 20 to 25 percent of the agricultural output. In traditional villages, most crops are produced for the farmers' own use. Traditional hunting, forestry, and fishing activities produce the remaining agricultural output. As much as 50 percent of the food-grains consumed in Botswana are being imported; 33-50 percent of all basic foodstuffs (including oil, sugar, and tea, as well as grains) are imported.[3]

Botswana's surface area is divided into three legal types: Tribal Lands (274,000 square km), with essentially no private land ownership; State Lands (266,000 square km), administered by the central government; and Freehold Lands (20,500 square km).

In July 1975, the government published its National Policy On Tribal Grazing Land. The essence of the policy is the establishment of private property rights in tribal areas, and almost all future livestock programs will be geared to it. While the Tribal Grazing Land Policy is expected to arrest the deterioration of the rangelands, many in the government fear that it will also worsen the distribution of wealth and income in the rural areas.

All totalled, 5 percent of Botswana's land is thought to be arable, and approximately 15 percent of that is believed to be under cultivation. Generally, farming in Botswana complements cattle holding, with 73 percent of the farmers engaged in both cattle and farming.

The government has set a goal of reaching net self-sufficiency in non-livestock agriculture by 1986. The goal results partly from a desire to reduce the dependence on imports and the resulting drain on the balance of payments, and partly from the desire to increase incomes in rural areas.

The structure of Botswana's crop production and trade is greatly affected by consumer preferences, availability of processing facilities, and South African pricing policies. There seems to have been a shift in consumer preferences from sorghum to maize, particularly on the part of urban consumers.

G. MINING AND INDUSTRY

As already shown, a major factor in Botswana's high rate of economic growth since independence has been the growth in the mineral sector. It is the nation's largest private employer and is an important contributor to the development of a semi-skilled labor force.

The discovery of diamonds in 1967 resulted in the development of the Orapa Mine, which is currently producing 2.35 million carats per year and is to be expanded to 4.5 million in 1978. A second mine came into production in 1976.

Botswana's mineral deposits constitute by far its most important natural resource, especially when the potential is considered on a per capita basis. The known mineral potential, besides diamonds, includes copper-nickel mines and copper deposits presently under exploration, low-quality coal deposits, large brine deposits, and small, potentially exploitable deposits of manganese, gypsum, asbestos, and gold. The economic future of the country depends primarily on its ability to use this mineral wealth to diversify the production base of the economy.

In regard to industry, the development of manufacturing on any significant scale must be recognized as a long and difficult process. Handicaps to this development derive from its limited scope for import substitution, its land-locked character, limited water supply, lack of skilled workers, long distances to metropolitan markets, and some caution on the part of foreign investors due to political uncertainties in the region. Despite these constraints, the opportunity to exploit the large customs union market, effective subsidies on imported goods, and economic factors which may offset political constraints on foreign investment all contribute to potential increased industrial development. The manufacturing sector, which in 1972 contributed only five percent to total cash

employment and nine percent to total GNP, is dominated by the Botswana Meat Commission (BMC). Other sub-centers range from firms producing grains and feeds, metal products and machinery, beverages, games and trophies, furniture, rubber, and plastic products. [1]

The future efficient development of the economic infrastructure depends greatly on the existence of an active and viable domestic construction industry, which is at present very little developed and plays only a marginal role in civil works construction. Most of the major works are executed by foreign firms based mainly in South Africa. The few existing local firms are primarily subsidiaries of South African or Rhodesian companies, and are capable of carrying out only small road works. Current government policies and the country's great mineral potential offer favorable prospects for development of an active domestic construction industry. The main constraint to the development of bonafide domestic firms seems to be the absence of entrepreneurial and management expertise.

H. TRANSPORTATION

A country almost the size of Texas would require an extensive transport system to become fully integrated. Botswana's transportation system is, however, still in its infancy. Having developed as a result of colonial exigency rather than local need, the system's major component

remains the Rhodesian-owned and operated railway, which was built between 1893 and 1897 as part of Rhodesia's colonial empire. Approximately 70 percent of Botswana's imports and exports, as well as significant internal freight and passenger traffic, travel by rail.

While almost two-thirds of Botswana's people live within 80 km of the rail line, roads between much of this population and the line are quite primitive, and often impassable without four-wheel vehicles during the rainy season. For many Batswana who must travel increasing distances to their farmlands and cattle posts, poor rural roads are also a distinct hardship. In general, direct links between the east and west of Botswana are virtually non-existent.

Ameliorating these transport problems to some extent is the multitude of air strips scattered throughout Botswana. However, many of these are in poor condition and only a small proportion of Botswana's population directly benefits from them.

In the last few years, the government has placed a major emphasis on transportation development. Between 1973-74 and 1975-76, 27.8 percent of the central government's development budget was spent on transport. During the next plan period that proportion will remain approximately the same. Of the $131 million the government plans to have spent on air and road transport between 1975-76

and 1980-81, 88 percent will be for road development. Of that, 50.6 percent will go toward the building and upgrading of the north-south road which will link Botswana with its African neighbors to the north.

I. EDUCATION

Prior to independence in 1966, Botswana's educational system was extremely underdeveloped. Less than three percent of secondary school-aged children attended secondary school in 1964, and fewer than half of primary school-aged students went to primary schools. In Lesotho (then Basutoland), there existed a university designated for Batswana, but only five Batswana students were enrolled in 1962. By 1962, only 35 Batswana living in Bechuanaland held B.A. degrees. Thus, upon independence, Botswana had very few highly educated citizens. Moreover, it faced a 75 percent (or greater) illiteracy rate among its adult population in general.

After independence, Botswana's educational system developed, at first rather slowly, but steadily. Over the nine years following independence, primary school enrollments increased at an average annual rate of 5.4 percent, and secondary school enrollments increased by almost 19 percent a year. Furthermore, a number of post-secondary institutions were built.

By 1974, 70 percent of the 6-13 age group were enrolled in primary schools and 13 percent of the 14-19

age group were enrolled in secondary schools. Three hundred students were attending the University of Botswana, Lesotho and Swaziland (now the University of Botswana and Swaziland), 730 students were enrolled in various kinds of post-secondary vocational training, and 452 were enrolled in teacher training.

Although enrollments in the primary schools have increased fairly rapidly, the percentage of primary teachers considered unqualified has remained quite high (36 percent in 1975) and the low number of qualified high-school graduates severely limits the population ready for post-secondary training.

The government plans to invest at least $47.9 million in educational projects between 1976-1981, and recurrent expenditure on education will grow at 15 percent per annum over the same period. The Ministry of Education's share of recurrent expenditure will increase from 19 percent to 23 percent of the budget total. Only communications and general infrastructure will attract a larger share of public investment than education, and no department will have a faster growth of recurrent expenditure. These figures clearly demonstrate the importance the Government attaches to the development of educational opportunities. However, even with these massive allocations to this sector, demands for qualified individuals will not be adequately met.

J. HOUSING AND SETTLEMENT PATTERNS

Traditionally tribal villages were built around the home of the chief and the kgotla, or tribal meeting place. Residence in the villages was restricted to the time between harvesting and ploughing. During the rest of the year, most people divided their time between the agricultural lands, located up to 30 miles outside the village, and the cattle posts, located 60-100 miles from the village. Although it appears that more individuals are now residing permanently on the agricultural lands, often in small village groupings, the tribal villages remain among the most heavily populated in Africa. The major tribal villages are Serowe, Kanye, Molepolole, and Mochudi.

Housing consists mostly of round thatched huts called rondavels. These huts are constructed of local materials: sun-dried bricks and mud and wattle, with thatched roofs. Building techniques have been well perfected, and costs of construction are low.

Rapid urbanization has resulted in housing shortages in the modern towns - Francistown, Gaborone, and Lobatse. Housing in squatter areas is inferior, density is high, and services are absent. Some efforts have been made to provide low-cost housing in Gaborone, but it is now recognized that provision of sites and services is a more feasible alternative. [13]

III. THE HEALTH SECTOR

A. A PROFILE OF THE HEALTH SITUATION IN BOTSWANA

1. Health Status and Patterns of Morbidity and Mortality

The health problems of most of the population of Botswana who live along the eastern corridor are due to common nontropical diseases (see Tables 3 and 4). Major causes of morbidity are respiratory and gastrointestinal ailments, and a major cause of hospitalization and a leading cause of mortality is pulmonary tuberculosis. Botswana is fortunate to have a low endemicity of malaria which is restricted mainly to the northern part of the country. Hookworm is virtually unknown. Malnutrition is uncommon and the mean haemoglobin levels of the population are several grams higher than in most African countries.

However, the absence or low prevalence of several tropical diseases gives the problem of schistosomiasis a higher priority than it would have had if the country was bedevilled with other major causes of morbidity. A 1976 WHO study concluded that urinary schistosomiasis due to S. haematobium was widespread in Botswana along various river beds and in stock dams, burrow pits and in village irrigation dams. S. mansoni thus far has only been identified in the Okavango and Thamalakane Rivers and two other sites in the country. Examination of rectal snips taken from schoolchildren in Maun revealed a 70 percent infection rate with S. mansoni.[6]

TABLE 3

Some Major Causes of Hospital Deaths
In Botswana in 1975

Disease	Admission to Hospitals	Hospital Deaths	Hospital Case Fatality	Deaths as % of Total Deaths
Tuberculosis	2,679	222	8.3%	19.6
Respiratory conditions excluding TB	5,264	120	2.3%	10.6
Cardio Vascular System	1,008	80	7.9%	7.1
Enteritis	1,914	95	5.0%	8.4
Malignant Diseases	299	52	17.4%	4.6
Injuries	4,898	62	1.3%	5.5
Measles	2,536	79	3.1%	7.0
Malaria	733	10	1.4%	0.9

* Total adds up to 63.7% of all hospital deaths.

Remainder accounted for by miscellaneous diseases. Total number of deaths in hospitals = 1130.

Source: Ministry of Housing

TABLE 4

Number Of Out-Patient Attendances
By Disease Groups And Percentage Of Total
Out-Patient Attendances in 1975

Condition	Number of OPD Attendances	Number of OPD Attendances *
Respiratory Conditions	120,712	20.12
Sexually Transmitted Diseases (VD)	54,668	9.11
Diseases of the Skin	49,571	8.26
Diarrheal Diseases	40,005	6.67
Injuries	37,296	6.22
Diseases of the Eye	25,958	4.32
Total Out-Patient Attendances		600.000

* Total adds up to 54.7% of all out-patient attendances.

Remainder accounted for by miscellaneous diseases.

Source: Ministry of Housing

Mental health problems are increasing in Botswana partly due to social change, urbanization, economic pressures, and unemployment. Alcoholism and drug abuse are also becoming more common among high school and university students. Two other areas of concern are:

- Occupational Health: Many of the diseases shown in Tables 3 and 4 are associated with, or aggravated by, particular occupations. These include diseases such as tuberculosis, anthrax, silicosis, tetanus, and brucellosis; and

- Dental Health: A workshop held in Botswana in January 1976 confirmed the increasing incidence of caries and periodontal disease. This is associated with growing urbanization and dietary changes to refined carbohydrates.

2. Food and Nutritional Status

The following findings on malnutrition were cited by Ministry of Health officials (from information on 1976 outpatient data based on a 2.2 percent of sample (2,000 children) in 0-4 year old population, particularly 9-12 month old group, total of 2,000 in sample):

- Clinical malnutrition, e.g., kwashiorkor or marasmus, was rare;

- Chronic undernourishment was more prevalent. National nutritional problems are due to lack of total food, although surprisingly little vitamin deficiency is seen. Maize and sorghum--the staple crops--provide good nutrition, especially when supplemented with fair consumption of animal protein.

It is believed that the traditional handling of food, e.g., via drying of meats, had beneficial effects on

nutrition. Currently, however, as people are moving into towns and away from traditional lifestyles, such practices as drying fruits and vegetables and gathering wild foods are dying out. Therefore, traditional knowledge may be lost and subtle signs of social malnutrition are beginning to develop among new urban dwellers.

A Nutrition Unit was established in 1973 and aims to develop strategies and programs to reduce undernutrition, establish social and geographical profiles of risk-groups, and act as a functional liaison unit between the Ministry of Health and other organizations involved in nutrition programs. It is hoped that a sufficient number of nutrition officers will be trained locally so that each health region will be staffed by one officer in 1981. WHO supports this unit in the Agriculture College, nutrition education through the Botswana Extension College, and family welfare education.

The unit places a high emphasis on action-oriented training through the National Health Institute's program for nurse training. This includes, for instance, training for professionals as well as non-professional personnel (e.g., family welfare educators.)

A number of Nutritional Rehabilitation Centers--less than one half dozen--have spontaneously formed around the country. Their origin is not clear, but they are usually

associated with an energetic personality, e.g., a concerned nurse, chief, or teacher. These have usually developed independent of village development committees, and are operated on private donations from voluntary organizations.

3. Environmental Health Issues

a. Sanitation/Waste Disposal

The Ministry of Government and Lands is involved with sanitary projects in many towns, including solid waste disposal. The Ministry recently let a consultancy for the evaluation of waste disposal and sewerage facilities in Gaborone. This study will indicate what is needed to bring the capital city up to standards for effluents. While the city's present system is adequate, in-migration of population has been running at 16 percent annually for the past few years, and officials feel it is time to begin planning for the future. Open pit burning of solid waste is currently used in the capital city of Gaborone. Lobatse, where the abattoir pollutes the local water supply, has no sewer system but a first-stage effort is being planned by the government.

Although air pollution does not present a problem at this time, there is no doubt that it will in the future, especially if attitudes held by industry remain fixed.

For instance, government officials have asked the management of the copper-nickel mine at Selebi-Pikwe to take measures for air pollution abatement, but the company thinks it is not economical at this time to clean up the plant environment. Pollution is caused by copper waste dumped into the Shashe River, and air pollution is due to sulfur. Over the next several years, however, the mining company is expected to spend a substantial sum to clean up the water.

b. Water

It is estimated that 40 percent of the people have access to piped water. An analysis of the ten district plans (1978) by the Ministry of Finance and Development Planning revealed that clean water is the first priority among the expressed needs of the people [2]. High nitrate concentrations have been detected in many borehole and ground water supplies. A study to be conducted in late 1978 will examine whether people--especially children--are being affected. One solution, and possibly the cheapest, will be to drill new boreholes and prevent cattle from polluting them. It is uncertain, however, whether cattle people are the source of contamination.

Local authorities have primary responsibility for the provision of water supplies in their areas, assisted by the central government. The Ministry of Local Government

and Lands administers water development grants to local authorities; the Ministry of Agriculture is responsible for the small-dam construction program; and, the Ministry of Mineral Resources and Water Affairs has major responsibility for water development. The Water Utilities Corporation is responsible for some urban water supplies, and the National Development Bank provides loans for water development related to farming.

About 75 percent of the country's human and livestock population are estimated to be totally or partly dependent on ground-water. The country has over 5,000 registered boreholes and there are perhaps 2,500 unregistered.

The program for supplying the villages with adequate water of acceptable quality started in 1972 and it is envisaged that it will be completed by 1985. The current five-year plan calls for the provision of safe water supply to 100,000 people in major villages and 50,000 in smaller settlements. By 1985 all remaining villages with more than 500 inhabitants and two-thirds of settlements with less than 500 will be supplied with safe water. It is intended that nobody should have to walk more than 400 meters to the nearest standpipe. [2]

c. Occupational Health

The government is concerned that workers face particularly high health risks through exposure to occupational hazards, and it intends to set up a unit to promote and

maintain occupational health. To do this it will be necessary to utilize both internal and external financial sources, appoint a medical officer to establish an operational basis for the program, and pass comprehensive legislation dealing with the prevention and control of hazardous conditions in places of work.

The Salisbury Report (1976) recommended that the government introduce a scheme for the disabled in Botswana. The government has already started to implement many of the proposals, and a Special Services Unit has been established to coordinate programs for the blind, the deaf, and the physically handicapped. The unit partly comprises medical social workers attached to the regional health teams, and it is believed that wherever practicable family and community involvement with the handicapped should be encouraged. [2]

4. Population and MCH/Family Planning

The family is the most important and easily identified socio-economic unit and therefore forms a focus for most aspects of basic health services. Women of child-bearing age comprise 20 percent of Botswana's population, while children below the age of 15 comprise another 45 percent. Table 5 indicates some rates of morbidity and mortality among these two groups in Botswana in 1974 and 1975, as well as their use of medical facilities.

TABLE 5

Morbidity And Mortality Rates, And Use Of Medical Facilities
By Children Under
15 Years And Women Aged 15 to 44 Years

	Children (Under 15 Years)		Women (Aged 15 to 44		Total	
	1974	1975	1974	1975	1974	1975
Proportion of Hospital Deaths	41%	50,1%	11,6%	10.4%	52,6%	60,5%
Proportion of Hospital In-Patients	27,5%	30,2%	48%	46,5%	75,5%	76,7%
Proportion of Out-Patients	39,4%	54,1%	34%*	34%	73,2%	88,1%
Number of Ante-natal Attendances	-	-	91,000**	119,023	-	-
Number of Family Planning Attendances	-	-	21,482	29,272	-	-

Notes: * 15 years old and over.

** New and repeat attendances. Rough estimate only due to considerable under-reporting.

The Ministry of Health has established a division, headed by a Medical Officer, for the program planning, organization, and evaluation of maternal and child health/ family planning services.

Comprehensive maternal and child health services, comprising ante-natal care, post-natal care, and family planning, are given in all health facilities with qualified staff. In introducing family planning to the people, the Ministry of Health decided that these services should be integrated with the maternal and child health services within the overall health care program. The aim is to provide all citizens in the reproductive ages with knowledge of methods of family planning and associated services, so that they are able to plan their families in relation to spacing and size if they so wish.

The MCH/FP Medical Officer is also responsible for training village-based community health workers, the family welfare educators (FWE's). These young women are chosen from their villages by the Village Development Committees, and are given three months pre-service training to motivate people towards health programs. They have regular in-service training, assist nurses and doctors on their visits, and keep central authorities informed about local health problems.

To reduce illness and death in mothers and children it is necessary to widen and improve the existing program

by establishing more staffed rural health facilities, by training and placing more nurses and FWE's in the clinics and villages, and by more in-service training. These measures should further increase the numbers of women seen at ante-natal clinics, of family planning acceptors, and of children vaccinated. The figures in Table 6 show the present situation and the 1981 targets.

The birth rate in Botswana is estimated at 47 per 1,000, and the death rate at 21, giving a growth rate of 2.6 percent per year; at this rate the population would double within 27 years. The mortality rate is thought to be the lowest in Africa and is due to low infant mortality, estimated at 97 per 1,000 births. Life expectancy at birth is 56 years. (Source: 1978 World Population Data Sheet.)

Total fertility is about 6.5 births per woman. In a survey in the Ghanzi District, the average number of live births among mothers over 35 was 6.2; the average number of children wanted by all mothers was 5.8. [2] Natural child spacing has resulted from the custom that a woman should not conceive until her last child has been weaned --at about 18 months. Although male absenteeism seems to have altered traditional habits, it does not appear to have affected the birth rate.

TABLE 6

Ante-Natal Clinic Utilization Percentages

	Proportion of Totals	
	1976	1981
Pregnant Women Visiting an Ante-natal Clinic	40%	80%
Supervised Deliveries	58%	80%
Women of Reproductive Age Accepting Family Planning	6%	9%
Children Vaccinated	40%	80%

Source: Ministry of Health

Family planning is becoming accepted in the context of maternal and child health, although traditional values create resistance to widespread usage. At the World Population Conference in 1974, Botswana declared its population problem to be one of underdevelopment of human resources, not one of overpopulation. The government believes "social, economic, and political conditions and integration of women are more important than availability of contraceptives for effective family planning."

5. Mental Health

Botswana has one 120-bed referral hospital at Lobatse for all patients needing psychiatric treatment. For several years this hospital has been severely overcrowded, with unsuitable buildings and highly inadequate service facilities. In June 1978, the patient census was well over 450.

The reported number of psychiatric cases is increasing for at least three reasons. First, as health personnel are becoming more widespread through the country, so the detection, reporting, and referral of psychiatric cases are improving. Second, there have been severe strains imposed on the population by rapid socio-economic change. Third, the establishment of the Lobatse hospital has increased the people's awareness of mental illness.

The Ministry of Health recognizes this growing problem and intends to develop a program for the more effective prevention and treatment of mental illness by integrating mental health services into the network of basic health services. This will mainly be accomplished by setting up psychiatric units and outpatient facilities in district hospitals and by expanding the corresponding training facilities, but it will also be necessary to enlarge and modernize the psychiatric hospital itself.

Current plans call for the construction of a 320-bed hospital in Francistown. When it is completed, the present facility, Jubilee Hospital, is to be converted into a second mental health hospital. However, because the new hospital is not scheduled for completion until 1985, there is little relief in sight during the next several years for the patients at the Lobatse Mental Hospital.

B. THE HEALTH DELIVERY SYSTEM: AN OVERVIEW

1. The Organization and Administration of Health Services

As is true with most developing and developed countries, the initial emphasis of health services in Botswana was on curative care. Beginning with the period of the Third National Development Plan (1973-1978), however, the government embarked on a long-term effort to establish a preventive/curative mix of health services and to extend them into the rural areas. The Plan emphasized the need to (a) construct clinics and health posts in all settled communities of more than 500 persons, (b) train and appoint health personnel to work in the rural areas, (c) improve, rather than expand, hospitals, (d) use hospitals as the highest level within the health care referral system, and (e) accelerate the training of para-medical and auxiliary personnel. The government's goal was to reach the greatest number of people possible with the broadest level of health services which the government could afford.

This approach is being continued during the period of the Fourth National Development Plan (1976-1981). According to the Plan, "the long-term aim of the Ministry of Health is to provide a comprehensive health service to people throughout the whole country. To do this, the curative and preventive aspects of health services must be integrated and aimed particularly at the community or

village level." (NDP 1976-1981 Chapter 14.39, Policy Statements and General Objectives). The statement points out that much progress has been made towards establishing a well-balanced health care system and that major objectives in order of priority are: [2]

- strengthening of primary health services equitably distributed, but with an emphasis on rural and peri-urban areas;
- expansion and diversification of training facilities and opportunities for medical and paramedical personnel;
- improvement of hospitals and health services to ensure adequate referral and specialists' services;
- control and reduction of diseases caused by an unfavorable environment through immunization, surveillance, and treatment;
- expansion and diversification of health education training programs;
- expansion of the MOH's administrative and planning establishment; * and
- expansion or introduction of new mental health, occupational health, and handicapped services into the primary health care delivery system.

These emphases are consistent with the observed health problems in Botswana. Preventive health measures can reduce the incidence of endemic and social diseases which tend to overburden the health delivery system.

Botswana is geographically divided into twelve administrative units, including ten district and two town

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* The government does not publish a sequence of five-year plans. Rather, a system of "rolling plans" is used; a new five-year plan is published every three years.

councils (Gaborone and Francistown). The governing body on the district/town level is the district/town council, which functions under the authority of the Ministry of Local Government and Lands. The MLGL supports the operations of the councils by providing equipment and supplies and funds for construction. The MLGL's Unified Local Government Service coordinates the councils' facilities, including health facilities. Health activities are coordinated between the MOH and MLGL at both the central and regional levels. [2]

Health care in Botswana is organized for delivery at different levels of sophistication and coverage. Health services are provided by the central and local governments, the missions, the Red Cross, the mining companies, and by private and traditional practitioners. The central government (Ministry of Health) is responsible for the general planning and supervision of the developing health care system, and for the total operation of government hospitals and health centers. The town and district councils (through the Ministry of Local Government and Lands) have been assigned the responsibility for construction, maintenance and operation of their clinics and health posts. The missions are responsible at present for the operation of their hospitals, clinics, and health posts, although the central government provides them with yearly subsidies. The mines at Orapa and Selebi-Pikwe operate small hospitals for

their employees and their dependents. Together, the facilities operated by these four organizations constitute the network of formal health sector services.

In addition to the health posts and clinics operated by the district councils (MLGL), there are an estimated 60-75 villages with temporary structures which serve as health posts, as well as an estimated 100 small settlements where mobile teams make regular visits.

A major source of health services continues to be the various mission-run facilities. These currently have about 25 percent of the total number of inpatient beds and treat about 20 percent of outpatients. This represents a substantial contribution of both staff and financial resources, and the government will continue to subsidize the missions' running costs in the future at whatever level is necessary to keep them open.

The relationship between the government and the missions is still evolving. The government does not intend to acquire mission facilities as a matter of policy --recent acquisitions were initiated by the missions themselves. On the other hand, it is government policy to treat each mission facility as part of the total health system, to contribute to their viability, and to ensure that the missions recognize the essential responsibilities of central and local government, particularly in the supervision by the Regional Medical Teams, in maintaining

or planning of new or expanded facilities, and in budgetary or utilization reviews.

The various missions in Botswana are established together in the Association of Medical Missions for Botswana, and are represented in the Ministry of Health by an Executive Coordinator. This arrangement has proved extremely successful in co-ordinating the work of the missions and the government and in improving the planning process.

Government health care policy is also evolving with regard to private mining companies. Some of these have already contributed to the development of health facilities, while other new industries, especially in isolated areas, now often find that they cannot attract skilled workers and management personnel without ensuring provision for adequate health care services. While the government believes that a minimal first step for such companies is to render health care for their employees and dependents, it would like these resources to be integrated into the overall health care system. [7]

2. Health Manpower

Currently there are 77 physicians practicing in Botswana, or one physician for every 8,824 in the de facto population. The great majority of these physicians, 80

percent, are expatriate; 53 are with the central government, 9 with missions or mines, and 15 are private practice physicians. Government policy directs that such doctors may treat paying patients privately, but not as patients in government hospitals. In-patients may, however, pay a fee and thus be seen as "private" patients in a "private" ward by doctors on the hospital staff. They may also attend as out-patients at special times. Other senior medical staff include 10 pharmacists--4 in government service and 6 in private practice; 15 health inspectors, of whom 14 are in government service; and 5 dentists, 2 of whom are in government service.

In addition, there are a variety of other health personnel, including nurses, health assistants, and technicians (see Table 7). Most of these undergo training in Botswana at one of the nurse or health training schools. As Table 7 illustrates, nurses form the main component of the formal health personnel structure in Botswana.* In the two categories listed in this table, the total number of nurses is 754--comprising 59 percent of all active health personnel.

The nursing profession is composed of 337 enrolled nurses and nurse midwives in government service (including both the Ministry of Health and the Ministry of Local Government and Lands); and 72 who work either in missions,

* There are some 2,000 traditional practitioners.

TABLE 7

Health Personnel, July 1, 1978

JOB TITLE	Government		Mission Mines	Private	TOTAL
	Central	Local			
Physician	53	-	9	15	77
Enrolled Nurses & Nurse/Midwives	276	61	52	20	409
General Nurse/ Midwives	200	55	45	45	345
Health Assistants	65	8	-	-	73
Pharmacists	4	-	-	6	10
Health Inspectors	9	5	-	1	15
Dentists	2	-	2	1	5
Family Welfare Educators	-	330	20	-	350
TOTAL	609	459	128	88	1,284

Source: Ministry of Health.

in private practice, or in hospitals and clinics operated by the mining companies. In addition, there are 255 general nurse midwives in government services, and 90 who work either in the missions, mining companies, or in private practice. Other mid-level personnel engaged in health services delivery of a curative nature include 65 health assistants with the Ministry of Health and 8 with the Ministry of Local Government and Lands.

Table 8 displays the expected output of nurses between the years 1978 - 1985, during which time 1,361 nurses, or a number equivalent to a threefold increase over the present complement (754), is anticipated.

In 1972, the National Institute in Gaborone began to train registered nurses, mid-wives, and health assistants. It also took over responsibility for the enrolled nursing schools in Lobatse, Francistown, Serowe, and Molepolole.

As of 1978, the output of graduates from the National Health Institute and the numbers of medical staff trained were generally behind the targets set in 1973. This was largely due to limited accommodation for students and teachers. The training objectives for the 1976-81 Plan period are listed below: [2]

a. Medical and Dental Officers and Pharmacists

Batswana students will be sent abroad each year for training. However, since few were trained in the last Plan period, expatriate recruitment will be continued.

TABLE 8

Expected Output of Newly Trained Nurses

Enrolled Nurses	1978	1979	1980	1981	1982	1983	1984	1985	Total 1978-85
Lobatse	15	144	40	40	40	40	40	40	269
Molepolole	30	23	40	40	40	40	40	40	293
Serowe	10	16	40	40	40	40	40	40	266
Francistown	14	15	15	40	40	40	40	40	244
Subtotal	69	68	135	160	160	160	160	160	1,072
Missions	20	45	23	-	-	-	-	-	88
Total	89	113	158	160	160	160	160	160	1,160
Adjusted Total	80	95	130	130	130	130	130	130	955
Registered Nurses									
Gaborone	48	52	62	62	62	62	95	95	538
Missions	4	7	-	-	-	-	-	-	11
Total	52	59	62	62	62	62	95	95	549
Adjusted Total	42	44	41	42	43	44	75	75	406

Assumptions: 1) Drop-out rate of about 10% p.a. for enrolled nurses.

2) Drop-out rate of about 25% ov(full course for registered nurses.

Source: Ministry of Health

b. Registered Nurse Mid-wives

It is estimated that an annual intake of 50 nursing students will be needed for an effective and relevant training program; however, expected annual output is somewhat higher.

c. Enrolled Nurses and Enrolled Nurse Mid-Wives

The proposed expansion of the National Health Institute and enrolled nursing schools at Lobatse, Francistown, Serowe, and Molepolole will provide training facilities for 80 pupil nurses at each. It is estimated that by 1981, 355 enrolled nurses will have qualified. The Ministry also plans to introduce mid-wifery training for as many enrolled nurses as possible. This cadre will form the backbone of the rural health services.

d. Public Health Nurses

The Ministry will start to train public health nurses locally, and the aim is an annual intake of 10 or more students over the Plan period in order to ensure adequate supervision of rural, urban, and school health services.

e. Nurse Tutors

At present all tutors are trained outside Botswana, at a rate of one or two per year. It is intended to start a tutor training programme locally in conjunction with the Faculty of Education of the University of Botswana and Swaziland.

f. Dental Nurse Tutors

It will also be necessary to train two dental nurse tutors to be responsible for the training of dental therapists.

g. Nurse Practitioners

Due to shortages of doctors, nurses have for many years examined and treated patients suffering from common health problems. In order to give nurses additional skills and techniques to be effective workers the Ministry plans to start a one-year training programme for nurse practitioners.

h. Family Welfare Educators

This auxiliary worker has become an important and permanent member of the health team especially at the intermediate and peripheral levels. The objective is to increase the annual intake of family welfare educators from 60 to 90 during the Plan period.

i. Health Inspectors

In order to meet the objectives of improved environmental sanitation it is intended to train about three health inspectors each year in the next five years with a target number of 17 trained by 1981.

j. Health Assistants

A new and more relevant syllabus for the training of this cadre has been introduced. The annual intake target is 35 students.

k. Pharmacy Technicians

Training of this cadre only started in 1976 and is behind schedule. In the last Plan period, however, technical assistance personnel were recruited to undertake the reorganization of most hospital medical stores and drug supplies.

l. Nurse Anaesthetists

Two nurses are already training as nurse anaesthetists and a total of 12 will be trained by the end of the Plan period.

m. Dental Therapists

The first group of dental therapists is in training. Expansion at the National Health Institute will make it possible to train two each year.

n. Health Administrators

This cadre was introduced to support senior medical and nursing personnel in the routine administration of health services and facilities at central and district levels. It is intended to train about 20 health administrators over the Plan period.

o. Health Education Officers

Over the Plan period two health education officers will be trained annually. They will be assigned to each regional health team and to the health education unit.

p. Medical Social Workers

One or two medical social workers will be trained each year and then attached to a regional health team or another unit.

q. Nutritionists

Nutritionists will be posted to regional health teams or the Nutrition Unit. By 1981, the MOH intends to have decentralized the operations of its Nutrition Unit to the regional level.

r. Physiotherapists, Radiographers, Occupational Therapists, Laboratory Assistants, Field Assistants and Technical Assistants.

During the period 1978-81, renewed efforts will be made to train Batswana for these posts.

The scarcity of trained Batswana is a critical constraint to the country's development plan in general and to health sector development in particular. Consequently, the analysis of the demand and supply for skilled manpower is extremely important. In 1975, the World Bank estimated that the demand for skilled manpower would expand at nine percent per year and that the increase in domestic supply, already determined by previous investment in educational and training facilities, would be unable to meet the increased demand with the result that the need for expatriates will more than double over the Plan period [11]. Table 9 illustrates the growth of the health

TABLE 9

Central and Local Government
Capital Expenditure on Health Care in Botswana, 1973-76 and 1976-81 Estimates

	1975-76		1976-77		1977-82	
	P	%	P	%	P	%
Hospitals	321,450	29,0	164,500	9,2	3,424,500	33,5
Health Centers	113,250	10,2	74,000	4,2	1,296,000	12,7
Training	26,000	2,4	627,000	53,2*	3,400,000	33,3
Basic Rural Health Units	612,000	55,2	697,600	39,1	1,430,500	14,0
Other	35,300	3,2	219,700	12,3	667,400	6,5
Total Expenditure	1,108,000	100,0	1,782,700	100,0	10,218,400	100,0

Central and Local Government
Recurrent Expenditure on Health Services in Botswana

	1975-76 est.		1976-77 est.		1977-82 est.	
	P	%	P	%	P	%
Central	3,965,500	83,1	4,394,801	79,0	6,329,000	77,9
Local	808,800	16,9	1,168,800	21,0	1,940,400	22,1
Total	4,774,300	100,0	5,563,601	100,0	8,769,400	100,0
Headquarters	171,100	3,6	159,300	2,9	204,800	2,3
Training	340,950	7,1	379,450	7,1	784,600	9,0
In-Patients	2,021,500	42,3	2,218,000	39,9	2,761,600	31,5
Out-Patients	1,424,600	29,8	1,856,600	33,4	3,114,300	35,5
Public Health and Sanitation	452,650	9,5	506,350	9,1	1,318,300	15,0
Others	362,500	7,6	425,900	7,6	586,000	6,7

Source: Annual statements of accounts, District and Town recurrent estimates. Ministry of Health recurrent estimates, Plan Projections.

One Pala = $1.23 U.S.

*This figure appears to be in error; the data would indicate a 35.2 percentage.

"training budget" for central and local government between the years 1975-76 and 1977-82, both in terms of capital and recurrent expenditure estimates. It is doubtful that the planned increase in the share of the budget going to "training" (from 2.4 percent in 1975-76 to 35.2 percent in 1976-77) was actually implemented. The SADAP team was unable to verify these estimates, but Table 10 appears to indicate that actual capital expenditures on "training" were only 11.1 percent of total capital spending for 1976-77. This reflects the fact that, whereas actual total 1976-77 health development expenditures were only 77 percent of the estimate total, spending on "training" within that total was 24 percent of the estimates for "training".

Of the above eighteen categories of health staff in Botswana who are being trained (or will be trained during the current Plan period, 1976-81) by the government, most of the services are delivered by three core groups of personnel:

a. Family Welfare Educator (FWE):

More than 300 FWE's have been trained and assigned to health posts in Botswana. This auxiliary worker has become an important and permanent member of the health team at the most peripheral level of the delivery system. The objectives during the present development plan were to increase the annual intake of FWE's from 60 to 90 during each of its five years.

TABLE 10

Development Expenditure During NDP III

	1975-76		1976-77	
	P	%	P	%
Hospitals	321,450	29,0	100,255	7,3
Health Centers	113,250	10,2	40,100	2,9
Training	26,000	2,4	152,150	11,1
Basic Rural Health Units	612,000	55,2	1,069,100	78,1
Other	35,300	3,2	7,870	0,6
Total	1,108,000	100	1,369,475	100

Source: Annual Statement of Accounts

The FWE's are chosen by the villages (or at least by district councils), and given 11 weeks of training. They then return to their villages where they work at motivating people to use health care services--child care, immunizations, family planning, and nutrition. FWE's are paid by the district and town councils at the rate of $1,660 per year.

Training is given at the Denman Rural Training Center outside Gaborone. Subjects taught include nutrition, health education, first aid, some medical topics, public health, home economics, gardening and poultry keeping, community development, and social problems. Training consists of eight weeks' classroom work and a three-week practicum in the field. Refresher, in-service courses are also provided to the FWEs.

In the field, FWE's are supervised by Regional Medical Teams, and in health posts by enrolled nurses (where posted). FWEs engage in home visiting and follow up of malnourished children, tuberculosis cases, and family planning clients. FWEs are taught to diagnose and treat simple ailments, including diarrhea, sore eyes, scabies, burns, and minor cuts.

As the FWE's are under the operational control of the Ministry of Local Government and Lands, and because they also constitute the most peripheral unit in the country's health delivery system, lack of adequate supervision and

technical support is a serious constraint on their effectiveness. During the 1976-81 Development Plan, the Ministry of Health hopes to train sufficient staff to place one enrolled nurse in each of the 200 health posts, thereby providing on-site supervision. The MOH, however, has experienced difficulties in the posting of nurses to existing health facilities, and in retaining them in these remote rural areas for an extended period of time. Adequate supervision and technical support for FWEs appears to be a problem area for the indefinite future.

b. Enrolled Nurse (EN):

Candidates for the EN program must have a Junior Certificate (junior high school graduate) and are then enrolled in a two-year program at one of four government or three mission schools. The four government schools are located in Francistown, Lobatse, Serowe, and Molepolole; the three mission schools are in Mochudi, Kanye, and Ramotswa. Enrollment at the government schools has increased to 40 students per school per year (beginning in 1978). Student enrollment at the mission schools averages 15 per school per year. Upon graduation, a selected number of EN's are given an additional two years of training at the National Health Institute (NHI) in Gaborone to qualify as enrolled nurse midwives (ENM).

c. State Registered Nurse (SRN):

Beginning in 1974, candidates for the SRN program must have passed the Cambridge O-level examination (high school graduate) and are then enrolled in a basic three-year program at the National Health Institute in Gaborone. All graduate SRN's, however, are required to qualify also as midwives. This requirement adds one year to the basic training; the candidate graduates as a state registered nurse midwife (SRNM). Enrollment at NHI is 62 students per year through 1981; after 1981 enrollment will increase to 95 students per year. This proposed increase is contingent upon completion of the final phase of expansion of the NHI facilities under a loan from the African Development Fund.

Both the EN program and the SRNM program are under the professional control of the Nursing Council of Botswana. Standard examinations for the award of diplomas are offered by the Nursing Examinations Board of Botswana, Lesotho, and Swaziland (NEBBLS). [7]

It is somewhat difficult to recruit women for nurses' training, due to competitive careers offering better salaries and working conditions. Early marriage and child-bearing, and family obligations, are additional factors which cause a dropout among nurses trained. The National Development Plan states that an attempt will be made to attract male students to the nursing profession.

Most health personnel assigned to health posts and clinics are employees of and paid by the Ministry of Local Government and Lands, while personnel in hospitals and health centers are employees of the Ministry of Health. Employment benefits and working conditions differ within the two systems, and this constitutes a particular problem in staffing remote health facilities. Presently, there is a proposal before a joint committee of the MOH and MLGL on a Unified Nursing Service, which would place all nurses under the control of the MOH. [7]

Apart from the more modern health care personnel, some 2,000 traditional healers continue to practice in Botswana. Of these there are two major types: herbalists and divine healers. The former prescribe and sell medicinal plants and the latter practice herbalism and bone throwing. The traditional medical healers work out of their own homes or in the homes of patients seeking their services.

In 1976, traditional healers accounted for 42 percent of the direct payment by private individuals for health services (see Table 26). Some are organized into formal interest groups, e.g., the Botswana Dingaka Association. This organization has 343 registered members, primarily from the areas around Gaborone. And, traditional healers have typical fee schedules for the services they provide. The fees charged to patients visiting central and

local government facilities account for 16 percent and 4.5 percent, respectively, of current costs.

Some officials believe that the traditional system complements the modern one. It is thought that both healers and their clients classify diseases as "European" and Tswana. Diseases considered "European" include smallpox, upper respiratory diseases, and many skin lesions. Tswana diseases include venereal diseases, infertility, and hallucinatory disorders. The classification, however, is subject to change, based on empirical observation of the success of modern medicine in treating certain cases. On the other hand, observation of the failure of clinics and hospitals to successfully treat other individuals may also lead to reclassification by traditional healers.

A survey of Health Practices in Rural Areas* suggests that parents' choices of healers for sick children are related to the illness. Traditional problems, i.e., tlhogwana, or gastroenteritis accompanied by dehydration, khujavana, or inflamed umbilicus, and malwetsana, or malnutrition, are referred to traditional healers, while clinics and practitioners of "European" medicine are consulted usually for most other problems. [9]

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* Priscilla R. Ulin, "Preliminary Report: Survey of Health Practices in Rural Areas." (Mimeo prepared for the Department of Health Services Ministry of Health: Botswana, May 28, 1974.)

Although not part of the modern health care system, the traditional healer (Ngaka) performs a significant role in Botswana, especially in the rural areas. A research program on these traditional healers is now nearing completion. Among its preliminary findings are the following:

- 42.9 percent of surveyed families consulted a traditional healer at some time;
- 43.7 percent of the relatives of nurses consulted a traditional healer at some time;
- 93.4 percent of the general population consulted a modern medical practitioner at some time.

On the basis of this information, the policy of the Ministry is to evaluate further the contribution of traditional healers to the health care system of the country, and possibly then to seek ways of closer cooperation and consultation.

The interest of the MOH in traditional practitioners underscores their considerable influence on the total delivery capacity of the Botswana health care system. In 1974, the Rural Income Distribution Survey conducted by the Central Statistics Office of the Government made reference to the importance of traditional medicine in the rural areas. The RIDS suggested that the bulk of traditional healers perform their services on a part-time basis, and that they would not be able to support themselves exclusively from their practice of traditional medicine. It was further estimated that a part-time Ngaka might earn

P300 per annum ($369). Current estimates of these earnings should include an allowance for inflation over the past four years.

The 1973/74 National Accounts made estimates of the annual income of Ngaka's in 1973/74, and adjusted these to get an estimate for 1974/75. In the absence of any concrete up-to-date information on the actual income of a sample of Ngakas, the MOH preferred to simply adjust the 1974/75 National Accounts figure to arrive at an estimate of the 1976/77 total income of all traditional healers of P1,065,000 or U.S. $1,385,400, or $693 per provider. [8]

3. Health Care Facilities

Health services in Botswana are provided in both government and private sector facilities. There are 14 hospitals: one referral and 13 general hospitals. The referral hospital is in Gaborone, while general hospitals are at Maun, Francistown, Selebi-Phikwe (government and mine), Orapa, Serowe, Mahalapye, Mochudi, Gaborone, Molepolole, Ramotswa, Lobatse and Kanye (see Table 13). The health centers are located at Kasane, Bobonong, Mmadinare, Rakops, Palapye, Tsabong, and Ghanzi - two of which have a staff doctor (Ghanzi and Mmadinare).

There are 76 clinics and 32 maternity wards, though not all are yet in use. There are also several mobile clinics which visit health posts on a regular basis. The

200 health posts serve as referral points for patients entering the health care system.

Table 11 shows how existing facilities are distributed between the Ministry of Health (central government), the mission, town and district councils, and the mines. As of July 1978, Ministry of Health officials stated that existing facilities were staffed at the "minimal level of 80 percent".

The number of hospital and health center beds, excluding the psychiatric beds at the mental hospital in Lobatse (120), is shown in Tables 12 and 13, and the number of inpatient days by hospital for 1976 is shown in Table 14. Table 15 gives the occupancy rates in the hospitals for the year 1976.

Botswana's health delivery service capacity is based in these capital facilities:

a. Hospitals

The Princess Marina Hospital in Gaborone serves the rapidly increasing population of the nation's capital and its environs. It is also the referral hospital for other health units in the country. The hospital has accommodation for 308 patients: 246 beds, 58 cots, and 4 incubators. This figure takes into account the 56 beds and 14 cots at the health center which serves as the tuberculosis unit of the hospital. It is located about 2 kilometers from the main building.

TABLE 11

Health Care Facilities

	Health Posts	Clinics	Maternity Wards	Health Centers	Hospitals
Central Govt.	-	-	-	7	9
Missions	-	5	1	1	3
Town and District Councils	200	70	31	-	-
Mines	-	1	-	-	2
Total Planned by 1984	300	100	32	18	15

Source: Ministry of Health, July 1978.

TABLE 12

Number of Beds in Hospitals 1976
(as of December)

Hospitals	No. of Beds
Princess Marina, Gaborone	304
Jubilee, Francistown	164
Athlone, Lobatse	149
Sekgoma Memorial, Serowe	157
Maun	153
Mahalapye	91
Scottish Livingstone, Molepolole	182
Selebi-Phikwe (Government)	58
Seventh Day Adventist, Kanye	167
Deborah Retief Memorial, Mochudi	170
Bamalete Lutheran, Ramotswa	96
Selebi-Phikwe (B.C.L.)	24
Orapa (De Beers)	72
TOTAL	1,787

Source: Ministry of Health.

TABLE 13

Number Of Beds In Hospitals And Health Centers, 1976

Hospitals	Number of Beds
Princess Marina, Gaborone	304
Jubilee, Francistown	164
Athlone, Lobatse	149
Sekgoma Memorial, Serowe	157
Maun	153
Mahalapye	91
Scottish Livingstone, Molepolole	182
Selebi-Phikwe (Government)	58
Seventh Day Adventist, Kanye	167
Deborah Retief Memorial, Mochudi	170
Bamalete Lutheran, Ramotswa	96
Selebi-Phikwe (B.C.L.)	24
Orapa (De Beers)	72
Total	1,787

Health Centers	Number of Beds
Rakops	13
Tsabong	13
Palapye	3
Bobonong	5
Mmadinare	55
Kasane	33
Ghanzi	28
Total	150
Grand Total	1,937

TABLE 14

Number of In-Patient Days By Hospital, 1976

Hospital	Total
Princess Marina, Gaborone	82,759
Jubilee, Francistown	56,513
Athlone, Lobatse	50,073
Sekgoma Memorial, Serowe	44,990
Maun	39,492
Mahalapye	23,065
Scottish Livingstone, Molepolole	51,841
Selbi-Phikwe (Government)	12,574
Seventh-Day Adventist, Kaneye	45,617
Deborah Retief Memorial, Mochudi	29,431
Bamalete Lutheran, Ramotswa	29,544
Selebi-Phikwe (B.C.L.)	4,146
Orapa (De Beers)	12,715
Total	482,760
Average Daily Number In Hospital	1,319

TABLE 15

Average Occupancy Rates in Hospitals, 1976

Hospital	Total %
Princess Marina, Gaborone	75
Jubilee, Francistown	94
Athlone, Lobatse	92
Sekgoma Memorial, Serowe	78
Maun	71
Mahalapye	69
Scottish Livingstone, Molepolole	78
Selebi-Phikwe (Government)	70
Seventh-Day Advenist, Kanye	75
Deborah Retief Memorial, Mochudi	47
Bamalete Lutheran, Ramotswa	85
Selebi-Phikwe (B.C.L.)	47
Orapa (De Beers)	48
Total	74

Sources: Ministry of Health

Staff specialties at Princess Marina include ophthalmology, surgery, gynaecology, and anaesthesiology. A pathologist joined the staff in June 1978.

Situated on the grounds of the hospital are the following capabilities:

- Main laboratory: reference laboratory for the country.
- Dental clinic.
- Regional health team offices.
- Field offices for Epidemiologist.
- Nutrition
- Senior Health Inspector
- Commissioner of the Handicapped
- Senior Welfare Officer

The campus of the National Health Institute is contiguous with the hospital.

A new hospital, with a capacity of 320 beds, is planned for Francistown. Construction, which has yet to begin, is scheduled for completion in 1985 at a total cost (construction and equipment) of $12.3 million. The government has requested assistance from the African Development Bank for this project. All of the general hospitals provide full basic curative services and all have laboratory and X-ray services of varying standards. These facilities are able to transfer cases to the main referral hospital at Gaborone.

As mentioned previously, the one hospital for psychiatric diseases is located at Lobatse. The hospital has one psychiatrist, one non-specialist medical officer, and one social welfare officer on its staff.

All new inpatients together with their relatives are interviewed by the social welfare officer to get as much information as possible about social, economic, and family background. After discharge, the patients are referred to the district, social, and community workers for followup.

As mental health is a high priority with the Government of Botswana, the SADAP team presents a detailed breakdown of statistics for the psychiatric hospital. The data shown in Tables 16 - 17 are for the year 1976.

b. Health Centers

A health center is a unit intermediate in size between a clinic and a hospital. The health centers each have varying numbers of beds ranging from a few to 55. Curative services are available for those conditions which can be dealt with at the intermediate level. More complicated cases are referred to the nearest hospital. Some have X-ray units and some have laboratories for the simpler tests.

Preventive services are carried out at the health center and in the surrounding areas by mobile teams. Senior staff from Regional Health Teams or hospitals make scheduled visits to the health posts and clinics.

Table 16

Number of Admitted In-Patients By Mental Disorder Type of Admission And Sex, Year 1976

	Mental Disorder	Voluntary		Certified		Committed		Total		
		M	F	M	F	M	F	M	F	Total
290	Senile and pre-senile Dementia	11	22	4	3			15	25	40
291	Alcoholic psychosis	18	5	12	4			30	9	39
292	Psychosis associated with intracranial infection	1	1	2				3	1	4
293	Psychosis associated with other cerebral conditions	18	15	6	6			24	21	45
294	Psychosis associated with other physical conditions	3	5	1	1			4	6	10
295	Schizophrenia	215	203	101	52	1	1	317	256	573
296	Affective psychoses	11	35	2	1			13	36	49
297	Paranoid states		1						1	1
298	Other psychoses	2	9	1	5			3	14	17
299	Unspecified psychosis	8	3	3				11	3	14
300	Neuroses	1	7	1				2	7	9
301	Personality disorders									
302	Sexual deviation									
303	Alcholism	31	5	12				43	5	48
304	Drug dependence	5						5		5
305	Physical disorders of presumably pyschogenic origin									
306	Special symptoms not elsewhere classified									
307	Transient situational disturbances		1	1				1	1	2
308	Behavior disorders of childhood									
309	Mental disorders not specified as psychotic associated with physical conditions									
310	Borderline mental retardation									
311	Mild mental retardation	1		1				2		2
312	Moderate mental retardation	1						1		1
313	Severe mental retardation									
314	Profound mental retardation									
315	Unspecified mental retardation	1			1			1	1	2
	Diagnosis not stated	8	9	6	3	1		15	12	27
	Total	353	321	153	76	2	1	490	398	
		656		229		3				888

Source: Ministry of Health

TABLE 17

Number Of Admitted In-Patients By Mental Disorder, First of Re-Admission Year

	Mental Disorder	First Admission		Re-Admission		Total		
		M	F	M	F	M	F	Total
290	Senile and pre-senile dementia	13	20	2	5	15	25	40
291	Alcoholic psychosis	26	8	4	1	30	9	39
292	Psychosis associated with intra-cranial infection	2	1	1		3	1	4
293	Psychosis associated with other cerebral condition	19	15	5	6	24	21	45
294	Psychosis associated with other physical condition	3	3	1	3	4	6	10
295	Schizophrenia	210	139	107	117	317	256	573
296	Affective psychoses	13	32		4	13	36	49
297	Paranoid states		1				1	1
298	Other sychoses	2	14	1		3	14	17
299	Unspecified psychosis	10	3	1		11	3	14
300	Neuroses	2	6		1	2	7	9
301	Personality disorders							
302	Sexual deviation							
303	Alcholism	35	5	8		43	5	48
304	Drug dependence	4		1		5		5
305	Physical disorders of pre-sumably psychogenic origin							
306	Special symptoms not elsewhere classified							
307	Transient situational dis-turbances	1	1			1	1	2
308	Behaviour disorders of childhood							
309	Mental disorders not specified as psychotic associated with physical conditions							
310	Borderline mental retardation							
311	Mild mental retardation	1		1		2		2
312	Moderate mental retardation	1				1		1
313	Severe mental retardation							
314	Profound mental retardation							
315	Unspecified mental retardation		1	1		1	1	2
	Disorder not recorded	11	8	4	4	15	12	27
	Total	353	257	137	141	490	398	
		610		278				88

Source: Ministry of Health

c. Clinics

The 76 health clinics are mainly run under the direction of the district councils and the Ministry of Local Government and Lands. Medical supervision comes from the nearest Regional Health Team of which there are eight.

Clinics provide preventive services and out-patient curative services. The staff travel in their area, visiting health posts and thus supervise the work of Family Welfare Educators. Most clinics are now visited at regular intervals (usually fortnightly) by members of the Regional Health Team.

d. Health Posts

The health post represents the smallest and most peripheral health unit. Each one is staffed by a Family Welfare Educator who has three months formal training. In July 1978, there were 200 health posts in the country. These make up an important means of health care delivery and health education to the rural population. The routine visits by MOH and MLGL staff to these units are focused on preventive as well as curative service delivery issues.

4. Preventive and Public Health Services

The Ministry of Health has been placing great emphasis on prevention and several programs are now in operation. Because over 85 percent of the population is considered as rural-based, these programs can only be effective if close cooperation occurs with the Ministry of Local Government and

Lands. The government's program in preventive services is on these activities: [10].

- Tuberculosis programs including immunization of all children aged 0-14.
- Immunization programs against: diptheria, whooping cough, tetanus, poliomyelitis, measles, and smallpox.
- Comprehensive maternal and child health services including antenantal and postnatal care, and family planning which is offered at all facilities.
- Malaria Control Program.
- Bilharzia Control Program.
- Trypanosomiasis Surveillance Program.
- Plague Surveillance Program.
- Dental Health Program.
- Nutrition Program.

Maternal and child health srvices are conducted in all health facilities. The main objectives of this program are to:

- Reduce infant and neonatal morbidity and mortality;
- Reduce maternal morbidity and mortality;
- Improve through constant supervision and support the health of under-five/pre-school children, and;
- Provide families with services enabling them to plan size of families and spacing of children.

To accomplish these objectives, the following services are provided.

- Antenatal and postnatal care.
- Under-five clinics with continuous monitoring of growth and development.
- Immunizations against childhood infectious diseases.

- Infant delivery under adequate supervision, while at the same time endeavoring to identify "at-risk cases" for institutional delivery.
- School Health Program.
- Advice and service to all desiring to practice family planning.

Numbers of mothers attending antenatal clinics continued to increase. For instance, the total number of attendances (first and repeat) was 17 percent higher in 1976 than in 1975 (see Table 18). The total number of first visits (41,038) was just below half the number of repeat attendance. Clinic staff have observed that antenatal care is being sought at earlier stages of pregnancy by larger numbers of mothers. In 1978, tetanus toxoid injections were given routinely to all mothers attending antenatal clinic unless specifically contraindicated.

In the well baby care category of government provided health services, the number of children under five years of age attending for immunizations, supervision, and nutrition is:

	Well Baby Care	
	New	Repeat Attendances
Hospitals	5,781	34,154
H.C.'s and Clinics	28,384	190,960
Health Posts	17,450	150,429
Total	51,515	330,543

Source: Ministry of Health

TABLE 18

Figures of A.N.C. Attendance by Type of Facility
1976

Facility	1st A.N.C. Visits	Percentage Total	Repeat A.N.C. Visits	Percentage Total
Hospital	16,921	41%	36,058	36%
Health Centers and Clinics	17,623	42%	52,172	52%
Health Posts	6,494	17%	11,459	12%
Total	41,038	100%	99,689	100%

Antenatal Attendances By Rural and Urban Facilities

	New	Repeat	Total	% of Grand Total
Urban	12,243	29,646	41,892	29,7%
Rural	28,795	79,040	98,835	70,3%
Grand Total	41,038	99,689	140,727	

Source: MOH

Most clinics have a follow-up system for undernourished and malnourished children whereby these children have a special day on which they attend at the clinic. Cooking demonstrations are done by the staff to show mothers how to prepare nutritious meals for their children. Family Welfare Educators visit the children who are hospitalized. This contact is kept up through attendance at the clinic's "nutrition sessions".

The figures for various types of immunization continue to show increased coverage since 1975 (see Table 19). The total first DPT increased by 37 percent and numbers completing their course increased 31 percent. Polio first immunizations increased by 40 percent and completers by 51 percent.

The Ministry of Health feels these figures demonstrate the effective extension of health services into outlying areas of the country. At the bottom of Table 19, it can be seen that some 75 percent of all immunizations are delivered in rural facilities. Because many of these facilities are in localities where it is difficult to secure the "cold chain", it would be useful for the Ministry to know how effective the vaccines are when administered. However, the SADAP team was unable to obtain any information on the potency and efficaciousness of vaccines when injected at any health services delivery site.

TABLE 19

Number of Immunizations Reported by Health Facilities, 1976

	Small-pox	B.C.G.	D.P.T.			Booster	Polio			Measles	Other
			1	2	3		1	2	3		
Hospitals	9,787	6,601	3,418	2,811	2,237	1,314	3,157	2,652	],336	2,034	5,797
H.C.'s and Clinics	36,621	26,989	25,885	18,329	14,301	8,464	27,743	21,104	16,548	20,628	9,509
Health Posts	12,879	15,864	17,644	11,363	7,522	4,317	20,246	13,671	9,904	10,530	2,566
Total	59,287	49,363	46,947	32,503	24,060	14,095	51,146	37,337	28,788	33,192	17,871

Analysis by Urban and Rural Facilities

Urban Facilities	5,692	5,765	5,440	,4,461	3,362	2,719	5,449	4,734	3,681	3,606	4,452
Rural Facilities	53,595	43,598	41,507	28,042	20,698	22,376	45,697	32,603	25,107	29,586	13,419
Total	59,287	49,363	46,947	32,503	24,060	14,095	51,146	37,337	28,788	33,192	17,871

Source: Ministry of Health

5. Staffing Patterns of Health Facilities

During the early part of 1978, the Ministry of Health and the Ministry of Local Government and Lands reviewed present basic health services proposals for 1981 in the light of existing distance criteria. Table 20 summarizes District health service population coverages based on the 15 km radius criterion from any health facility.

The Ministry of Health has prepared staffing proposals for criteria to be usd as guidelines during the current Plan period. These are to be utilized for the selection of types of health facilities in given locations and for planning for the growth in numbers of health personnel (see Tables 8 & 11). The guidelines proposed for staffing health posts and clinics have been chosen with regard to the expected output of trained nursing personnel between 1978 and 1985. After allowances are made for the nurses required by the hospitals and health centers of the central government, the missions, the Mines, and the National Health Institute, it is thought that sufficient nurses (especially ENs) will be available by 1986 to staff all health posts and clinics according to these long-term staffing guidelines.

Listed in Chart I are the criteria for choice of health facilities, according to distance/population coverage, standard of buildings, and the provision of staff. [12]

TABLE 20

Population within 15 km of a Health Facility, Botswana
(Access to Hospitals, Health Centers, Clinics, Health Posts)

	1971 Census[1]	STATED IN DISTRICT PLAN	
DISTRICT	Analysis 1974 [2]	End of 77/78 Dev. Programme	1981 Target
Central	59.9%	80%	85%
Ghanzi	62.8%	-	-
Kgalagadi	78.1%	65%	70%
Kgatleng	98.7%	-	95% (access to health posts & clinics only)
Kweneng	86.0%	-	-
North-East	34.1%	almost 100%	over 100%
Ngamiland	74.7%	-	-
Chobe	91.7%	100%	-
South-east	96.1%	-	-
Southern	49.3%	40% (5 km radius)[3]	54% (5 km radius)
TOTAL	66.4%		

1. Excluding Town populations
2. Estimated at end of 1975/76 building programme.
3. DTRP estimates coverage using 15 km radius as 88% (1977/78) and 91% (1981).

Source: National District Development Conference 1978, Paper Number R, Ministry of Health

CHART I
Site Selection Criteria

A) Settlements of less than 500 people (within a 15 km radius)

Description	no government-or district-supplied fixed facility; visits possibly based at a hut provided by the community, or in a shop or at the kgotla.
Community-based health personnel	- FWE (to serve a population minimum of 200)
Medical Personnel	- visited by Mobile Teams who are based at clinics or health centers. (to serve a minimum 20 - 30 families)
Functions	- as per health post.

B) Health Posts	Medium Term (During NDP5)	Long Term
Description	Fixed facility; standard design HP2 or other building; 3 rooms (consultation treatment, store) and toilet; a house in remote areas.	Fixed facility; standard design HP 2; 1 nurse's house.
Population covered (within 15 km radius)	500 - 1,000 population in rural areas; 4,000 - 8,000 in major villages & towns	Minimum 500 in rural areas; 3,000-5,000 in major villages and towns
Health Staff	1 EN (in remote areas)	1 EN (possibly 2 depending on location and work load)

Community-based personnel	FWEs (covering 500 to max. 2000 people each)	FWEs (covering 500 to max. 2,000; possibly linked to ward system in major villages and towns)
Functions	i) Preventive health work (MCH, school health, immunization, nutrition, health education, family planning etc); ii) First aid; iii) Diagnosis and treatment or referral of common diseases; iv) Case finding, follow-up of discharged patients; and v) Keeping records. (becoming more comprehensive with time)	
C) Clinic	Medium Term (NDP 5)	Long Term
Description	Fixed facility; standard design C2 or other building; 5 rooms with covered waiting area and toilets; vehicle; two staff houses	Fixed facility; standard design C2; vehicle; 4 staff houses.
Population (within 30 km radius)	5,000-1,000 in rural areas; 10,000 in major villages and towns.	3,000-8,000 in rural areas; 5,000-10,000 in large villages and towns.
Community-based personnel	2 FWEs (at least)	FWEs (as required by population; 1 FWE to max. 2000 people)

Health Staff	1 SN/MW or 1 EN/MW (if available) 1 EN 1 HA (clinical) 1 Driver 2 GDAs	1 Public Health Nurse 1 SN/MW 1 EN/MW + 1 EN 1 Driver 2 GDAs

Functions

i) MCH, and family planning and necessary deliveries.
ii) Immunization
iii) Environmental health
iv) School health
v) Health Education and nutrition
vi) First aid
vii) Elementary lab examinations
viii) Diagnosis and treatment of common diseases
ix) Case finding and follow up, with particular emphasis on TB
x) Collection of statistics
xi) Supervision of health posts in area and mobile services to small settlements.
xii) Inservice training of ENs and FWEs

D) Clinic with Maternity Ward

	Medium Term (During NDP 5)	Long Term
Description	Fixed facility, standard design C2/MW1, a vehicle, three staff houses	as in medium term but with one additional vehicle, and total of five staff houses
Population covered	As for clinic but maternity ward subject to specific assessment	as in medium term

Health Staff	2 SN/MW OR 1 SN/MW and 1 EN/MW 1 HA (clinical) 1 Driver 4 GDAs 1 EN	as in medium term plus 1 Public Health Nurse 1 EN/MW 1 EN 1 Driver 1
Community-based personnel	at least 2 FWEs	FWEs (as required by population)
Functions	as for clinic but plus deliveries from wide area	as in medium term

E) Health Center Term: As soon as resource constraints permit

Description	Wards with 4-12 beds for delivery and maternity, 8-18 beds for observation and curative care. Outpatients block comparable to clinic C2; support facilities such as basic kitchen, laundry, storerooms, incinerator, mortuary, generator, laboratory, and administration offices; three vehicles, eight staff houses or Pool houses where available.
Population covered	subject to specific assessment of area
Health Staff	One Public Health Nurse Two Staff Nurse/Midwife Four Enrolled nurses Two Enrolled Nurses/Midwives One Senior Health Assistant (Clinical) One Health Assistant (Sanitation) One Executive Officer One Clerk/Typist Six General Duty Assistants Two Drivers
Community-based personnel	FWEs (employed by local authority; as many as population requires)

Functions	i)	MCH, inpatient midwifery and family planning
	ii)	Immunization
	iii)	Environmental health, including demonstration and guidance
	iv)	School Health
	v)	Health Education and Nutrition
	vi)	First Aid
	vii)	Diagnosis and treatment of common diseases
	viii)	Case finding and follow up with particular emphasis on TB
	ix)	Collection of statistics
	x)	Elementary laboratory examinations, including sputs, TB, examinations of blood films, analysis and examination of urine and stools for parasites
	xi)	Field surveys for communicable diseases
	xii)	Supervision of clinics and health posts in its area
	xiii)	In-service training

Source: National District Development Conference 1978, Paper Number R, Ministry of Health.

6. Health Care Financing

In reviewing this section of the SADAP report, the reader is cautioned to place the issues of Botswana's health care financing in perspective. While the per capita expenditures in health may appear to be high at this point in time, one needs to remember that the present health infrastructure has been put in place where formerly very little had existed. For instance, total expenditure on medical and sanitary services has risen from R 159,986 (South Africa Rand) in 1955 to R 501,818 in 1962/63 and R 776,480 (approximately $1,087,072) in 1967/68. In the 1967/68 budget, there were 19 nursing sisters, 85 staff nurses and 50 medical aides. At the end of 1969, the government controlled six hospitals, seven health centers, and 11 dispensaries. Missionary societies controlled four hospitals, two health centers, and seven dispensaries. [13] The capital financing of health facilities has been and still remains a donor initiative and, in recent years, the principal donor has been NORAD. The changes which have taken place with regard to Botswana's expanded health delivery capacity since 1969 have served to skew the curve upward in the late 1970s on per capita health expenditures. Therefore, today's data must be viewed in the context of the dramatic changes that have occurred in the government's expenditure pattern over this brief period of time.

The financing of health services in Botswana is the responsibility of the central government, through its Ministry of Health, and of local government, through the Ministry of Local Government and Lands. In a Ministry of Health report dated May 1978, it was found that the following ministries also had measurable activities which contribute to health or to the provision of health services: Ministry of Mineral Resources & Water Affairs, Ministry of Agriculture, and the Ministry of Works and Communcations. In addition, the Ministry of Health no longer has its own budget items for vehicles' operation and maintenance. These costs are now assumed in the budget of the Central Transport Organization. Furthermore, it is not clear from the fiscal data for central and local government capital spending whether the figures in Table 21 include the construction program for rural facilities entitled "Accelerated Rural Development Programme 1973-1976" (ARDP). Under this program, funds were allocated from external sources (mainly NORAD) for the construction of health facilities. During 1975-76 and 1976-77, 18 clinics and 63 health posts were constructed, in addition to 20 nurses' quarters. Some maternity facilities were also completed, but an accounting of them has been omitted from the ARDP Report. Total cost of rural health facility construction in the two-year ARDP program was $1,654,719. Undoubtedly, these funds are included either in the central or local government budgets

TABLE 21

Central And Local Government
Capital Expenditure On Health Care In Botswana, 1974-76 and 1977-82 Estimates

	1973-74		1974-75		1975-76		1976-77		1977-82	
	P	%	P	%	P	%	P	%	P	%
Hospitals	38,755	21,4	589,687	38,6	321,450	29,0	164,500	9,2	3,424,500	33,5
Health Centers	9,265	5,1	47,778	3,1	113,250	10,2	74,000	4,2	1,296,000	12,7
Training	22,284	12,3	11,737	0,8	26,000	2,4	627,000	53,2	3,400,000	33,3
Basic Rural Health Units	105,785	58,4	776,800	50,8	612,000	55,2	697,600	39,1	1,430,500	14,0
Other	5,044	2,8	101,652	6,7	35,300	3,2	219,700	12,3	667,400	6,5
Total Expenditure	181,133	100,0	1,527,654	100,0	1,108,00	100,0	1,782,700	100,0	10,218,400	100,0

Source: Annual Statement of Accounts and Plan Projects.
* One Pula = $1.23 U.S.
** Estimates

for this time period. The team, however, is unable to substantiate the proper cost center for the expenditure. [14]

Tables 22 and 23 give the reader some idea of the government's investment in community, preventive and public health services throughout the country. It can be seen that the bulk of district councils' (local government) expenditures on health services is on the treatment of out-patients and for preventive services provided to individuals such as ante- and post-natal care, immunizations, health education, nutrition demonstrations, family planning, etc. The relatively low expenditure by districts (MLGL) on general preventive measures and health inspection is attributable to the presence of Ministry of Health-funded Regional Health Teams. [8]

Table 23 provides a functional breakdown of the costs of health services rendered through the central government's various facilities. It can be seen that in 1976, some 56.5 percent of all service delivery points were designated as curative. However, in terms of health services actually provided by central government staff, some 67.7 percent is, apparently, of a curative nature. (The third column lists 3,156 pula or 32.3 percent of the total costs as "prevention").

Table 21 showed the capital expenditure estimates for the period 1976-77 - 1977-82, while Table 24 gives the same information for recurrent expenditures. Table 25 is an

TABLE 22

1976/77 Expenditure by District Councils on Health Services

By Functional Category

	Thousands of Pula				
	Inpatients	Outpatients	Prevention	Admin. & Support	TOTAL
Clinics	37	263	218	71	589
Health Posts	-	142	146	43	331
Prevention	-	-	42	10	52
TOTAL	37	405	406	124	972*
% of Total	3.8	41.6	41.7	12.8	99.9

* Equivalent to U.S. $1,196,000.
SOURCE: Ministry of Health

TABLE 23

Functional Breakdown of 1976 Cost of Health Services* Provided by Central Government

	Thousands of Pula						
	In-Patients	Out-Patients	Prevention Etc.	Field Admin. and Support	Capital	Total	% of Total
Hospitals	1890	780	420	600	113	3803	38.9
Health Centres	61	70	45	32	41	249	2.5
Regional Health Teams	-	80	118	105	1	304	3.1
Clinics	8	35	45	5	1070	1163	11.9
Prevention, Health Education, and Environmental Health	-	-	2530	220	1505	4255	43.5
TOTAL	1959	967	3156	962	2730	9774**	99.9
% of Total	20.0	9.9	32.3	9.8	27.9	99.9	

* Excluding Central Administration and Training.
**Equivalent to U.S. $12,022,000.
SOURCE: Ministry of Health.

TABLE 24

Central And Local Government
Recurrent Expenditure On Health Services In Botswana

	1973-74		1974-75		1975-76 est.		1976-77 est.		1977-82 est.	
	P	%	P	%	P	%	P	%	P	%
Central	1,837,900	88,0	3,078,900	88,9	3,965,500	83,1	4,394,801	79,0	6,329,000	77,9
Local	251,300	12,0	382,900	11,1	808,800	16,9	1,168,800	21,0	1,940,400	22,1
Total	2,089,200	100,0	3,461,800	100,0	4,774,300	100,0	5,563,601	100,0	8,769,400	100,0
Headquarters	77,820	3,7	132,000	3,8	171,100	3,6	159,300	2,9	204,800	2,3
Training	62,320	3,0	102,000	3,0	340,950	7,1	379,450	7,1	784,600	9,0
In-Patients	972,040	46,5	1,606,500	46,4	2,021,500	42,3	2,218,000	39,9	2,761,600	31,5
Out-Patients	619,560	29,7	971,000	28,0	1,424,600	29,8	1,856,600	33,4	3,114,300	35,5
Public Health and Sanitation	191,180	9,1	295,800	8,6	452,650	9,5	506,350	9,1	1,318,300	15,0
Others	166,300	8,0	354,500	10,2	362,500	7,6	425,900	7,6	586.000	6,7

Source: Annual statements of accounts, District and Town recurrent estimates, Ministry of Health recurrent estimates, Plan Projections.

* One Pula = $1.23 U.S.

account of actual expenditures during NDP III. There are figures of note in these tables:

- For the period 1976-77, capital and recurrent expenditures total $9,035,950, or $14.04 per capita (de facto population).
- Local government's share of the recurrent budget has increased from 11 percent of the total government health budget in 1974-75 to an estimated 21 percent in 1976-77, reflecting a 57 percent absolute increase over two years.
- In 1976-77, the estimated capital expenditure (see Table 21) was $2,192,721; actual expenditures were $1,684,454, or a shortfall of some 23 percent. However, recurrent expenditures (see Table 24) were estimated at $6,843,229; actual current expenditures were $7,861,176 or an excess of 15 percent.

The opening of many new rural facilities led to a nearly six-fold increase in local government recurrent expenditure on health and sanitation services between the years 1973-74 and 1976-77 [see Table 25]. This table also shows that in the same period the central government's recurrent expenditures increased by a factor of 2.4.

In Botswana, patients are charged fees for some services rendered in government facilities. Table 26 estimates the various direct costs incurred by individuals seeking health services in both the public and private sectors. It is interesting to note that traditional medical practitioners may account for 42 percent of direct payment by individuals. Also, the figure of $1.31 million estimated paid to traditional healers in 1976 is equivalent to 22 percent of the total government recurrent health budget for 1975-76 ($1.31 million vs. $5.87 million = 22 percent). [8]

TABLE 25

Development Expenditure During NDP III

	1973-74		1974-75		1975-76		1976-77*	
	P	%	P	%	P	%	P	%
Hospitals	38,755	21,4	589,687	38,6	321,450	29,0	100,255	7,3
Health Centres	9,265	5,1	47,778	3,1	113,250	10,2	40,100	2,9
Training	22,284	12,3	11,737	0,8	26,000	2,4	152,150	11,1
Basic Rural Health Units	105,785	58,4	776,800	50,8	612,000	55,2	1,069,100	78,1
Other	5,044	2,8	101,652	6,7	35,300	3,2	7,870	0,6
Total	181,131	100	1,527,654	100	1,108,000	100	1,369,475	100

Source: Annual Statement of Accounts

Recurrent Expenditure on Health Services NDP III

	1973-74		1974-75		1975-76		1976-77*	
	P	%	P	%	P	%	P	%
Central Government (actual)	1,837,000	88	3,078,900	88,9	4,000,680	83,2	4,974,700	77,8
Local Government (est.)	251,300	12	382,900	11,1	808,800	16,8	1,416,600	22,2
Total	2,088,300	100	3,461,800	100	4,809,480	100	6,391,200	100

Source: Annual Statement of Accounts.

1. District and Town Council recurrent estimates.
* Total 1976-77 expenditure (development plus recurrent) of P 7,760,675 is equivalent to U.S. $9,545,630, or $14.04 per capita.

TABLE 26

Estimated Value Of Direct Payments By Private Individuals on Health Services, 1976

	(000's Pula)*	%
Payments to:		
Health Facilities (i.e., Government Mission, Mine, etc.)	477	18.8
Private Medical Practitioners (Modern)	180	7.1
Pharmacies and Traders	814	32.1
Traditional Medical Practitioners	1,065	42.0
	2,536	100.0
	($3.2 million U.S.)	

1 Pula = $1.23 U.S.

Source: Financing of Health Services in Botswana, Ministry of Health, August, 1977.

For the present Plan period, the government has decided upon development and recurrent expenditure ceilings for all sectors and ministries. The Ministry of Health is limited to $17 million development expenditure on health services between 1975 - 81. It is also restricted to a 12 percent annual growth ceiling on its recurrent budget [2], although the Ministry of Local Government and Lands has estimated that district council expenditure on health is likely to grow at 13.5 percent per annum from 1976-81.

The capital expenditure for many of the projects planned for the next few years will be financed from abroad. In particular the African Development Bank is providing assistance for the expansion of the training facilities for nurses, while NORAD is continuing to support the construction and equipping of health posts and clinics throughout the country. A large number of other governments and organizations are also helping to fund projects. [2]

The Ministry of Health has been particularly concerned about the need and importance of surveying the field of health and health-related activities in Botswana through a study of national health expenditures.* As Tables 27-30 indicate, the MOH has initiated an analysis of:

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* The national expenditure information provided in this section has been drawn from a report entitled: "A Country Case Study: Financing of Health Services in Botswana, Ministry of Health, Government of the Republic of Botswana, August 1977." This report was written by Mr. Murray Kam, Planning Officer, Ministry of Health.

- the supplies of resources (of all types but mainly financial),
- the users of these resources, and
- the quantification of these resource flows.

The results of such a national expenditure study will allow the MOH to evaluate specific information derived from the study in order to ascertain whether the resource flows identified result in a system of health and health-related activities in conformity with national political and health goals. [8]

The acquisition of relevant national health expenditure information can be used subsequently with other data on the effects of health spending to identify, clarify, and possibly measure potential costs and impacts of various allocations of resources, e.g., for health services delivery or health manpower development and utilization strategies. This could give national planners the basis for justifying a choice of an alternative strategy redirecting the resource flow toward pre-existing goals.

In Table 27 it can be seen that the direct payment by recipients amounts to 16 percent of the total sources of finance for health services in Botswana during 1976. Table 28 lists this figure at 13 percent as it is net of direct payments to government, missions, and employers. However, the figure of central importance in these two tables is the

TABLE 27

SUMMARY: Sources Of Finance For Health Services In Botswana 1976

	(000's P)	%
Government (Central and Local) [1, 2]	7,212	45.6
Employers [1]	607	3.8
Local Missions and Charity [1]	208	1.3
Foreign Aid	5,259	33.2
Direct Payments by Recipients	2,536	16.0
Total	15,822	99.9
	(U.S. $19,461,000)*3	
Estimated GDP 1976	300,000	
Total as % of GDP		5.3

SOURCE: Ministry of Health, August, 1977.

Notes:
1. Net of Direct Payments
2. Including Subventions
3. Equivalent to U.S. $28.64 per capita.

TABLE 28

SUMMARY: Breakdown Of Expenditures By Main Providers On Health Services In Botswana 1976 By Type Of Expenditure (000'P)

	Capital	Recurrent	Total	%
Government (Central & Local)	2,882	9,600	12,482	78.8
Missions (excluding government subsidies)	78	501	579	3.7
Employers	86	541	627	4.0
Charitable organizations	50	25	75	0.5
Direct payments by Recipients*	-	2,059	2,059	13.0
Total	3,096	12,726	15,822	100.0
			(U.S.$19,461,000)	

Source: Ministry of Health, August, 1977.
* Net of direct payments to government, missions, and employers.

per capita expenditure of $28.64 (based on the de facto population of 679,500 divided into the expenditure of $19,461,060 = $28.64). This is a high figure on a per capita basis. If this expenditure was adjusted for 1978 prices, it would then be somewhere in the range of $33 - $36.00 per capita. The MOH leadership would want to assure itself that their delivery system is providing health benefits which are consistent with the national investment.

Table 29 is a breakdown of expenditures between urban and rural areas of the country. In terms of the allocation of resources, it shows that 31 percent of the expenditures are made in urban centers where some 15 percent of the population reside, and the remaining 69 percent of the resources are in the rural areas where some 85 percent of the population live. It is important to note, however, that urban areas have been experiencing a 12 percent annual increase in population during the past few years, mainly because of rural-to-urban migration.

Table 30 lists all of the Government of Botswana's expenditures for health services. In 1976-77, the total per capita expenditure of $16.04 was higher than that stated in Table 25 ($14.04 per capita). The reason for this increase is that the accounting methods applied differ from one table to the other. In Table 25, expenditures were

TABLE 29

SUMMARY: Breakdown Of Expenditures By Main Providers On Health Services In Botswana 1976 By Urban/Rural Location Of Expenditure (000's P)

	Urban	%	Rural	%	Total
Government (Central and Local)	3,616	30	8,430	70	12,046
Missions (including government subsidy)	6	1	1,009	99	1,015
Employers	504	80.4	123	19.6	627
Charitable organizations	25	33	50	67	75
Direct payments by recipients*	752	36.5	1,307	63.4	2,059
Total	4,903	31	10,919	69	15,822

(U.S. $19,461,0

Source: Ministry of Health, August, 1977.

* Net of Direct Payments to Government, Missions and Employers.

TABLE 30

Expenditure By Central Government on Health
And Health Promoting Services in Botswana

Recurrent Expenditure:

(000's Pula)

	1973/74	1974/75	1975/76	1976/77*	
Ministry of Health	1,838	3,079	3,001	4,885	
Other Ministries	575	721	834	1,092	
	2,413	3,800	4,835	5,977	($ 7,351,710U.S.)
% of Total Government Recurrent	5.9%	6.1%	6.7%	7.0%	

Development Expenditures:

Ministry of Health	63	425	398	300	
Ministry of Local Government	100	777	515	1,069	
Ministry of Water Affairs	251	993	1,031	1,505	
Other Central Government	38	349	105	8	
	452	2,544	2,049	2,882	($ 3,544,860 U.S.)
% of Total Government Development	1.5%	7.8%	5.8%	7.5%	

Source: Ministry of Health, August, 1977. ($10,896,570 U.S.**)

* The Government's financial year runs April 1st to March 31st each year.

** On a per capita basis (de facto population of 679,500), total government expenditures for health are $16.04.

listed only for the Ministry of Health and for the Ministry of Local Government and Lands. In Table 30, ministries other than these two are cited, e.g., Ministry of Water Affairs. Apparently, the amounts listed have to do with what the Ministry of Health refers to as "the provision of health promoting services."

In addition to the expenditures listed in Table 30, the Ministry of Health received aid in the form of fully or partially funded foreign technical assistance, foreign provision of fellowships and in-service training courses, as well as goods supplied by donors in-kind. The value of this aid to the Ministry's recurrent operations is estimated in Table 31 [8]. The addition of this figure, $2,804,400 added to the figure in Table 30 ($10,896,570 + $2,804,400 = $13,700,970) increases the per capita expenditure for government health services from $16.04 to $20.16.

As mentioned previously, the services provided by the Ministry of Health are not completely without charge. However, the nominal charges for general patients are, in the majority of cases, not actually collected because the patient falls within those age levels or disease classifications which are treated free. The revenue from fees collected by the Ministry of Health from all general and private patients amounted to: [8]

TABLE 31

Estimates of Levels of Foreign Assistance to Botswana's Health Sector in Recent Years

	(Thousands of Pula)		
	1974/75	1975/76	1976/77
Assistance to Ministry of Health Recurrent Operations	434	515	465
Local Value of WFP Food[a]	1000[a]	1345	1815
Ball-Park Estimate	1434	1860	2280[b]

SOURCE: Ministry of Health, August, 1977.

NOTES: a. World Food Programme Aid is distributed primarily through the Ministry of Local Government and Lands and thus would be considered as aid-in-kind to other Ministries. The final points of distribution to the recipients are primary schools, secondary schools, brigades, hospitals, health centres, and clinics. Major classes of recipients are primary school pupils, children at under five clinics, and expectant mothers.

b. Equals $2,804,000 U.S.

	1973/74	1974/75	1975/76	1976/77
Revenue from fees*	$158,670	$206,640	$246,000	$329,640
Percent of Ministry of Health Expenditures	7%	5.5%	5.0%	5.5%

The Ministry of Local Government and Lands also charges patients for some services in clinics and health posts. In their recurrent expenditures for 1977/78, fees accounted for 4.5 percent of the MLGL budget prior to the deficit grant financing allocation from the Ministry of Health. [16]

The government's development expenditures on health services shown in Table 32 were almost exclusively financed by external sources, either in grants or loans. These data indicate that it is the government policy to finance the major cost of health services development through external donors. The range of development projects covered by this expenditure included construction of health facilities, purchase of equipment, and construction of village water supplies. Expenditures on urban infrastructure such as housing, sewerage, and water have been excluded. [8]

Botswana's urban sector is composed of five townships: Gaborone; Francistown; Lobatse; Selibe/Pikwe; and Orapa.

* As these fees are collected, they become part of the government General Revenues Account.

TABLE 32

Sources of Finance For
Central Government's Development Expenditure
On Health
Botswana

	PERCENT			
	1973/74	1974/75	1975/76	1976/77
Government Revenue	10.5	8.2	14.9	6.8
Foreign Grants	83.6	66.1	72.7	87.8
Foreign Loans	5.9	25.7	12.4	5.4

SOURCE: Ministry of Health

These towns contain an estimated 15 percent of the population. Knowledgeable observers feel that a relatively significant proportion of the health services provided in these towns are consumed by rural dwellers who have referred themselves in search of better "quality" services. Botswana has some of the largest traditional villages in Africa. Serowe, for example, has a de jure population of around 40,000, although the de facto population fluctuates throughout the year according to the seasonal migration patterns linked to the traditional methods of rearing cattle and subsistence agriculture. Thus, the distinction between urban towns and rural villages is not based on population, but rather on the high level of infrastructure in the townships. [8]

In Table 33, the Ministry of Health attempts to address the difficult problem of disaggregating rural-urban health care costs. Ministry planners have excluded from this calculation (that is, the total calculation) both capital expenditures and WFP (World Food Programme) Assistance. Still, it is clear that approximately 40 percent of the central government's recurrent resources for health services are being consumed in urban areas, where only 15 percent of the population live. It can be argued that the picture is not complete without considering the

TABLE 33

Breakdown of Cost of Central Government Health Services* By Urban/Rural For 1976

	(Thousands of Pula)		
	URBAN	RURAL	TOTAL
Capital	39	2691	2730
Hospitals	2010	1680	3690
Health Centres	-	208	208
Regional Health Teams	15	288	303
Clinics	9	84	93
Prevention, Health Education, and Environmental Health	365	2385	2750
TOTAL	2438	7336	9774
As % of Total	25.0	75.0	100.0
Excluding Capital and WFP Assistance, Then	2127	3102	5229
As % of This Total	40.7	59.3	100.0
% of Population	15.0	85.0	100.0

Source: Ministry of Health, August, 1977.
* Excluding Central Administration and Training.

substantial subsidies the central government provides (for recurrent expenditures) to the district councils (MLGL), even though the Ministry of Health has limited responsibilities in rural areas for the direct provision of health services.

Illustrating the cost of health services by category of expenditure provides a useful analytical tool. Table 34 shows that physicians and dentists incur a relatively low proportion of the health expenditure budget. Even when the World Food Programme (WFP) item is netted out, the percentage going to physicians is only 6.7 percent and that for nurses is 18.7 percent. [8]

It would appear that the Government of Botswana has, over the past several years, made an extensive investment in health infrastructure development and in an expanded system capacity for the delivery of services. Now, the major problem facing national planners is that of costs vs. benefits. Although the expenditure of 5.3 percent of the GDP for health services is reasonable in terms of the costs associated with the implementation of a health delivery system where almost no infrastructure existed prior to 1969, the government, as time goes on, has to increasingly secure this investment relative to the benefits which have been intended for the people.

TABLE 34

Breakdown of Central Government Recurrent* Cost of Health Services** 1976, By Category of Expenditure

Category	OOOs of Pula	Percent
Payments to Medical Personnel:		
Doctors and Dentists	341	4.8
Nurses (all grades)	947	13.4
Technicians, Auxiliaries	786	11.2
Others	496	7.0
Transport and Communications	608	8.6
Medical Supplies and Equipment	1030	14.6
Food & Food Supplements (WFP)	2069	29.4
Other Goods and Services	767	10.9
TOTALS	7044***	99.9

* Excluding Capital.
** Excluding Central Administration and Training.
*** Equivalent to U.S. $8,664,120.
SOURCE: Ministry of Health

C. DONOR ASSISTANCE

The capital expenditure for many of the health projects planned for the next few years will be financed from external sources. In particular, the African Development Bank is providing assistance for the expansion of the training facilities for nurses, and presently has under consideration a proposal from the government to provide funding for the new 320-bed hospital in Francistown at an estimated cost of $11 - $12.3 million. NORAD is continuing to support the construction and equipping of health posts and clinics throughout the country. The cost of this construction program is 30 million Norwegian Kroner, or about U.S. $6 million.

Although approximately 76 percent of the 1977-1978 health development fund was contributed by foreign donors, this figure must be contrasted with that of the first several years of the decade when Botswana was completely dependent on external sources for development assistance.

Major donors are listed below: [9]

WHO: Provides technical advisers, including a medical officer, public health nurse tutor, mid-wife tutor, tuberculosis epidemiologist, and a technical officer for smallpox and tuberculosis control. A New MCH/FP project is currently being finalized for the next five-year plan period.

UNICEF: Provides training, clinic equipment, drugs, vaccines, and vehicles; half of the total $665,000 UNICEF commitment over the five-year period, 1973-77, will be spent on health activities.

UNFPA: Funds family planning staff recruited by WHO.

UNDP: National Health Institute Project ($203,000/ 1973-76); financing technical assistance in trypanosomiasis epidemiology ($75,000/1973-76).

FAO-WFP: School lunch, institutional feeding, vulnerable groups feeding, and food-for-work: $1,534,200 over 5 years (1971-75).

IPPF: Funds transport, staff salaries, and health education materials: $236,500 in grants over 1969-73; also provides family planning commodities.

USAID: MCH/FP project (total estimated cost: $2,135,00 - 1973-78), and $1,329,000 million in health services development and environmental sanitation for FY '78. A $5 million grant for the training of health personnel was recently presented to AID/ Washington for review, and funding was approved.

DANIDA: National Health Institute Project
Ghanzi District Rural Health Project
Hospital Improvements Consultancy

SIDA, CUSO, DANCHRAID, Danish Volunteer Service, U.K. Government Volunteer Service, OXFAM, Church World Service, and other voluntary organizations provide other assistance in health.

IV. ISSUES OF CURRENT CONCERN

Since independence in 1966, the government has endeavored to bring health services to the largest proportion of the population possible given the constraints of the economy. The long-term aim of the Ministry of Health is "to provide comprehensive health services to people throughout the whole country. To do this, the curative and preventive aspects of health services must be integrated and aimed particularly at the community or village levels." [2]

The government has devoted much attention to the preparation and formulation of its national development plan in the health sector. It is a well-conceived macro-economic planning document; the institutional capacity to pursue the development of the plan as an implementable program of action has not, as yet, reached full maturity. As a result, the ability of the health care system to absorb and utilize resources to meet stated national goals is beginning to show signs of strain and tension. Although the government delivery system appears to be well-utilized, low average productivity of health care providers seems to indicate possible excess staffing and treatment capacity relative to the demand for services. With many nurses to be trained and added to health staffs throughout the system in the next five years, the government faces the possibility of being over-extended in terms of its capacity to finance,

supervise, manage, and retain health personnel in rural areas at a rate consistent with the development of capital infrastructure and at a rate consistent with the demand from the populace for health services.

Of great importance, however, is the existence of an operational consensus within the government on the organizational processes and structures requisite for the achievement of national goals in the health sector. Though the implementation of the plan is accompanied by complex constraints and formidable obstacles, all of which are comprised of interrelated factors, there is an invigorating sense of cohesion among national planners and program managers. The SADAP team was impressed by the willingness of senior Ministry of Health officials to discuss with candor and openness its initial observations of their health system's performance. The Permanent Secretary said to the team: "We do not want to repeat the mistakes of others...be frank with us."

In that spirit, the health policy issues of current concern which will be addressed are as follows:

1. Health Services Delivery Capacity
2. Financing of Health Services
3. Operating Costs of Capital Investment Decisions
4. Community Mental Health and Life Styles in a Changing Society
5. Grant vs. Loan Financing

1. Health Services Delivery Capacity

Table 35 illustrates the government's out-patient services for the year 1976.* It would seem, at present, that the availability of government-provided services did not insure their full utilization by the public, although the average out-patient services delivered per capita (3.8) is quite good. The number of services delivered by a health facility is probably as dependent on social and cultural factors as it may be dependent on the availability of such services. A strong argument can be made that the utilization of health services by the population they were design to serve is far more difficult for national planners to predict than is the effectiveness of such services.

It is likely that the low utilization relative to system capacity (19.9 services per day per facility, or 7.6 services per day per provider, in centers, clinics, health posts, etc.) is due to a combination of low demand from the population and low productivity on the part of providers. Team members did note on field visits that some facilities were utilized at a low rate, even though they were well-staffed and supplied with drugs and medicines. In any

* In using the term "services," the SADAP team recognizes that multiple services can be provided during one patient visit. In one visit, a patient can receive, say, a a dressing, an innoculation, contraceptive supplies, etc. The totality of these services, therefore, constitutes the information in Table 35.

TABLE 35

1976
Central and Local Government

Health Services

	NUMBER
Diagnosed Outpatients (new, repeats, injections, and dressings):	
Hospitals	736,603
Other Health Facilities	919,595
Antenatal; Family Planning; Post-Natal; and Well Baby Care:	
Hospitals	95,381
Other Health Facilities	433,587
Number of Immunizations by Health Facilities:	
Hospitals	42,144
Other Health Facilities	370,316
Number of Immunizations by Health Inspectors	36,215
Total Outpatient Services Delivered	2,633,841
Total Number Outpatient Services in Hospitals (14)	874,128
Average Number of Outpatient Services per Year per Capita	3.8
Percent Outpatient Services in Hospitals (14)	33%
Total Number of Other Health Facilities (Centers, Clinics, Health Posts, Mobile Clinics, Etc.) Reporting Outpatients in 1976	340
Government Health Personnel in 1976 (Approximate)*	892
Outpatient Services per Health Facility per Year (Excluding Hospitals) (2,633.841 - 874,128 = 1,759,713 divided by 340 facilities)*	5,176
Outpatient Services per Day (Based on 5-day week, 260-day work year)	19.9
Average Number of Outpatient Services Rendered by Health Staff Members During Year (1,759,713 divided by 892)	1,972
Average Number of Outpatient Services Rendered by Health Staff Members on a Daily Basis (5 Day Week, 260-day work year) (1,972 divided by 260)	7.6

NOTES FOR TABLE 35

* Number of facilities reporting outpatients services in 1976.

** In 1977, there were 944 government (central and local) health personnel. The 892 figure for 1976 represents an extrapolation based on: number of new entrants into the health field during 1977, mainly Family Welfare Educators, Enrolled Nurses, etc., and netting out the two dentists since their services are delivered for the most part in a hospital based situation. However, the 392 figure does include physicians even though they deliver the great bulk of their medical care in hospitals.

SOURCE: Medical Statistics, 1976, Medical Statistics Unit, Ministry of Health, pp. 9-50.

case, the government would want to resolve this demand/utilization/productivity issue before committing additional resources to facility construction and personnel training.

One factor which may mitigate against an increased public utilization of government facilities is the presence in and acceptance by the community of some 2,000 traditional healers. Whether or not these providers impact on demand by consumers for public health services should be a policy question which receives immediate attention by national planners.

2. Financing of Health Services

Given the very great target for achieving equitable distribution of primary care services to all the people, the government feels it must continue its considerable resource investment in facility construction and personnel training. The ultimate success in providing "an expanded, comprehensive, integrated health system" [2] depends upon the building of a sound foundation of training coordination, management, and support institutions. While the past efforts to expand health services have been largely capital-intensive, the financing of service-intensive components has lagged somewhat behind due to the difficulty of recruiting and training personnel (sufficient to staff facilities according to projected staffing patterns) from a limited pool of available skilled manpower. As more and more personnel are trained and posted, and as a comprehensive, integrated

health system develops, operating expenses and not capital expenses afford the major financing problem. And historically, marked under-financing of operating expenses has greatly decreased the effectiveness of the public health sector in many countries.

In 1976/77, over 87 percent of the Ministry of Health's capital development budget was externally financed. The amount of the capital development budget financed from external sources would indicate that it is the government's policy to finance the major cost of health services development from donors. In 1976, the government's per capita expenditures on health in the public sector was $16.04 (see Table 30). Missions, employers, charitable organizations, and direct payments by recipients accounted for an additional per capita expenditure of $12.60. The total public/private health expenditure of $28.64, on a per capita basis, accounted for 5.3 percent of the GNP in 1976. The percentage of GDP devoted to the purchase of health services, while considerable, still must be reviewed in light of the limited health sector capacity which existed prior to 1969.

Because of the interest of a number of foreign donors in assisting the government's health sector, it is especially important that national policymakers and donors alike achieve a thorough understanding of the potential long-range consequences of particular courses of action supported by foreign assistance. The means can easily become

the end itself. For instance, the declared goal of comprehensive health care coverage for Botswana's entire population is the stated justification for facilities requirements, which in turn become the justification for training requirements. But important decisions to undertake major construction and training programs have been made without much analysis or specification of the potential effectiveness of such programs in reducing the great magnitude of health problems relative to the potential long-term costs.

During the period 1978 - 1985, the government has projected an output (adjusted for attrition) of 955 enrolled nurses and 406 registered nurses. If these 1,361 new health personnel in 1985 were to meet the low productivity standards of 1976 (7.6 services per day per health staff member), the total volume would be 2,689,336 outpatient services for the year, or, a total greater than the 2,633,861 services rendered by all personnel stationed in hospitals, health clinics, centers, and health posts in 1976. As far as the SADAP team could determine, neither the government nor a donor has initiated demand and utilization studies for determinants of health services delivery to rural areas of Botswana.

The 1976 operating budget (central and local government) was $6,843,229. During the period 1978-85, 600 family welfare educators are also expected to be added to the health personnel roster. The addition of 1,361 enrolled nurses, and registered nurses, and of an estimated 600

family welfare educators, would add (excluding housing) $4,387,951 to the 1976 operating budget, or an increase of 64 percent in costs, in 1976 dollars, just for these three categories of health personnel (see Table 36). The long-term forecasting of operating costs relative to the government's ability to pay and to the public demand for services is unavailable from any source.

During the last Plan period, it was considered by government planners that implementation capacity rather than the availability of financing was the principal constraint on project implementation. As Table 37 shows the Ministry of Health was able to implement only 57 percent of its planned development expenditures during the period 1973-76. [2]

The Ministry of Local Government and Lands, (MLGL) which runs health facilities through district councils, has experienced a nearly five-fold increase in operating expenditures during the period 1973-74 - 1976-77 when costs increased from $309,099 to $1,436,640 annually. These increases were due primarily to the opening of new facilities and the siting of field staff. Because the government has been placing an increased emphasis on service delivery in rural areas, and since these areas are under the operational control of the MLGL, it would be instructive to review the district councils' recent experience with the recurrent cost implications of past investment decisions. The subject of recurrent costs is one on which

TABLE 36

SADAP Team Projections of Additional Staff to be Available for Service in Botswana, 1978 - 1985

Personnel	Salary		Total		Annual Costs
Family Welfare Educators	$1,660 p/year	x	600	=	$ 996,000
Enrolled Nurses	$1,845 p/year	x	955	=	$1,761,975
Registered Nurses	$4,014 p/year	x	406	=	$1,629,976
			1,951		$4,387,951

*The SADAP team projections assumes that FWEs will be added at the same rate during th' period 1978-85 as during the current Plan 1976-81. That is, the addition of 60 - 90 FWEs are projected through 1981. Through short-falls and drop-outs, team estimates 75 FEWs per annum through 1985. Cost estimates are based on 1978 dollars; do not include housing and other support costs.

TABLE 37

Planned And Actual Development Expenditures, Botswana 1973/74-1975/76

Ministry/Sector	*Planned Expenditure* P'000	*Actual Expenditure* P'000	*Percentage Implementation* %
1. Agriculture	9 600	2 885	30
2. Commerce, Industry and Tourism	1 704	695	41
3. Water Affairs and Geological Survey	5 615	5 904	105
4. Education	11 246	11 941	106
5. Health	3 247	1 855	57
6. Roads and Airfields	28 809	18 755	65
7. Government Infrastructure	8 131	3 771	46
8. Posts and Telecommunications	4 C24	2 951	64
9. Urban Development	15 930	9 590	60
10. Rural Development, Ministry of Local Government and Lands	1 765	2 994	170
11. Miscellaneous	1 212	460	38
TOTAL	91 883	61 801	67

Source: Ministry of Finance and Development Planning.

the MLGL receives little guidance, particularly on such questions as the projected growth of operating budgets, and the availability of deficit grants from the Ministry of Health to finance these expenditures in the future. [16] Yet, it is clear that the answers to such questions are of considerable importance in deciding the desirability and feasibility of expanding rural health services as stated in the current Plan, especially since additional family welfare educators, who are now exclusively employed by local governments, will add almost $1 million per year to annual operating costs by 1985.

Table 38 indicates the reliance of council health services on deficit funding from the central government. Although accounting for only 20 percent of district council recurrent expenditures, health services (excluding sanitation and inspection) claim 53 percent of the deficit grants provided to councils (for all services) by the central government. Estimated collections of clinic fees will cover less than 5 percent of the costs of the health services.

It can be further argued that the future recurrent cost consequences of health facilities already constructed have not yet been fully felt. Table 39 shows that the costs of health staff, comprising 64 percent of the total council health budget, already amount to nearly $1,055,340, yet it is well known that most districts suffer from shortages of health staff, and the filling of vacancies would probably result in a significant increase in personal emoluments. [16]

TABLE 38

District/Town Council Impact of Health Programs on Recurrent Expenditure in Botswana, 1977-78

	1977-78 Health Budget	% of Total Budget	Clinic Fees	% of Health Budget	Deficit***	% of Deficit Grant
Central*	361,589	14,6	18,000	5.0	343,589	46.4
Kweneng	201,064	20.5	8,000	4.6	193,064	55.6
Southern	161,583	18.7	9,460	5.9	152,123	99.2
North West	134,942	17.7	3,120	2.3	131,822	60.3
Kgatleng	137,823	27.9	7,000	5.1	130,823	54.0
North East*	94,028	27.3	6,000	6.4	88,028	43.9
South East**	65,000	25.7	2,200	3.4	62,800	71.5
Kgalagadi	107,646	28.8	4,000	3.7	103,646	41.5
Ghanzi	73,876	23.8	2,700	3.7	71,176	44.0
Total	P 1,337,551	19.5	60,480	4.5	1,277,071	53.2

* Does not include transport costs, which were included under Works are therefore understated.

** Estimate based on Health and Social Services Committee vote, with Special CD expenditure and estimate for CD salaries deducted; transport costs not included.

*** Provided by Central Government

Source: Ministry of Local Government and Lands, District Councils Estimates of Revenue and Expenditure, 1977-78.

TABLE 39

Breakdown of District/Town Council
Recurrent Health Expenditures in Botswana,
1977-78

	Personal Emoluments	% of Total Budget	Maintenance & Repairs	% of Total Budget
Central	346,699	69.1	14,730	4.1
Kweneng	127,164	63.2	5,400	2.7
Southern	106,622	66.0	1,400	.9
North West	173,115	54.2	2,460	1.8
Kgatleng	80,623	58.3	3,200	2.3
North East	67,628	71.9	100	.1
South East	43,265	66.6	4,150	6.4
Kgalagadi	65,676	61.0	2,000	1.9
Ghanzi	44,016	59.6	2,020	2.7
Total	P 857,808	64.1	35,460	2.7

Source: MLG&L, District Council Recurrent Estimates 1977-78; Annual Reports to NORAD on LG 20.

For instance, by 1985 if only 50 percent of the anticipated increases of FWEs, enrolled nurses, and registered nurses staff (1,951-975) were actually to be sited in health clinics or health posts operated by the councils, the impact on their operating budgets would be considerable. In 1976/77, local government had an estimated operating budget of $1,437,624. Using 1978 salary tables, the 975 new personnel by 1985 would add $2,193,975 to local government recurrent costs for these three categories of health provider, excluding logistics, management, housing, and maintenance.

Table 39 also indicates that most districts seriously underestimate the maintenance and repair costs of health facilities. In the seven districts for which complete information is available, estimated maintenance and repair costs are adequate to cover only 54 percent of the capital investment made during the period 1973/74 - 1976/77. Any 'savings' realized by short-changing maintenance costs are illusory, since the failure to maintain facilities properly in the present will lead to costly repairs and replacements in the future. [16]

It is clear from these tables, then, that at present the costs of council health services are considerable; that health services are dependent on deficit grants from the Ministry of Health to remain at those levels; and that current levels of expenditure do not fully reflect the

district councils' commitments to supply health services. Moreover, the councils (MLGL) will be expected to employ a major portion of the 1,361 nurses and perhaps all 600 FWEs to be trained in the next few years, since the expanded rural clinic and health center services will be their operational responsibility.

In the same paper,* the effects of further expansion of health services in the North East District are documented. For instance, by the end of Phase I of the district plan period, the North East District will have 5 clinics, 4 maternity wards, and 13 health posts, giving it 100 percent coverage by existing criteria for health facilities. For Phase II of the Plan period, 1 maternity ward and 2 clinics are proposed. It is estimated that the costs of operating and staffing these new facilities will add $35,670 yearly to the recurrent health budget. The additional costs of operating, maintaining, and staffing all health facilities constructed during the 1977/78 - 1981/82 plan period (including housing) will be $91,758 (1977/78 prices), an increase of 79 percent over the 1977/78 budget. Adding in the $7,380 for vehicles in 1977/78, plus the $4,797 shortfall in the maintenance expenditure, the annual health budget for the North East District Council will be $219,000 by 1981/82. Assuming that clinic fees rise at twice the rate of costs, i.e., 160 percent, and allowing for the

* Ministry of Local Government and Lands, 1978, Modifying LG20 Criteria.

rents collected on nurses' housing, the deficit in the health budget will be $196,800--80 percent of this year's deficit grant." [16]

The situation in other districts may differ considerably from that in the North East, but the problems cited may be indicative of what other districts can expect. Thus, any decisions on the expansion of health services by the central government must be based on some indication of the revenue available to the district councils in future years. This will be affected by a number of developments, for example: [16]

- If efforts to create employment in the rural areas are not successful, the district council tax base cannot grow at any significant rate; working age people will leave the rural areas in search of jobs, and the district population will be dominated by the very young, the very old, and women, all of whom put relatively greater per capita demands on health services.

- Increasing council responsibilities in other areas, particularly road maintenance, will make large, competing demands on council resources.

- The councils will probably need to meet rising health care costs by increasing facility fees to outpatients. Although national per capita income has been improving steadily over the past few years, the distribution of this income has not been shared equitably with rural residents. Estimates for the year 1976/77 suggest that only 59 percent of the GDP actually accrued to Botswana citizens, and in 1981 the projected citizen share will drop to 54 percent--most of which goes to urban residents. This inequitable distribution of income will affect the ability of rural residents to pay higher costs for health services.

3. Operating Costs of Capital Investment Decisions

A rural health system and its associated capital construction will generate modified and probably increased operating cost requirements.

In order to expand the rural health system at projected rates, the government must have the economic power to launch and maintain selected new or expanded programs. The key is the word "selected." It is, of course, never possible to undertake every program desired, and unless care is taken, programs that are launched may be beyond the capacity of the national internal resources to maintain. It is hoped that this will not happen. But it is easy for programs to generate unanticipated resource demands, particularly as resource constraints begin to relax slightly. Costs of program development, particularly of capital program development, can accelerate out of control unless there is full appreciation of the future operating cost implications of today's capital investment decisions. It is somewhat complex and difficult to make such projections, but future recurrent costs should be forecast before a construction commitment to a capital project is made. The reasons for this are:

- To assure that funds will be available to allow operating costs to cover at least the minimally feasible (in program and financial terms) services which are to be provided in the newly constructed facility.

- To allow the Ministry to have probable future year operating cost requirements as additional criteria for choosing between competing new or expanded programs.

- To match, within the limits of economic projection, the probable ministerial budget growth against the cost of continuing programs and the cost of new or expanded programs which complete their capital development phase.

Experience in the United States and other countries illustrates that the single most costly oversight in health planning can be the unanticipated program and financial impact of capital development on overall program direction and financial resources. In general, capital-intensive projects, usually hospital or hospital-related construction (health centers) and service programs are the first priorities in the development of health services capacity. After the construction phase is completed, these facilities tend to secure a disproportionate share of the annual budget because of their sheer visibility and the high cost of operating them. Subsequently, these projects divert funds away from those which are less visible and capital intensive, namely those which relate to the delivery of rural health services. Once the original capital development direction is taken, it becomes ever more difficult to bring balance back into the resource allocation picture. And, the operating cost implications of these projects are substantial.

Since the government is planning to construct a new 320-bed hospital at a cost of $12.3 million in Francistown

by 1985, it would be useful to review its projected operating costs against the central government's estimated recurrent budget for 1976/77. It is generally recognized, as a rule of thumb, that the operating costs per year of hospitals in Africa are 1/3 the capital development costs. In its first year of operation in 1985, the operating costs for the Francistown facility would then be $4.1 million (1978 dollars). This figure, while reasonable in its own right, has to be compared with the central government's total recurrent budget, which in 1976/77 was $5.4 million.

Although the Francistown hospital is a single case in point, there is greater reason for concern about the illustration. Table 40 shows estimated capital expenditure for the years 1976/77 and 1977/82, as well as those expenditures for recurrent costs. The reader will note that capital costs will increase substantially in the period 1977/82 over recurrent costs, and that hospitals account for the major proportion of this increase. Therefore, prudent policy-makers and program managers in Botswana must move aggressively to control the capital development process or it will control their health program initiatives for decades to come.

4. Community Mental Health and Life Styles in a Changing Society

Community mental health needs in developing countries in general have been given little attention by the international donor community. Appropriate diagnosis and treatment of mental disorders, of course, are intimately related

TABLE 40

Central and Local Government Capital Expenditures
On Health Care In Botswana, 1974/77 and 1976/81 Estimates

	1976/77		1977/82	
	P	%	P	%
Hospitals	164 500	9,2	3 424 500	33,5
Health Centers	74 000	4,2	1 296 000	12,7
Training	627 000	53,2	3 400 000	33,3
Basic Rural Health Units	697 000	39,1	1 430 500	14,0
Other	219 700	12,3	667 400	6,5
TOTAL EXPENDITURE	1 782 700	100,0	10 218 400	100,0

Central and Local Government Recurrent Expenditure
On Health Services In Botswana

	1976/77 est.		1977/82 est.	
	P	%	P	%
Central	4 394 801	79,0	6 329 000	77,9
Local	1 168 800	21,0	1 940 400	22,1
TOTAL	5 563 601	100,0	8 769 400	100,0
Headquarters	159 300	2,9	204 800	2,3
Training	379 450	7,1	784 600	9,0
Inpatients	2 218 000	39,9	2 761 600	31,5
Outpatients	1 856 600	33,4	3 114 300	35,5
Public Health and Sanitation	506 350	9,1	1 318 300	15,0
Others	425 900	7,6	586 000	6,7

* SOURCE: Annual Statement of Accounts & Plan Projections, Ministry of Health.

to social, psychological, and cultural characteristics and dynamics of a society, and donors are rightly reluctant to become involved. Moreover, therapeutic treatment of mental problems has been considered an expensive, long-term process affordable to the population-at-large only in the more affluent countries. In the developing countries, inpatient services consist of little more than custodial care, and outpatient services are typically available only in urban areas.

It is understandable then that donor assistance to Botswana's health sector has given little recognition to mental health needs of Batswana. Until about a decade ago there was very little reliable epidemiological data relating to the distribution and prevalence of mental disorders among the Batswana. In the past, the government's major effort in planning mental health service delivery was directed towards establishment of a mental hospital in Lobatse and referral services in all outlying health facilities. There has been a severe shortage of trained professionals and almost all (if not all) of them are located in the one mental hospital. And, there have been few meaningful models for donors and the government to use for the provision of mental health services suited to rural societies. [17]

The Batswana have been conditioned by ties to the extended family, by a system of hierarchical authority in the village (the chief), and by traditional rural life

styles. For instance, sex education in the extended family was the responsibility of the grandmother. Instruction was gradual and phased in on a day-to-day basis until the child was ready for formal initiation ceremonies. Now this is rapidly becoming a thing of the past. Botswana is moving through an incipient stage of socio-economic development. It is occurring at such a rapid pace that the choice of solutions between traditional and modern authority is forcing many into an in-between state of uncertainty and psycho-social tension.

The forces of migration and urbanization predominantly affect young men from rural areas. In addition to wages and other attractions of the urban life, an impetus to migration derives from the workings of traditional systems of hierarchy and seniority which deny the young status or power, and often land and wives. Thus they leave to earn wages which will provide them with perhaps a semblance of status if and when they return to the village.

Urbanization often includes the rejection of rural or traditional institutions and values and the adoption of "superior" urban ones. Whereas traditional societies function as wholes and the individual is embedded in the group which is the most important, in the cities more individualism is required. No kinship or peer group provides guiding constraints nor real psychological support. Despite efforts to better themselves, the migrants are often

not equipped to deal with the harsh impersonal life of the city. Senior authorities in the Ministry of Health believe this phenomenon is most notable among Batswana laborers returning from the South African mines who are manifesting a high incidence of mental illness. The barracks-like existence of a Batswana worker in South Africa serves as an introduction to alcoholism, prostitution, physical violence, and other manifestations of social breakdown. Exposure to such extreme living conditions for the uninitiated and vulnerable laborer conditioned to traditional institutions and values is creating a critical problem for Botswana.

The accelerated movement of young men to the cities and industrial centers in recent years is the beginning of a process which may leave the countryside increasingly to women, children, and older men--creating in its wake "incomplete societies". Those who are left behind will be burdened further with agricultural work and the hardships of subsisting on their own. In addition to social problems the rapid population growth in cities and industrial areas (averaging some 12 percent over the past few years), combined with unsuitable traditional health and hygiene practices are creating serious environmental health problems.

Before independence, the Batswana prepared locally grown agricultural products, including "wild foods," and home-dried foods, for their daily diet. The urban and peri-urban areas and industrial areas lack space for gardens. Moreover, there is little or no accessibility to traditional methods

of food processing, and little time to raise vegetables for home consumption in any case. These facts make the urban dweller more dependent upon less nourishing but more convenient preprocessed foods, including commercially produced infant formula.

"The close relationship of diet and health, and the vital importance of nutrition in medicine, are becoming better recognized in modern medicine.* Even so, nutrition is still not taken very seriously by many or most modern physicians. In China, by contrast, the importance of diet has never been ignored. It is reported that in imperial days the government ranked nutrition as its highest among medical authorities...If there is one thing universal in Chinese medicine, classical or folk, professional or self-managed, that one thing is diet therapy. Modification of food patterns is part of medication, not to be separated from the use of drugs." [18] Given the past experience of Botswana in traditional food processing among its population, planners of national programs to improve the nutritional value of present day diets ought to be cognizant of this heritage and attempt to incorporate its lessons into project designs.

Despite the increasing national wealth created by recently discovered mineral deposits and new export markets for cattle, these new economic conditions are also creating the classic problems associated with rapid urbanization and

* Berg 1973; R. Williams 1971; S. Williams 1973.

industrialization, including social alienation and duality manifested in rising rates of alcoholism, mental disease, deteriorting nutrition, and the proliferation of peri-urban slums, with concommitant environmental health problems. The resolution of these problems may be little affected by what can be considered conventional health-related inputs.

The training and placement of psychiatric nurses in health centers and clinics address the symptom rather than the cause of current problems in community mental health. As the Batswana society continues to develop in this new era, health investments should be so designed as to support and reinforce other social and economic investments. It is important, therefore, for national planners to seek to optimize the use of available resources by designing complementary health and other development investments which interact in a synergistic manner.

5. Grant vs. Loan Financing

The impressive performance of Botswana's economy in recent years and the good future prospects for export-led growth both suggest that loan financing be considered as a mechanism for assisting the governent implement its development plan for health. There is little question that, despite the high growth rates of the early 1970s (averaging 20 percent annually in real terms) and the 10 percent annual real growth projected for the next three years, Botswana will continue to be in need of grant assistance in certain sectors. However, the characteristics of

past growth and of future growth prospects provide the justification for beginning steps toward soft loan financing for particular elements of assistance packages.

Until 1970, the government relied on grants for meeting not only all of its development spending, but also a substantial part of its recurrent expenditure. In the early 1970's, raidly increasing government revenues enabled the government not only to cover all recurrent spending, but generated surpluses which were used partly to finance public investment. By 1973/74, public savings met about 45 percent of public investment needs, and with external financing amounting to the equivalent to 80 percent of capital spending, the government ended the year with a cash surplus. The U.K, which provided 90 percent of all external (grant) assistance to Botswana in 1969/70, had switched to loan financing during the following two years, and by 1973/74 was providing only 12 percent of all external assistance.

Exports grew at an annual rate of 44 percent (in constant prices) between 1966 and 1971, while imports grew at half that rate. With the renegotiation of the Customs Union revenue arrangements with South Africa and the establishment of two major mines in 1970, the country began its transformation into a high-growth, export-oriented economy. During the next five years, government revenue increased by 40 percent per year, while expenditures increased by only 16 percent per year. The National Development Plan for 1976-81 projects real annual growth

rates of GNP to average about 10 percent, and expects 1980/81 exports to be 67 percent higher in real terms than those for 1976/77. About 45 percent of gross capital formation during the Plan period is expected to be financed by public foreign debt. World Bank estimates showed that Botswana's external public debt stood at U.S. $110.2 million at the end of 1973, and that its debt service ratio was only 1.5 percent. Thus there is every indication that Botswana will be able to handle a loan at concessionary terms to finance at least part of an overall health assistance package.

V. RECOMMENDATIONS

The SADAP team recommends seven proposals which build on the program and budgetary commitments made by the Government of Botswana since independence. It is clear that the country is making a substantial effort to produce a broad range of health manpower and to expand health infrastructure and capacity. This effort is consistent with the statements of Ministry of Health officials who articulated to the team the intent of the government to make health services available to the entire population, consistent with resource availability. These services are to be made available to rural and urban dwellers alike, both rich and poor. However, it is also clear that a gap exists, in that this objective is still far from realization--particularly for the residents of rural areas.* Consequently, these recommendations deal with the potential for filling that gap. Their specific purpose is to provide a basis for discussion between donors and the Government of Botswana, of activities whereby the donor community may assist the government in reaching its stated goals.

It is the team's opinion that the government has made rapid and sustained progress in the development of infrastructure for the delivery of health services to the entire population. Now, national planners are faced with the difficulty of extracting from this health services

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* While most residents are within 15 km of a health facility, this statement deals with utilization of facilities rather than accessability to them.

system the high level of utilization, productivity, and effectiveness that it is capable of delivering to the public.

Four broad policy guidelines for the donor community run through the fabric of the recommendations:

- Donor program intervention should be in those areas which assist the government to continue to shift, in real terms, its emphasis on health services delivery from curative to preventive/promotive care services.
- Donor program intervention should be in those development areas of the health sector which do not have unreasonably high recurrent cost implications for the government.
- Donor intervention should assist the government to make the existing system more responsive to the intent of national planners: a growing capacity is being set in place to make this a reality.
- And, donor intervention should be tailored to assist effectively in the translation of national development plans in the health sector into implementable programs of action.

If the Government of Botswana is to improve health services--preventive and curative--at an affordable cost, it should develop a national capability that has the technical capacity and the authority to recognize and plan for the changing health needs of the country. That is, if preventive and environmental health interventions are successful, infant mortality will decline and life expectancy will increase. The probable impact on the health system of this shift will be toward an increased demand for curative health services: and, demand tends to outpace the availability of curative capacity in this situation. Therefore, the

development of this capability should help to create the strategic tools which focus energy and resources on the formulation and implementation of a consolidated national health strategy which can plan for the long term.

1. The Cost and Utilization of Health Personnel

The current methodology for determining future health personnel "requirements" in Botswana is founded upon an understandable desire to expand coverage of the population principally by the placement of appropriately stafffed health facilities. To the extent that health planners have assessed future need for health personnel the technique has been to take the number of existing and planned facilities and multiply it by the relevant "staffing norms" for various health personnel categories (see p. 82). This methodology for determining the kinds and numbers of personnel to be trained does not appear to have included consideration of long-term employment and cost implications of the contemplated output. What is needed in the planning methodology is specific consideration of the implications of different levels and patterns of health personnel training capacity. Correspondingly, it would also be helpful if the national development plan more specifically articulated the impact on the causes and effects of ill health that specific levels and patterns of personnel development may be expected to achieve. Potential alternatives in the organization and financing of services delivery may be expected to

substantially affect the employment, cost, and health impacts of various health staffing strategies.

It has been the experience in developed countries that the level of availability of health personnel is highly correlated with the overall costs of health care services. In Botswana where the government is attempting to extend health care services to all, it is easy to imagine that recurrent costs of health services provided will be closely correlated with the costs of employing those health personnel available for employment. It is likely that both future costs and employment patterns in government health facilities will be determined principally by factors beyond the control of planning "norms" and "service targets."

In addition, the development of expanded postgraduate training for selected personnel in specialized fields may ultimately serve to influence a pattern of service delivery that is increasingly hospital-based, technology-dependent, and costly. If advanced, specialized medical training capacity continues to expand with donor financing, it may make it increasingly difficult for Botswana to afford continued, rapid expansion of basic health services to the rural population; the training capacity will have been structured to produce personnel to serve in hospital-based services.

Although the government has done an excellent job in getting health infrastructure in place since independence,

excess provider capacity in some facilities is a major problem. The number of visits made to a source of health care delivery is probably as dependent on social and cultural factors as it may be dependent on the availability of such services. A strong argument can be made that the utilization of health services by the population they were designed to serve is far more difficult to predict for national planners than is the effectiveness of such services.

The increasing rate of urbanization in Botswana can set in motion powerful forces demanding curative services. A curious paradox of "development" is the public desire for more government services. The potential burden of ever-rising costs inherent in an attempt to provide such services to all should give substantial incentive to government health planners to continually re-evaluate the ways in which their national health plans are articulated and acted upon. Large cadres of curative services personnel may begin to satisfy the popular need for attention to health complaints, but continuous escalation of numbers of personnel produced will merely escalate costs without appreciably diminishing the incidence of health complaints that they might treat.

The goal of cost containment therefore raises the twin issues of:

- How many health providers are enough? and
- How many can Botswana afford?

Given that resources will always be limited relative to those needed, the challenging issue then becomes:

- What kind of health providers can be most effective, relative to cost, in reducing ill health?

Improving efficiency through improved management, logistics, and supply systems would be one major step toward improving effectiveness of the government's health programs. But the greatest impact would come from providing great emphasis on training in preventive and promotive health measures. Over the long-term, the development of programs to eliminate the causes of ill health, possibly through community mobilization, would be the most cost-effective investment of government health resources.

The Ministry of Health is making a concerted effort to orient health personnel training toward the prevention of disease. The donor community must be an active participant in assisting Botswana to strengthen preventive services over the long-term.

Donor financing of health manpower development programs should address the need for the two types of health manpower that would improve the effectiveness and efficiency of the delivery of health services:

- Public health administrators and managers
- Preventive and promotive health workers/ educators

Effectiveness of any expanded cadre of preventive and promotive health workers is likely to depend on the

extent to which such workers can integrate their activities with broader development activities and the extent to which they can enjoy the trust and confidence of those they serve. For instance, it is the policy of the Ministry of Agriculture to increase dry-land farming. Those in the agricultural sector who are expected to provide the manpower need a better standard of living. The inclusion of "health considerations" in agricultural schemes would be a significant contribution toward making possible a better standard of living for the dry-land farmer.

2. Data Management and Information Processing

The Ministry of Health has broad responsibilities for planning health services and health protection activities. With an annual budget of $6.8 million (1976/77) and some 1,200 employees (1978), most of whom are engaged in service delivery or other field functions, there is a need for simple but effective methods and data for basic central planning and management analysis. It is necessary to develop a basic planning information system which would provide for the collection, analysis, and dissemination of required data.

Of immediate, practical importance is the urgent need to establish prospective criteria for determining probable future operating costs of present capital investments, and of a central capability at the Ministry of Health which forecasts long-term costs against expected benefits. The

consistent collection of reliable data from operating units is a requirement of this capability.

At present there is a lack of reasonably precise information on the qualitative and quantitative characteristics of the government's health delivery system, particularly, as mentioned in (1) above, in the area of health personnel. Accurate data should be available for health planners in order to facilitate their understanding of the service and financial dynamics of the present system.

Central planning staff at the Ministry should only receive condensed data from the field and subject it to various consistency checks; on a sample basis, randomly and in depth, they should have the capacity to validate the information received.

This issue is particularly important in regard to the manner in which some data are now collected. The Ministry of Finance and Development Planning collects monthly inpatient data from hospitals and health centers on a standard form. Diseases are coded 01-155 and each month the hospitals and health centers submit the forms to the Ministry's central office for a printout. Prior to January 1979, the Ministry plans to move from the 155 format to 800 characters. It did not appear to the SADAP team that this rapid increase in information detail was necessary without changing staff capabilities to manage, utilize, and analyze the data. For instance:

a. The statistical unit only aggregates the data from the field and sends back computer printouts. No analysis is done with the information, either at the central or regional level.

b. No sample surveys have been conducted on tests for reliability or validity of diagnoses entered into the code pattern at the health delivery points.

c. The information now gathered is relatively useless for planning purposes. Reported hospital deaths constitute some 10 percent of all mortality in Botswana. This figure does not give planners adequate knowledge for the underlying causes of mortality on a national basis.

The health delivery system in Botswana is growing in size and complexity. Without reliable and valid sources of information, central management and administration will be an impossible task. Donors should review the government's data collection procedures and computer requirements with a view toward providing both short and long-term technical assistance to improve information acquisition and analysis for program planning purposes.

As part of a broader effort to improve the information base available to health planners and programmers, it would be helpful for long-term planning purposes if the Ministry of Finance and Development Planning developed methods for incorporating aggregated health spending data into its system for calculating national accounts. Relatively simple methods could be devised for estimating private sector spending levels and patterns; public expenditures on health could be aggregated by referring to the portions of the budgets of various ministries obligated to health and

health-related services. Such baseline data would provide essential information needed for assessing the implications of alternative allocations of public resources to health. The relatively high level of total spending on health in Botswana (almost U.S. $30 per capita and over five percent of gross domestic product) indicate that there is a need to monitor the portion of national income allocated to health needs. An initial, thorough look at health spending and financing was reported by Ministry of Health Planning Officer, Murray Kam, in his 1977 report, "A Country Case Study:Financing of Health Services in Botswana." Follow-up work is needed to supplement and complement his study by developing a system to calculate and report total health spending on an annual basis as part of national accounting procedures.

3. Policy Analysis and Coordination

Current growth in the Botswana's health sector is itself producing problems and creating new administrative/-managerial needs. One of these is the need for basic information about the system--its scope, needs, capacity, costs, etc., as mentioned in (2) above. In addition, even with such basic information in hand, this growing complexity also creates broad administrative problems of coordinating policy analysis and decisionmaking with resource allocation decisions at a high level: with increasing system complexity, the relationships among service components, the overlap

among various programs within the health sector, become sources of heightened inefficiency;further, there occurs a growing discrepancy between the goals of the system and the actual results of health programs. Problems of consistency and coordination are already evident in relationships between the Ministry of Health on one hand and the Ministry of Local Government and Lands. The present problems appear likely to deepen as the system expands.

The current plan for a Unified Nursing Service under the Ministry of Health is one such example. While this plan may solve an administrative problem (personnel in health clinics and health posts are under the MLGL), the potential for other, more serious problems is great. The Ministry of Local Government and Lands has a natural constituency in rural areas and is an identifiable institutional force in the lives of these residents. Removing the nurses from, essentially, some form of community governance may prove detrimental to service utilization by the public in these areas.

In view of this concern, the SADAP team recommends that donors consult with the government on possible means by which they may assist in the alleviation of these problems of policy analysis and coordination of health policymaking and resource allocation decisionmaking as outlined below:

a. Coordination of Policy and Resource Allocation Decisions

Donors should identify ways to support the government in improving its capabilities for coordinating decision

making processes in health policy and resource allocation. This might include the possible creation of a coordinating council with representation from the different ministries, and alternative ways of ensuring better understanding of the critical interdependence between health and economic development in general on the part of major decision makers.

A national planning capability should have the critical authority to coordinate policy and set a framework within which all government health program and financing decisions would be cast. The fundamental purpose of the coordinating council would be to link planning with resource allocation in a manner which permits an understanding of the total health needs of the population, preventive and curative, environmental and personal. The Ministry of Local Government and Lands and the Ministry of Agriculture should be full partners in the council.

b. Decentralization of Health Services to the Regional Level

The government health services are organized and administered through a highly centralized, pyramidal structure operated primarily by the Ministry of Health (in terms of policy direction, resource allocation, and control.) This is the case in most countries in Africa; the responsibility, decisionmaking, and action rest at the top and not the bottom of the pyramid, causing concentration and centralization. However, a tendency toward increased decentralization implies that the perceived needs of the population

and their priorities are determined as a function of services and personnel having theoretical and technical expertise. An administrative reform in Botswana's health delivery system would make possible the extension of health services to its dispersed, rural population within the societal value structure of the country. Donors can play a signal role by supporting the application of this reform and then strengthening the government's commitment to equity in service delivery.

Equity cannot be achieved overnight. Before attempting to extend services to "that 10 percent of the population which does not now have access to them," the government should first consolidate its management and administrative capabilities over that portion of the population it can presently reach. Decentralization is one way to move toward equity. Then, whatever health system has been extended to the population, the government should secure that investment by addressing these questions:

a. Can it be afforded? Is the present system well utilized and productive?

b. Can it be managed? Is the present system under control and not over-extended?

c. Can staff be recruited, trained, and retained? Are present staffing policies consistent with demand factors and the changing health needs of the population?

In Botswana, especially in the western region, it is particularly difficult to reach that last 10 percent of the population who are presently without health services. While the government is committed to equity for all its citizens,

it must be practical. The SADAP team feels that government would be doing well if it could extend to this last portion of the population categorical disease control and mass immunization programs. In addition, the MOH should endeavor to create rapport with the Ngaka (traditional practitioner) to both encourage acceptance of government health services by dispersed rural people and to incrementally train the Ngaka in the preventive/promotive/curative methods of more formal (western) health service delivery techniques.

Therefore, because the health sector is rapidly expanding, and because 90 percent of the population is widely dispersed in rural areas, the administrative burdens on the central structure of the MOH could be reduced to the extent that some decisions can be delegated to the regional level. The MOH needs to adopt the principle of developing regional level planning, and to integrate this with central administrative activities. Donors should consider means of helping to accelerate this development, via the provision of short-term technical assistance, and training for personnel at the regional level.

c. Policy Seminars

Several seminars of 2-3 days each are suggested for high level decisionmakers in Botswana. Participating members should number no more than 6-8 in each seminar, and they should be representative of multi-ministerial interests. The signal purpose of these sessions will be to sensitize

selected individuals to a better understanding of the interaction between health and economic planning on the part of those engaged in the planning process. The team recommends that donors fund these seminars over a period of three years. To give the reader a better idea of the seminar concept, the following seminar topic is offered as an example:

Theme: Sectoral Economics and Health Planning

Discussion Leader: Dr. Robert Grosse, University of Michigan

Panel: Dr. Chong Kee Park, Korea Development Institute, Seoul, Korea

Dr. Habib Rejeb, Ministry of Health, Tunis, Tunisia

Mr. Norman McEvers, W.H.O., Geneva

In conduct of these seminars, it would be important for discussion leaders and panel members to participate in field exercises for the Government. This would give them the opportunity to test out their assumptions against the realities of service delivery in Botswana. Therefore, to the extent possible, discussion leaders and panel members selected for seminar assignments might also be those assigned to provide short-term technical assistance for other recommendations in this paper.

d. Operating Costs of Capital Investment Decisions

The donor community should assist the government to develop a mechanism which would project, for purposes of program and budget planning, future-year operating cost

implications of capital investments underway and proposed in the health sector. The SADAP team recommends further that donors provide technical assistance to the Ministry of Health to support the rapid development of this mechanism. Although resident staff planners in the Ministry can assist in this function at the present time, intermittent technical assistance staff with backgrounds in financial and economic analysis relevant to facilities and health personnel planning also must be provided. (See Issues of Current Concern, pp. 114-141, for a discussion of this topic.)

4. Health Prevention and Promotion, and Environmental Protection

In the SADAP's team judgment, there is reason to believe that a substantial investment increase in public health protection and environmental programs would be a cost-effective use of resources. However, while major efforts at improving public health and environmental protection are highly desirable and justified, an important preliminary activity needs to be carried out.

Donors should assist the government in the conduct of an extensive review of the current allocation of resources (capital and recurrent), and trends associated with these resources, to provide a comprehensive understanding and accounting of current program activities in this area. A qualitative and quantitative inventory is needed of each program in health prevention and promotion, and in environmental protection. Once this is completed, donor activity

can then be targeted on at least these three areas (which emerged from the SADAP's team's field work):

a. Environmental Protection

(1) Protection/provision of safe water suplies, particularly in regard to nitrate contamination.

(2) Disposal of sewage and sewage treatment facilities. Given the growth of urban areas during the past four years (12 percent average), and the probable increase over the next five years (estimated at 10 percent), current facilities will be inadequate by 1987. Engineering studies should be conducted in the near term (one such consultancy has been let by the government) as it takes several years to plan and construct sewage and sewage treatment facilites.

(3) Solid waste disposal: Open pit burning is now used in Gaborone (as well as other cities). While officials state this is a satisfactory method for the remainder of this decade, they must begin planning now for alternative means of disposal in the 1980's.

(4) Pollution control is becoming a problem in Botswana's rapidly expanding economy. The abattoir in Lobatse pollutes the local water supply; a first stage effort is now underway to provide sewage facilities, but this will have to be expanded in the future. The mine at Selebi-Pikwe dumps copper waste into the Shashe River, and pollutes the air through sulfur emission. The Ministry of Health should take on the responsibility of annually issuing a White Paper to the Ministry of Finance and Development Planning, stating the environmental and public health hazards of industrial pollution, including the likely national consequences if they fail to be addressed by the leadership.

b. Health Prevention and Promotion

(1) Increased investments in health education are warranted at this time. They should be aimed at:

- Community (adult) education.
- School health (primary, secondary, and university.)
- Professional/nonphysician education.

(2) The reduction of preventable mortality and morbidity due to bilharzia, malaria, and tuberculosis. Although the incidence rates of bilharzia do not appear to be known with any degree of accuracy, the Ministry of Health and the W.H.O. recognize the problem. A Peace Corps Volunteer recently completed a baseline survey on human prevalence and incidence rates. Many of the major donors in the health field have joined the W.H.O. Special Program for Research and Training in Tropical Diseases. The SADAP team suggests that donors assist the government in analyzing the Peace Corps data (if this has not yet been done) and, if the situation warrants consideration, to work with the government in the preparation of a project identification document for W.H.O.

c. Control of Communicable Diseases

The SADAP team encourages donors to assist the government in a control program for major communicable diseases. However, before undertaking any program of mass immunization, the government needs urgent assistance in the development and implementation of an effective cold-chair capacity. Given the great distances of health posts, clinics and other health facilities, and the fact that vaccines are imported, assistance must include:

a. Adequate refrigeration facilities at the international airport in Gaborone.

b. Refrigerated vans and backup support to transport the vaccines into Gaborone, and then to regional health centers and hospitals.

c. Adequate facilities for the storage of vaccines in all health facilities.

d. The means to test vaccines for efficacy and potency prior to distribution from the central warehouse in Gaborone.

5. Community Mental Health and Life Styles in a Changing Society

The Ministry of Health has the view that problems of malnutrition in peri-urban areas are "man-made." There is clear evidence it can point to that before independence local resources provided an adequate diet in rural areas. Now, with the rapid growth of urban and peri-urban areas and expansion of the non-agricultural labor force, the population is shifting to processed foods. The Ministry requests, therefore, that donor assistance should be sought to undertake a study which could identify and determine the possibilities for cultivating "traditional wild foods" in peri-urban and urban areas. Processed traditional foods could then be distributed by the Ministry in schools and health facilities.

Attempts by the government to increase agricultural production should not fail to take into consideration the needs of rural women and their almost total dependence upon agriculture, and, conversely, their major role in food production. This signal role of women in rural society has often been overlooked in past development efforts. In urban areas, the sales practices of infant formula companies should be closely monitored by the Ministry of Health to make sure that they are not using unethical methods to push their products.

In dealing with problems of alcoholism and mental illness, the most appropriate and cost-effective approach

might be the incorporation of traditional healers into psychiatric programs. This has been tried with some success in Nigeria, which enlisted a ready-made cadre of familiar and experienced specialists who had been the "curers of mental disease" within an accepted framework of societal values.

The SADAP team feels that community health programs should be focused in urban areas and in industrial residential settlements. They should include simple environmental health education, basic health services, including, where appropriate or necessary, maternal and child health. Government or private commercial ventures involving the employment of large numbers of people and the resettlement of the labor force should include provisions for timely and appropriate welfare services in their commercial schemes.

The problems of mental health illness in Botswana are real; the solutions are quite complex. As mentioned in "Issues of Current Concern," the traditional health inputs and investments treat the symptoms rather than the causes of disease. Change is occurring at an ever-increasing pace throughout the Batswana society. Multi-sectoral development strategies have uprooted people from the familiar and traditional values of an earlier society. Some Batswana have been able to leap unscathed over the chasm to modernity; others have encountered serious problems in the transition.

The SADAP team recommends that the donor community assist the government to conduct an initial baseline study on mental illness with a view toward:

1. Identifying the causes of the disease;
2. Identifying appropriate treatment strategies; and
3. Identifying training needs at the community level.

6. Central Warehouse Facilities for the Storage of Medical Supplies and Drugs

The Ministry of Health's central warehouse for medical supplies and drugs is in need of renovation. While the space appears to be adequate for the near term, supplies and drugs are not protected completely from the elements. During the dry, hot season, windows have to be opened to let air circulate, allowing dust from the nearby dirt road to pour in. The inside heat rises to such a level that medical creams and jelly compounds turn to liquid, causing a breakdown in some medications.

The SADAP team recommends for donor support an assistance program to:

1. Renovate the existing warehouse.
2. Install air conditioning or some other system of air cooling in the warehouse.
3. Pave the outside road with bitumen asphalt.
4. Secure all windows from the outside elements in all seasons.
5. Improve the drug inventory system.

7. Development of a Contingency Plan for Drought Relief

Throughout the SADAP teams's field visit, officials mentioned the periodic droughts which have afflicted Botswana in the past. Before the onset of the next one, they would like to set in motion a plan which would allow basic services to be continually delivered in all health facilities during the emergency period. Donors with special expertise in emergency preparedness are requested to assist the government in the design of a contingency plan for the drought period. At the minimum, the plan should include:

1. The pre-siting of emergency medical supplies and fuel (many health facilities use gasoline pumps for their water supply);

2. The design of a logistics system to insure re-supply of the most basic food supplies and medicines;

3. The provision of emergency evacuation for "worst case medical situations"; and

4. The training of first-aid workers at the community level.

APPENDIX

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A List of Persons Interviewed by Family Health Care/Africare

1. Paul Spray, Planning Officer, Ministry of Mineral Resources and Water Affairs
2. Nyadze Thipe, Ministry of Mineral Resources and Water Affairs
3. Kristen Christensen, NORAD Resident Representative, Gaborone, Botswana
4. William Wood, Chief Medical Administrator, Ministry of Health
5. Michael Stevens, Ministry of Finance and Development Planning Director of Planning, Ministry of Finance and Development Planning
6. Dr. Sebina, Permanent Secretary, Ministry of Health
7. Dr. J. Kreysler, Nutrition Expert, Nutrition Unit, Ministry of Health W.H.O.
8. James Miller, Planning Officer, Ministry of Local Government and Lands
9. Nancy Pielemeier, Author, Syncrisis: The Dynamics of Health, XIII: Botswana, Lesotho and Switzerland
10. Michael Blackmore, Senior Urban Engineer, Ministry of Local Government and Lands
11. William Johnson, Peace Corps Volunteer
12. Mr. Rush, Peace Corps Director, Botswana
13. Mrs. K. M. Makhwade, Chief Nurse, Ministry of Health
14. Dr. Fernando, Regional Medical Officer, Ministry of Health
15. Winnie Manyaneng, Health Education Officer, Ministry of Health
16. Murray Kam, Planning Officer, Ministry of Health
17. Gyda H. Hunter, Coordinator, International Committee of the Red Cross, Gaborone, Botswana

18. Richard Malotle, Executive Secretary of the Association of Medical Missions, Gaborone

19. Timothy Jones, Health Education Unit, Ministry of Health

20. Mr. Moapare, Central Statistical Officer, Ministry of Finance and Development Planning