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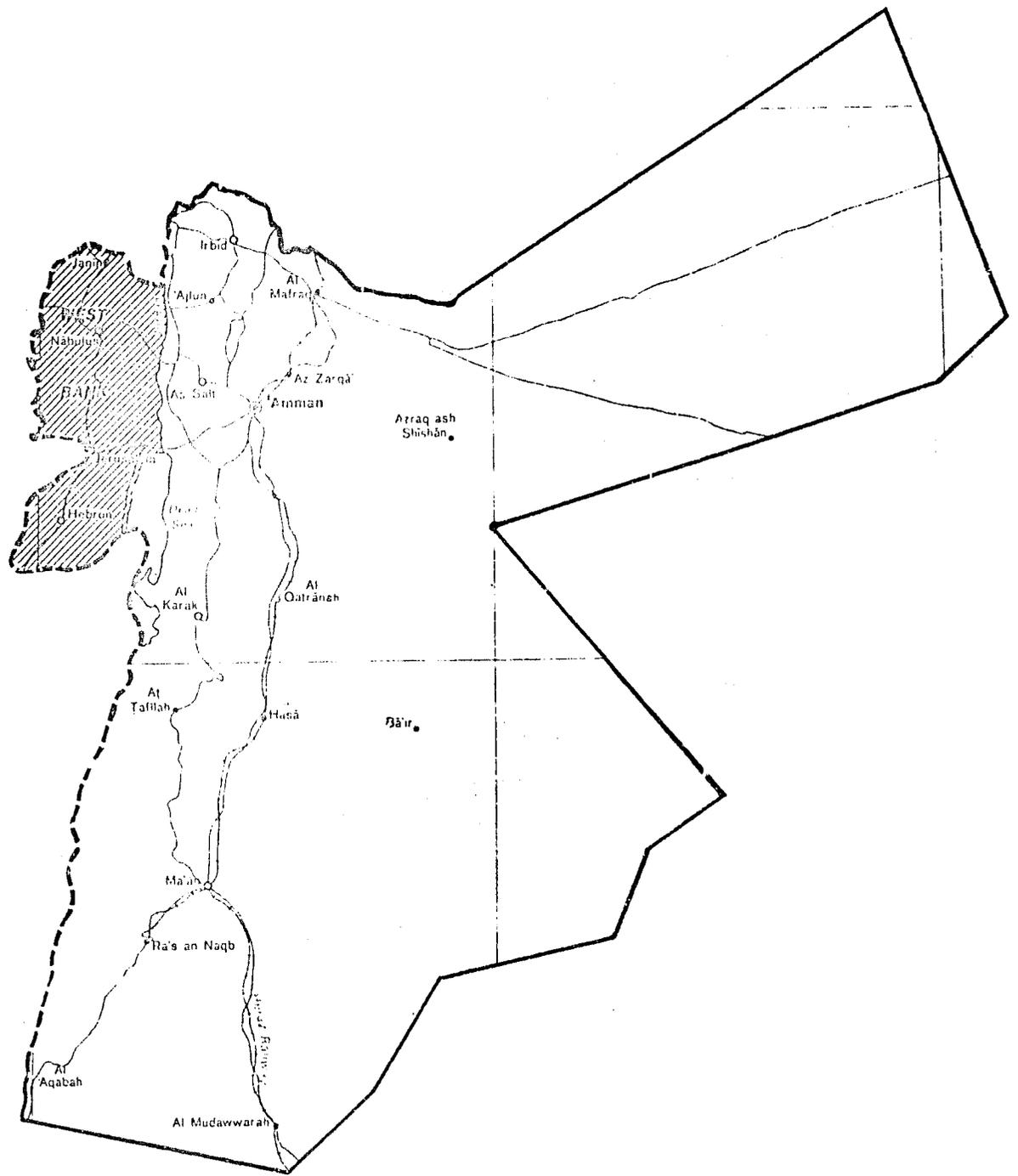
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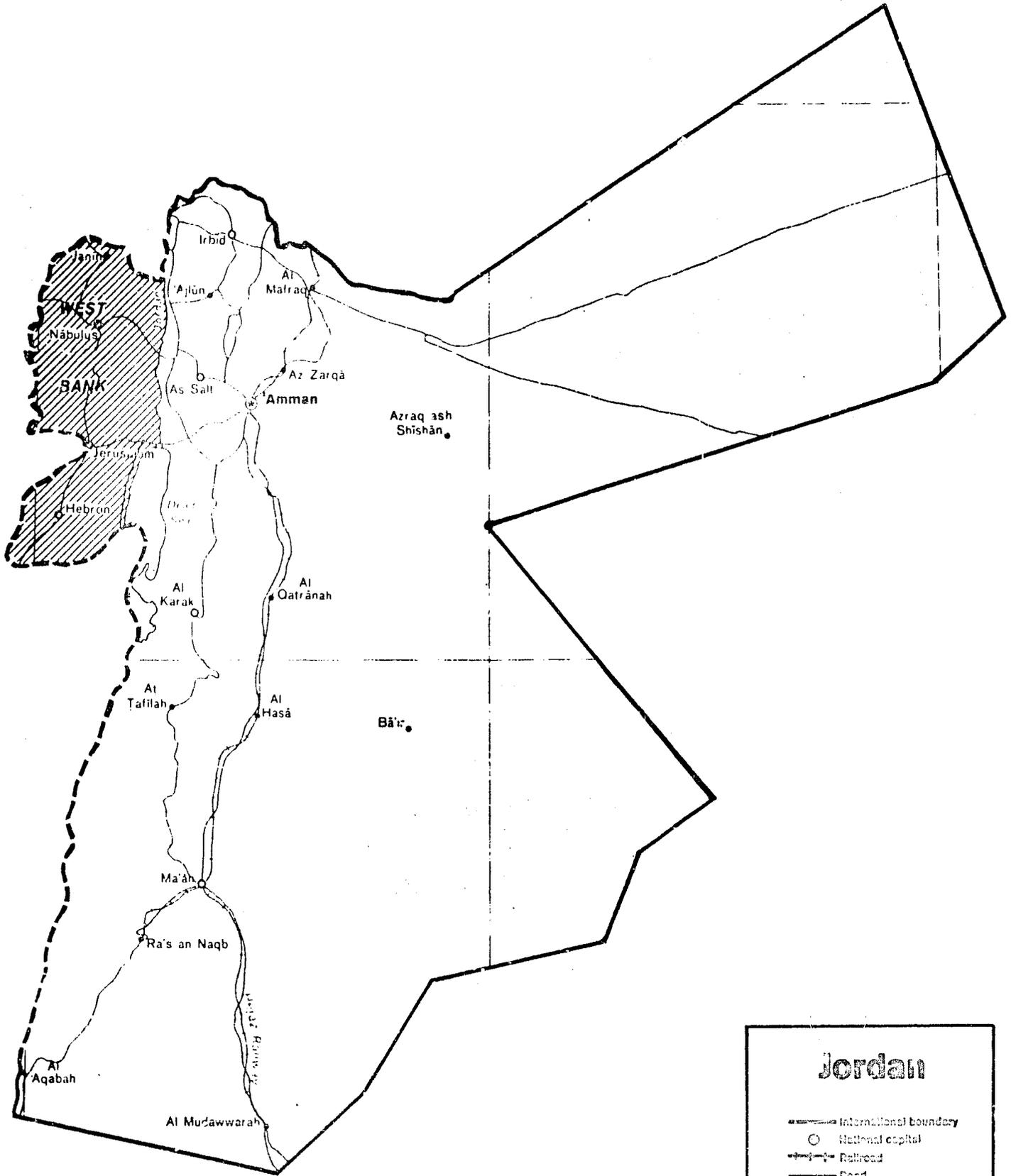
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# National Health Planning in Jordan Phase Two: Health Policy Strategy

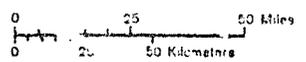


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# Jordan

- International boundary
- National capital
- Railroad
- Road
- Israeli-occupied territory



NATIONAL HEALTH PLANNING IN JORDAN  
PHASE TWO: HEALTH POLICY STRATEGY

6 NOVEMBER TO 23 DECEMBER 1976

IQC CONTRACT NO. AID/afr-C-1145 *GTS*

WORK ORDER NO. 7

PIO/T No.: 278-181-3-60065

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Columbia, Maryland 21044

3 February, 1977

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## FOREWORD

In August of 1976, the Government of Jordan requested cooperation from the United States Agency for International Development to carry out a series of activities which would contribute to formulation of a National Health Plan for Jordan.

In response, the Phase I Team (Robert C. Emrey, John Gallivan, and Dr. Stephen C. Joseph) visited Jordan between 16 September and 2 October 1976 to plan and arrange for activities of the Phase II Team. The full report of the Phase I Team is included as Appendix I of this document.

The Phase II Team members were:

Dr. Aristide Y. Apostolides	- Epidemiologist
Ms. Patricia Day Bidinger	- Nutritionist
Dr. Donald Freedman	- Phase II Team Leader
Professor Oscar Gish	- Development Economist
Dr. Frank Godley	- Demographer
Mr. Lee R. Lunsford	- Environmental Sanitation Specialist
Ms. Sharon Stanton Russell	- Manpower Analyst
Mr. Wayne Stinson	- Management and Organization Specialist
Mr. Herbert Traxler	- Information Systems Specialist

Also, Phase I Team advisors Dr. Stephen C. Joseph and John Gallivan provided assistance in Amman during that time period.

Team members, in cooperation with Jordanian counterparts, worked in Jordan for varying lengths of time between 6 November 1976 and 23 December 1976. During this period, the Phase II Team conducted extensive interviews, site visits, analysis of published and unpublished materials, preparation of reports and drafting of recommendations for a National Health Policy Strategy. Several meetings were held with the Health Policy Reference Group to review assumptions, initial findings, and proposed recommendations.

Subsequently, upon their return to the United States, a number of Phase I and II Team members worked, both individually and collectively, between the 16th and 27th of January 1977 to prepare the final draft of this report and, in the process, to respond to comments, questions, and concerns raised by members of the Health Policy Reference Group. The report was edited by Robert Emrey, John Gallivan, and Sharon Stanton Russell. Preparation of the report was assisted greatly by the work of Robert Blinzley, Dorothy Weatherby, Timothy Whittier, and the staff of Westinghouse Health Systems.

Many individuals and agencies extended cooperation and hospitality to the Phase II Team. The Team would like to express special thanks to His Majesty King Hussein of Jordan and His Government; His Royal Highness Crown Prince Hassan; The Minister of Health, His Excellency Mohammad Al-Bashir and his staff; The Director of The Royal Medical Services, Dr. Daoud Hananiyeh and his staff; The Director of the National Planning Council, Dr. Hanna Odeh and his staff; members of the Private Medical Sector and the Jordan Medical Association; other members of the Health Policy Reference Group; members of the Department of Statistics; Jordanian counterpart associates of the Phase II Team; the U.S. Public Health Service; and all other agencies and persons who, by their contribution of time, information, and valuable assistance have made this report possible.

The Phase II Team also extends special thanks to Dr. Sami Khoury of the University of Jordan, to Mr. Christopher Russell and Mr. Frances Herder at USAID in Amman and to Ms. Emily Leonard at AID in Washington, D.C.

## BACKGROUND

The Government of Jordan has begun the extensive and lengthy process of a comprehensive review of health problems in Jordan and a search for efficient and workable solutions to these problems. Ideally, this process should lead to a National Health Plan. The report of the Health Planning Team, Phase I (Appendix I) includes a preliminary model to guide such a process. In order to emphasize the major effort and inputs needed for such a plan, a brief review of the critical elements seems appropriate (See Figure 1). Such a plan should contain the following elements:

- A. A diagnosis of the health situation in Jordan based on available data, including:
  1. Population data
  2. Environmental data
  3. Patterns of morbidity and mortality
  4. Available resources: financial, human, and physical
  5. Available services
- B. Identification of problems to be addressed, including but not limited to problems relating to:
  1. Coordinated policy making and planning capacity
  2. Provision of adequate basic health services to the total population at the first level of contact between the patient and the health care system. (The term, Basic Health Services, is intended here to include health promotion, disease prevention, nutrition, diagnosis and early treatment of certain types of diseases.)
  3. Environmental health including water, waste disposal, housing, vector control, and food handling.

X

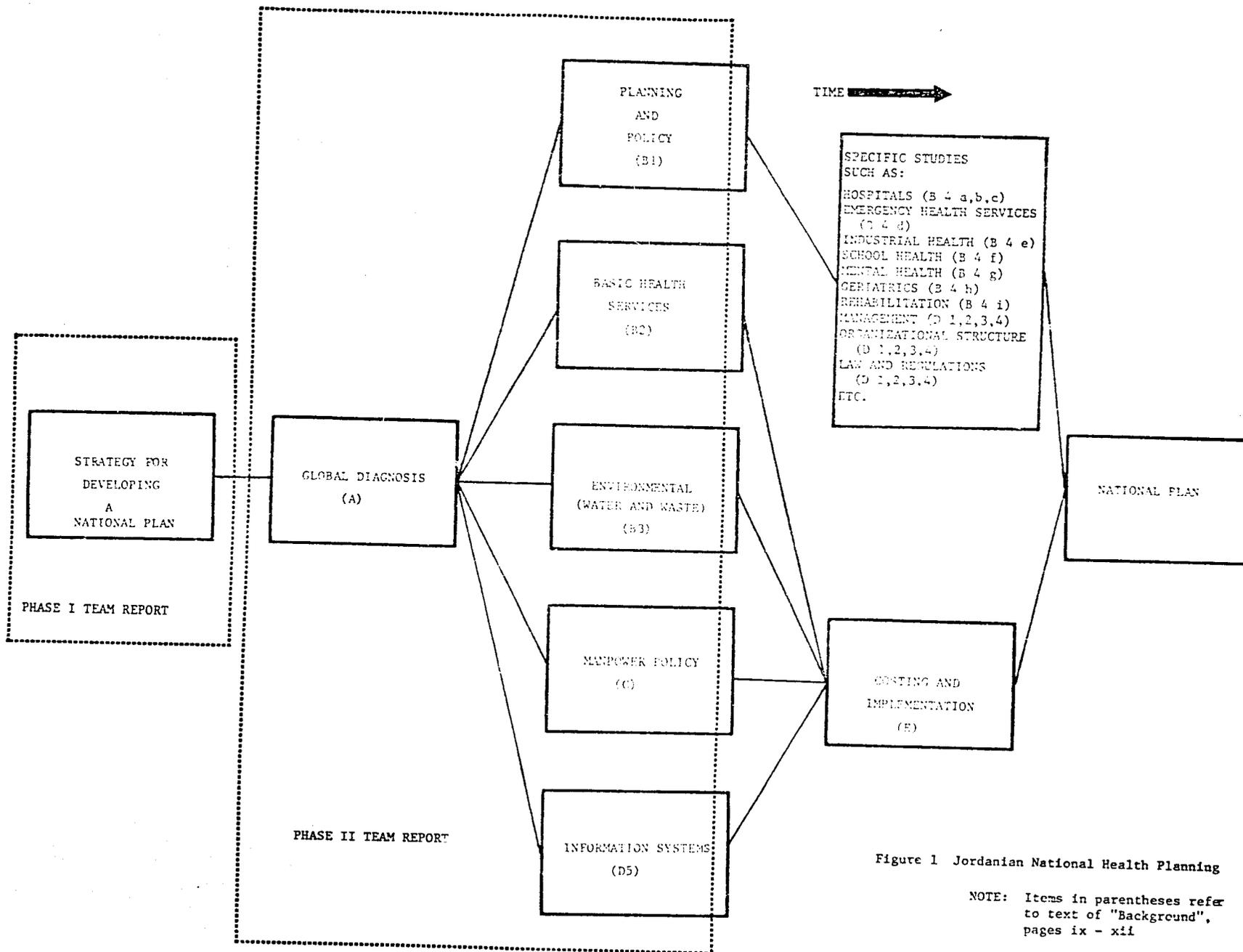


Figure 1 Jordanian National Health Planning

NOTE: Items in parentheses refer to text of "Background", pages ix - xii

4. Upgrading of specialized health services, including:
  - a. Optimum distribution of facilities and services
  - b. The referral system
  - c. Professional and environmental standards for each type of facility:
    - clinics and health centers
    - hospitals
    - laboratories
    - pharmacies and the drug industry
    - other related health facilities
  - d. Emergency health services
  - e. Industrial and occupational health
  - f. School health
  - g. Mental health
  - h. Geriatrics
  - i. Rehabilitation
- C. Manpower policy : This policy establishment would grow out of the choice of the type and degree of coverage desired and by the optimum mix of different categories of health workers to provide this coverage.
- D. The organization structure most appropriate for implementation of the plan, including:
  1. Defining the role of different providers of health services including reviewing the existing laws to strengthen the central role of the Ministry of Health
  2. Monitoring the private sector: responsibility, means of monitoring, and enforcement of standards
  3. The concept of regionalization
  4. Realignment of the central office of the Ministry of Health
  5. Information collection and analysis

E. Estimated costs for the implementation of each set of recommendations.

F. Time priorities for the implementation of this plan.

Team I established a preliminary strategy. Team II addressed some of the most pressing elements (which are detailed in the following report). The momentum of this process should be maintained until the totality of the problems faced by the health sector in Jordan are addressed and solved.

## PREFACE

The Government of Jordan, acting through the recently-formed Health Policy Reference Group, has committed itself to a better organized effort for meeting the health needs of the Jordanian population, making the most effective and efficient use of resources which are currently available and those which can possibly become available in the near future.

This effort should be thought of as a process of movement around a cycle from fundamental policy choices about the goals of Jordan's health system and the type of system best able to meet these goals, and then formal planning steps which define specific functions of the system and the costs associated with these steps. Finally, the effects upon the health of the population must be monitored as planning is implemented, and the results of this monitoring fed back into continuous policy choices, so that the process becomes continuous and self-renewing.

The report which is presented here comes at an early, but critical, stage in this process. It comes at the point where basic choices are to be made concerning the type of health system Jordan wishes. The supporting data and arguments for these basic choices are contained in the body of this report and lead to the recommendations concerning health policy and management contained herein.

But, the report which follows is not a health "plan" as such. It does not attempt to deal with all of the many factors that are affecting the health status of Jordan's population, or even all those components which make up the country's health care system.

Rather, what this report does is to discuss some strategic concepts directed toward the development of a more appropriate health delivery system in Jordan, and to offer for consideration a number of basic policy recommendations intended to establish a framework for health policy and to carry forward the health planning process. These proposals, in turn, will generate a great many more specific recommendations, and the need

for detailed assessment of many existing and/or potential elements within the health system. The scale and consequent cost of most of these activities will be determined as specific plans and services develop from policy proposals.

Analysis of the health setting in Jordan leads us to the conclusion that, among the many problems to be addressed, the most pressing is the provision of adequate care to the total population at the primary level or the point of first contact between the patient and the health care system. Therefore, we have chosen some specific areas to address in greater detail because of their significant contribution to health status and their central relevance to the policy framework proposed in this report. In particular, we have stressed the importance of basic health services (health promotion, disease prevention, nutrition issues, diagnosis and early treatment at the first point of contact) and the integration of preventive and curative health activities. We have also singled out mothers and children as these groups represent a significant portion of the population at high risk and comprise the most frequent users of basic health services.

The proposals themselves underscore the need for giving higher immediate priority to basic health services, with considerations of hospital services--especially tertiary (referral) institutions -- to follow thereafter.

The emphasis placed on the needs of women and children and the maternal and child health services does not presuppose that all the health care requirements of the rest of the country's population have already been met. Neither does it indicate that the organized maternal and child health services are necessarily the exclusive instrument for meeting the pressing needs of Jordan's women and children. Rather, it is an attempt to redress an existing imbalance within the health delivery system which will enable the system to better address the needs

of the total population of the country. Further, the approach taken toward basic health services has direct relevance to all segments of the population.

On the other hand, many important issues have not been developed in the report. Among them are qualitative and quantitative aspects of the hospitals and other health facilities, occupation, mental, emergency, rehabilitative, and certain other health services, the laboratory and pharmaceutical standards and policies, and second-level considerations of health services organization and administration. These and other issues must be analyzed in detail and placed in the proper perspective as the policy and planning process which we have described proceeds.

Put simply, the key issue at this point is the commitment to a policy and planning framework, regarding which a specific form is proposed, and for which implementation steps are suggested. This is the necessary context from which a more detailed and longer-term planning activity can flow. Even given the probability of additions to existing resources for health care in Jordan, the report assumes that there are constraints to the open-ended development of Jordan's health care system, as there is to the system of any country. These resource constraints are particularly important with regard to finances, manpower, and managerial infrastructure. With regard to finances, it is important to note that the most significant aspect of this constraint is that of recurrent budget rather than start-up and construction funds. The same follows with regard to manpower, in that as costly and difficult as it is to train a skilled health worker, it is still more so to employ such persons properly for the rest of their lives.

Additional financial resources will be needed for the implementation of certain of the recommendations contained in this report. It is important to point out in this context that the authors do not start with the assumption that more health sector spending is by itself a good

thing, but that more spending can be justified in the context of an improved planning and implementation capacity directed toward the health care needs of the entire population. It is under such circumstances that additional health sector expenditures would best be able to bring an appropriate return to the nation and its people.

## I. INTRODUCTION

The health planning task is, essentially, one of matching scarce resources to salient disease patterns. In Jordan, the health status indicator of most concern is an infant mortality rate of 90-100 per 1,000 live births. The existence of such a high level of infant mortality reflects the considerable extent of poverty which still exists in the country. These poverty levels imply poor nutritional status, inadequate supplies of clean water, and lack of suitable health education, which in turn lead to high incidence of diseases such as gastroenteritis and respiratory infections among the infant population.

Most of what is required to cope with existing health problems cannot be accomplished by improving the health sector alone. Such things as improved income, proper education, and access to clean water would be significant in this respect. However, there are certainly things the health sector could do that would positively affect the health of the population. Given the disease pattern discussed above and the current distribution of the population in Jordan, the most appropriate health care system that could be developed would be one built around the principle of easy access into that system. There must be complete coverage of the population by these services.

It is important to emphasize that a health care system offering basic coverage to the population would have the capacity to deal with the great mass of health problems in Jordan. It must be emphasized that most of the morbidity and mortality now found in Jordan is relatively easy to prevent and, indeed, to cure, provided contact is made quickly enough with the health care system.

The type of health care delivery system proposed in this report is one that in the first place would be capable of offering basic health

services to the whole of the population. These services would offer primary curative attention to the population coupled with necessary preventive activities, particularly in the area of maternal and child health. It should be noted that weaknesses in primary care exist in virtually every country in the world, and that the need to give priority to this area is as great in a country such as the United States as it is in Jordan.

The present health care system of Jordan is characterized by sharp maldistribution of health sector resources across the geographic and social components making up the Kingdom. The issue of equity and consequent redistribution of "health income" is very much part of the entire analysis contained herein.

Maldistribution can be seen both in the volume and type of services being offered. The system is very much hospital oriented, with at least three-quarters of the Ministry of Health's budget being spent within the hospitals. If the total health expenditure pattern of the nation were to be analyzed (including the military medical services, the University Hospital and the private sector), the resulting proportion of total expenditures going into hospital care could be even greater, perhaps in the order of 90 percent of total spending. Putting such a large proportion of health care expenditure at the hospital level is inefficient for several reasons. First the hospitals are often called upon to handle problems that should either have been prevented in the first place or cared for much earlier at a lower point in the health delivery system. Second, the hospitals have relatively limited catchment areas so that those urban dwellers living near the hospitals are able to capture a disproportionate share of the country's scarce health resources, while others get far less than their fair share.

There are two clear areas of action for the strengthening of the existing non-hospital health delivery infrastructure in the country; essentially the clinics and the health centers. Although it is impossible to detail the personnel requirements of these units in this report, it is abundantly clear that there will be no way of providing

for enough of them and, even more importantly, guaranteeing decent standards of work within them, in the absence of greatly strengthened personnel at these facilities.

The only way to provide enough adequately trained staff at all the units will be through the provision of high standard auxiliary cadres. There are many different ways of organizing an appropriate health manpower mix, and it would be inappropriate to discuss this issue at length here. A detailed health manpower plan is urgently required, one which would delineate the necessary mix, including the numbers of different types and levels to be trained.

The point must be made that simply training better workers for the rural infrastructure would by itself be meaningless in the absence of a policy which would allow these various personnel to deliver a far greater range and volume of services than, say, practical nurses now do.

The relative concentration of the population of Jordan means that medical doctors can offer more support and coverage to the system than is the case in many other Third World countries. Nonetheless, it is clear that the country will have to move away from the present almost exclusively physician-based system to one that is far more dependent upon various types of auxiliary personnel.

One important benefit of an auxiliary based system is that internationally they are not a generally recognized category, and therefore would not be able to leave the country for employment elsewhere within this occupation.

The second large area of forward progress that can be made now in the health sector is in the field of planning, management, administration and statistics. In fact such progress is a pre-condition for the activities discussed above. Some specific proposals in these areas will follow.

It must be stressed again that the most fruitful way of improving the health indices in the country--with the most important being infant mortality--is to stress the needs of Jordan's women and children. Of course mothers and children go together and so must their health services.

It is equally obvious that it is the most deprived women and children who are in the greatest need, and that the meeting of that need would be the most direct way of improving the country's health indices.

## II. THE SETTING

## THE PHYSICAL ENVIRONMENT

The Hashemite Kingdom of Jordan covers about 95,000 square kilometers in the upper northwestern part of the Arabian peninsula. Its main topographical divisions are an arid desert area to the east, and a series of lightly forested highlands to the west, which are cut by the deep Jordan River Valley. Rainfall is light, with an average of 400 millimeters per year in the highlands, 200 in the valley, and less than 50 in the desert. The climate in the highlands is a dry variant on the Mediterranean pattern; the valley's climate is more like that of tropical countries; and the desert climate is similar to that of the surrounding Arabian and Syrian deserts.

The natural resource endowment discovered in Jordan to date is modest. No petroleum has been found, despite extensive exploration. There is some copper, manganese, and high-grade iron ore, but there is no commercial exploitation of these metals.

Exploitable phosphate reserves have been found, and are estimated to total over 300 million tons. Two million tons were extracted for export in 1975, and a 5.4-million-ton annual output level is targeted for 1980. Revenues from increased phosphate exportation have played an increasingly important role in Jordan's finances during the mid-1970's.

A network of roads extends to most communities throughout the Kingdom. There are 5,000 kilometers of primary paved roads and 1,400 kilometers of secondary roads. There are some 34,000 registered Jordanian vehicles. A national airline and railway are also included in the transportation infrastructure.

Information media include five daily newspapers (four Arabic and one English), seven weekly newspapers, and national television and radio systems. In 1974, there was one radio for every two persons in the country, one television receiver for every thirty-two persons and one telephone for every ninety persons.

From a health standpoint, the most important aspect of Jordan's physical environment is the scarcity of water. Despite a slight excess of supply over demand, operating problems affecting the country's water distribution systems, as well as the long distances between

source areas and areas of highest demand, have resulted in severe shortages of water, especially in the Amman area. The national water consumption rate in 1975 was about 60 liters per capita per day, as compared with similar figures for Syria and Morocco of 163 and 90, respectively. In addition to the inadequacy of the quantities of water available to Jordanians, there are serious deficiencies in water quality. Analyses by the Ministry of Health of samples taken from water systems in eight major urban areas throughout the 1973-75 period showed that, by World Health Organization standards, none of the systems was delivering water safe for domestic use.

#### THE HUMAN ENVIRONMENT

The estimated East Bank population as of the end of 1976 was 2.014 million people.

An estimated birth rate of 46.8 per 1,000 population has combined with an estimated 14.5 per 1,000 death rate, to produce an estimated 3.23 percent annual population growth rate during the 1970-74 period. If maintained such a rate leads to a doubling of population in 22 years.

Gains in life expectancy were about one year per annum during the 1960's, and expectation of life at birth in 1972 stood at 59.1 for females and 57.4 for males.

Infant mortality rates have also declined noticeably in recent years. The current rate is estimated to be in a range of 90-100 per 1,000 live births, as opposed to a 1961 range of 150-160.

The median age of mothers is about 28, and the median birth order of newborns is the fourth. Thus, half the births are to women older than 28 and with four or more children.

The population of the East Bank is largely confined to a quarter of the land area, located along the western highlands and in the Jordan Valley. Population density in these areas is an estimated 270 persons per square mile. The desert areas, populated by scattered nomads or semi-nomadic groups, have a density of three persons per square mile.

Rural-to-urban migration has been rapid and massive in Jordan. The Kingdom is now 70 percent urbanized, as opposed to 44 percent in 1961. The three largest urban areas, Amman, Zarqa, and Irbid, account for six of every ten residents, and Amman alone accounts for three of every ten. Amman has grown three times as fast as the balance of Jordan during the past two decades.

An estimated 51.2 percent of Jordan's population is under age 15, with 36.8 percent between 15 and 44 years of age, and the remaining 12 percent older than 44. Such an age structure creates, of course, heavy demand for maternal and child health services.

There are 114 persons of dependent age (under 15 and 65 and over) per 100 persons of economically productive age (15-64) in Jordan. Dependency ratios in developed countries are usually in the vicinity of 80 to 100. (Further demographic data is presented in Appendix A.)

#### The Educational System

Subsidized compulsory education for all children through 14 years of age is a priority government policy. This has been responsible for steady increases in expenditures, numbers of schools and class units, numbers of teachers, and, correspondingly, in enrollments of the past eight years.

Table 1 shows school enrollments for 1975-1975. Percentages of enrollments for 1970-1971 are also shown for comparison, and the relative increase in proportionate enrollment at each level over this time period is also presented.

The most striking feature of this enrollment picture is the dramatic increase in the relative proportions of students pursuing the upper levels of education, most notably post-secondary education. Development of post-secondary educational opportunities at the University of Jordan, together with increasing absolute numbers of secondary school graduates partly account for this phenomenon.<sup>1</sup>

---

<sup>1</sup>In order to be eligible for most post-secondary education and training opportunities, students must sit for and pass the government's Tawjihi (secondary school completion) examination; 10,835 students passed the Tawjihi in 1974-75, an increase of 61 percent over the number passing in 1970-71.

Table 1.

SCHOOL ENROLLMENT: NUMBER (AND PERCENT OF SCHOOL AGE POPULATIONS) AT EACH EDUCATIONAL LEVEL BY SEX FOR 1974-75 AND RELATIVE INCREASE IN TOTAL ENROLLMENTS BETWEEN 1970-71 AND 1974-75, JORDAN<sup>a,b</sup>

Level	Primary (Grades 1-6)	Preparatory (Grades 7,8,9)	Secondary (Grades 10,11,12)	Post Secondary
<u>Males</u>				
Number enrolled	183,053	63,151	33,524	13,404
Percent <sup>c</sup>	(100)	(88)	(54)	(14)
<u>Females</u>				
Number enrolled	153,813	48,223	22,665	6,850
Percent <sup>c</sup>	(92)	(72)	(38)	(7)
<u>Total Male &amp; Female</u>				
Number enrolled	336,866	111,374	56,189	20,254
1. Percent <sup>c</sup> in 1974-75	(96)	(80)	(46)	(11)
2. Percent <sup>c</sup> in 1970-71	(90)	(65)	(35)	(3) est.
<u>Relative Increase</u>				
In Proportionate Enrollment <sup>d</sup>	7	23	31	267

<sup>a</sup> Source: Statistical Educational Yearbook 1974-75.

<sup>b</sup> Includes enrollments at government (68 percent) and private institutions.

<sup>c</sup> Number of children enrolled expressed as percentage of all children (by sex) in the appropriate age groups.

<sup>d</sup> Proportionate relative increase  $\frac{a-b}{b}$  takes into account and adjusts for population growth.  
Source: Statistical Yearbook 1970-71.

Expansion of specialized post-secondary training opportunities, such as in teaching, engineering, and commerce also helps to explain the rapid rise in post-secondary enrollments. In addition, a considerable number of Jordanians pursue education and training abroad.

The differences in proportionate enrollment at each level by sex, particularly at the upper levels, are also notable. Despite increases both in the proportions of school-age females enrolled and in Tawjihi attainment (about one-quarter of the Tawjihi recipients in 1970-71 and a third of the recipients in 1974-75), the absolute number of female Tawjihi recipients was still only 3,535 in 1974-75. This, together with patterns of early marriage and other sociocultural factors that discourage education for women, helps to account for the fact that only half as many females as males are enrolled in post-secondary education and training. The expansion of education and training opportunities in the non-health professions, along with this curtailed supply of eligible females, are contributing to difficulties in recruiting women to enter nursing and other health professions.

The number of male graduates with Tawjihi, while not large (approximately 7,300 in 1974-75) should be sufficient to supply an adequate number of candidates for health occupation programs. Evidence that supply alone is not the root of declining enrollment in selected health occupation training programs is offered by the fact that other post-secondary education and training programs in Jordan have more applicants than they can absorb.

### The Economy

Prior to 1948, (Trans) Jordan was a country of primitive agriculture, extensive nomadism, and minimal industry. In the decade prior to 1967, however, economic growth was recorded at an annual level slightly over 10 percent. And by 1976, a \$1.4 billion Gross National Product was being generated, with local investor and business confidence reported to be high, and over 100 foreign firms establishing offices in Amman.

Jordan's real per capita income in 1976, about U.S. \$630, was slightly lower than it had been in 1966. Given the events of the 1967-1976 decade, Jordan's maintenance of its standard of living reflects both the adoption of effective economic policies, and the mobilization of foreign resources. For example, the 1976 budget projects that 40 percent of recurring expenditures will be financed by foreign budget support, principally from the U.S., Saudi Arabia, and Kuwait.

Jordan has been engaged in formal economic planning since the early 1960's. A review of this activity and its involvement in the health sector is found later in this report. The most recent planning effort, a five-year plan for the 1976-1980 period, allocates 1 percent of the planned investment resources to the health sector. Emphasis is given to large facility development. This would seem to run counter to several of the plan's overall objectives, such as better distribution of income, full employment, and balance of trade. Smaller health facilities could be more evenly distributed and thus accessible to more people, would employ a greater volume of lower- and middle-level personnel, and depend less upon imported materials than would the kinds of facilities given priority in the plan.

Unlike many less developed countries, Jordan's agricultural sector is small, comprising 10.3 percent of output in 1975, and utilizing 23 percent of the labor force. The country's agricultural potential is modest, lacking as it does abundant rainfall and large areas of fertile land. The Jordan Valley area, however, is a large and important food-producing resource, where the recent introduction of plastic greenhouse technology is reported to have significantly increased vegetable production.

Jordan's planners look to industrial growth and the generation of a substantial export surplus as their principal means for achieving overall economic self-sufficiency. In addition to increased exports of phosphate and fertilizer, increased cement output and expansion of a large oil refinery at Zarqa are also seen as key steps in the attainment of the country's economic objectives. About 30 percent of the investment envisioned in the new plan is committed to these heavy industries.

Inflation became a serious problem in the mid-1970's. The Amman cost of living index registered 20 percent annual increases in 1974 and 1975. Manpower shortages have led to rapidly rising wages (starting from a very low base) in the private sector, and have fueled inflationary pressures already existing due to rapid growth in the money supply, strong housing demand outstripping supply, increasing construction costs, rising food prices, and large land speculation profits competing for a limited supply of consumer goods.

The 1976 Jordan Development Conference (JDC) study of the labor force in Jordan estimated that 382,000 persons, or 19.6 percent, of Jordan's (East Bank) population are participants in the labor force. Females account for 13.6 percent of the non-agricultural labor force, with 3.8 percent of the female population in the labor force overall. The low participation rates for women and students, together with the youthfulness of the population (51 percent under 15 years of age), high enrollment rates in schools and, finally, the large numbers of professional and skilled Jordanians working abroad, combine and contribute to the low labor force participation rate.

While nearly 71 percent of the labor force is employed in Amman Governorate, this figure represents a 15-percent decrease from 1970, when fully 85 percent of the labor force was in Amman. This reduction of labor force concentration in the capital Amman may reflect a trend toward labor spillover into Jordan's regions, as well as migration to employment opportunities abroad.

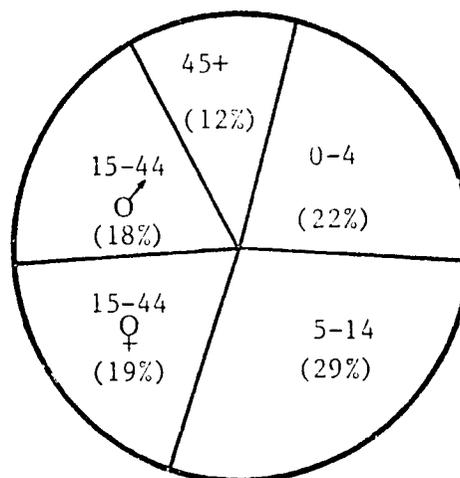
## HEALTH STATUS

As in many countries of the Middle East and other parts of the developing world, accurate evaluation of health conditions in Jordan is rather difficult. Statistical information is scanty and sometimes unreliable. Nevertheless, and despite all its shortcomings, available data can be used to construct a general view of these conditions and infer an order of magnitude of the most pressing problems facing the country. In this endeavor we shall concentrate on information derived from demographic, mortality, morbidity, and health facilities utilization data.

### Demographic Data

The Jordanian population is young, with over 51 percent below 15 years of age. For purposes of analysis, this group is usually divided between preschool age (0-4 years) and school age (5-14 years). The first group constitutes about 22 percent and the second about 29 percent of the total population. The adult population, aged 15-44 years, represents about 37 percent of the population while the older generation aged 45 years and over represents the remaining 12 percent. Among the adult population, a special group, women in the childbearing age (15-44 years), deserve special attention. This portion alone represents about 19 percent or roughly one-fifth of the population. Women in the childbearing age and children under 5 years of age thus constitute about 41 percent of the population, while these potential mothers and their children under 15 years add up to over 70 percent of the population. Figure 2 illustrates this high risk group.

Figure 2 Population Percentage Age and Sex Distribution, Jordan, 1975



Childbearing, delivery, lactation, and frequent short-spaced pregnancies make women in the 15-44 age group highly vulnerable to the effects of agents causing disease and possibly leading to death. Biological and environmental considerations coupled with low nutritional status put women in the childbearing age and their children at a much higher risk of becoming diseased and dying than the rest of the population. By the weight of both its number and its vulnerability, this group imposes itself now and for years to come as the single most important target group for the health care system.

#### Mortality Data

The number of deaths registered in 1974 was 6,445, yielding a crude death rate of 3.4 per 1,000 population. The U.S. has a crude death rate of 9.4, Germany 11.8, Norway 10.0, U.S.S.R. 8.0, and Iceland 6.9. Countries comparable to Jordan have rates ranging from 10 to 20/1,000 population. This rate is accepted by all international agencies and most workers in the field. Applying Jordan's estimated rate of 14.5 to an estimated population of 1,890,000 (1974), yields a total of 27,045 deaths which should have occurred during that year. This suggests that only 24 percent or 1 out of every 4 deaths was reported (see Appendix A).

Despite the diversity of methods used to estimate death rates, all results indicate a declining trend starting in 1960. Deaths of males appear to be reported more frequently than those of females (57.9 percent against 42.1 percent of all deaths reported). Distribution of reported deaths by region correlates with the distribution of population (see Appendix A).

Age distribution shows that among all deaths, about 28 percent are infants below 1 year, while about 10 percent are aged 1-4 and about 5 percent aged 5-14. Or, a total of about 43 percent of all reported deaths are of children below the age of 15. (They represent about 51 percent of the population.) In the U.S. this same age group accounts for about 25 percent of the population and only 4.4 percent of reported deaths, divided as follows: 3 percent under 1 year, 0.5 percent from ages 1-4, and 0.9 percent from 5-14.

Another important indicator is the infant mortality rate. Although reported infant deaths (1974) yield a rate of 11/1,000 live births, it is unlikely that this rate is an accurate estimate for Jordan. Several estimates have been worked out yielding rates of 90-100/1,000 live births (see Appendix A). The U. S. had a rate of 17.7, which is about 5.5 times lower.

If death rates by age groups and sex are adjusted to reflect a crude death rate of 14.5/1,000 and then compared to the U. S. rates, the following ratios will emerge:

- Although the overall crude death rate is only 1.5 times higher in Jordan, the rate for infant mortality is 5.3 times higher, for preschool children (ages 1-4) 10.6 times, and for school children (5-14) 5.8 times higher. Therefore, we can safely point out that children in general and especially in the preschool years are in the greatest need of care, and that school-age children, usually considered the healthiest group of the population, are clearly in need of improved care.
- Females maintain a higher ratio than males in all age groups and especially in the 1-4 age group, which is 13.4 times higher than American counterparts.
- From age 15-34, or the years of highest productivity, Jordanian women maintain death rates which are 4 times higher than American women, while men are only 2 times higher.

Classification of deaths by cause shows that enteritis, pneumonia, heart conditions other than Ischemic heart disease, and accidents are the four leading known causes of death. Available data from other years supports this conclusion. The above-mentioned heart conditions are present in all age groups without exception, and this uniform distribution may incriminate agents other than the degenerative conditions usually encountered in industrialized countries. One such agent may be rheumatic disease and its cardiac complications.

Accidents are at the same level of importance as a cause of death in Jordan as they are in the U.S. Motor vehicle accidents account for about half of these deaths. This is an important health problem which has to be addressed in a comprehensive and effective manner.

The high proportions of deaths attributed to symptoms of ill-defined conditions point to the fact that many deaths are not attended by a professional person, reflecting the degree of availability of health services to the total population.

Classified by age and cause, mortality data shows that enteritis and respiratory diseases are the major killers of children under 5. Measles, malnutrition, and meningitis are still important on the list of killers at this age. Accidents emerge as the leading killer in school-age children (5-14).

In summary, mortality data in Jordan points to the following conclusions:

- Deaths are underreported; only one out of every four deaths is registered.

- Causes of death show a mixed pattern which is neither that of the industrialized nations of North America and Western Europe, nor that of the poorest countries of Asia, Africa, and Latin America. Comparative studies of causes of death, especially in children, have shown that the more industrial countries were able to improve their mortality rates by improving the environmental conditions of the child and providing early and direct health services, including immunizations. Among the most obvious conditions amenable to such interventions are enteritis, especially that associated with weaning, some respiratory conditions, nutritional conditions, heart disease of rheumatic origin, accidents, and many infectious diseases of childhood (such as measles, diphtheria, poliomyelitis, tetanus and meningitis).

- Adults are dying of causes other than parasitic and infectious diseases (except pneumonia). Malaria is eradicated, and very few deaths are attributed to tuberculosis (only 60 in 1974). Women in the childbearing age frequently are dying of conditions relating to pregnancy and birth (332 women died in hospitals in 1975 of causes related to pregnancy, and this amounted to 13.5 deaths per 1,000 admissions for these types of causes).

- In order to achieve reductions in infant and childhood mortality rates during the coming decade, it is important to promote

spacing of pregnancies and strict enforcement of the minimum age of marriage for girls. All this will help achieve better health conditions for both mother and child.

#### Morbidity Data

Two major sources of information on morbidity are readily available: The first is the listing of reportable diseases prepared by the MOH and the second is the yearly "Morbidity Statistics in Hospitals" prepared by the Department of Statistics. Unless otherwise indicated, all data used herein is from these two sources.

*Reportable Diseases.* The three most frequently reported entities are: Mumps (2,082), Trachoma (1,239), and Measles (2,226) - figures for 1975. Although mumps may be relatively harmless in childhood, measles is a major killer that is preventable. Trachoma can be managed in such a way as to prevent its most feared complication--blindness. No reliable recent estimates on the prevalence of blindness were encountered.

Enteric diseases (typhoid fevers, dysentery, and infectious hepatitis) are closely related to the degree of water contamination and personal hygienic practices. From 1970-1975 they were the fourth most important group. Comparisons between the two data sources suggest that the MOH data for these diseases reflect severe under-reporting. Therefore, these figures are only suggestive and indicative of the magnitude of the problem.

Other preventable diseases still reported in 1975 are: poliomyelitis (69 cases), diphtheria (23), and pertussis (129).

Tetanus deserves a special look. In 1975, a total of 40 cases and 34 deaths were reported for an incidence rate of about 2/100,000 population. In some industrialized countries the rate is 40 times lower. This disease is often used as an indicator of the effectiveness of immunization programs and the degree of coverage achieved. As will be shown elsewhere, this coverage is very low.

Tuberculosis is another problem that will be mentioned frequently in this report. From 1971 to 1975 the number of cases were: 501, 594, 681, 611, and 500, respectively. Incidence rates were: 29, 33, 37, 32, and 26/100,000 population, respectively. These rates are indicative of generally adequate control measures. However, the 1975 incidence rates by region show great geographic variations.

Table 2.  
Tuberculosis Incidence by Region, Jordan, 1975

Region	New Cases	Rate/100,000
Amman-Balqa-Zarqa	207	17
Irbid	192	36
Karak-Tafilah	68	66
Ma'an	33	66

Table 2 indicates that despite the low numbers of reported cases in the south, the magnitude of the problem there is significantly higher. These findings coupled with the fact that BCG vaccination is rarely administered to the preschool-age children pleads strongly for an active contact investigation, especially in the southern part of the country.

*Inpatient Morbidity.* Hospital admissions statistics show that diseases of the digestive system are the leading group, accounting for about 18 percent of all admissions, followed by diseases of the respiratory and the genitourinary systems. Complications of pregnancy, childbirth, and the puerperium (excluding deliveries) come next in fourth place while diseases of the cardiovascular system are fifth with about 7 percent of all admissions.

*Outpatient Morbidity.* Data pertaining to cause of contact with outpatient facilities both in hospitals and MOH facilities is lacking. However an ad hoc survey conducted in the Ajloun Tababa on a sample of 4 days in 1975 showed that respiratory conditions accounted for 42 percent of all visits in all ages and digestive disorders for 18 percent.

Another survey conducted by the School Health Section of the MOH on pupils in the first and seventh grades in 1975 showed that the highest prevalence of disorders in that age group was for ear, nose, and throat disorders, followed by disorders in the digestive system, eye disorders, and infections of the skin. This survey, like the list of reportable diseases, emphasizes the importance of eye disorders as a cause of illness in Jordan.

The obvious conclusion from all this information is that diseases of the respiratory and digestive systems remain the two major causes for seeking medical care.

#### Utilization of Health Facilities

*Inpatient Facilities.* It is estimated that slightly more than 41 persons per 1,000 were hospitalized in 1975. Study of hospitalization trends shows that this figure is leveling off after a few years of steady increase. This trend, coupled with that of a low occupancy rate in hospitals (53 percent private, 59 percent RMS, and 74 percent MOH), implies that the need for hospital beds has been met.

The highest rate of hospitalization was in the south (Karak: 78/1,000 and Ma'an: 51/1,000) and the lowest in Balqa (30/1,000). The reasons for these discrepancies are not clear but may be attributed, among other reasons, to the lack of effective basic health care services responding to the basic health needs of the population. This pattern results either in misuse of hospitals as providers of basic care or in a need for care for unnecessarily advanced cases.

*Ambulatory Services.* More than 4 million visits to outpatient facilities were logged in 1975, for about 2 visits per person per year. Comparative figures from both the industrialized countries and some developing ones in Africa, Asia, and Latin America show a higher number of contacts per person per year (3-5 contacts). Given the short distances between populated areas and the availability of transportation, this low rate can be explained on the basis of factors relating primarily to

accessibility of health services as well as education and perception. The knowledge of early symptoms of disease, the importance of early medical intervention, and the accessibility of health services may be the determining factors in seeking early and frequent medical care.

#### Coverage by Health Services

As it is very hard to estimate this coverage for all segments of the health sector, two examples were selected: maternal and child health and immunization services as offered by the MOH programs.

As estimated from the MOH statistics, maternal and child health services cover only about 20 percent of all pregnancies with at least one prenatal visit. The other 80 percent of pregnant women do not even receive this visit before delivery. Postnatal coverage is even lower at 6 percent. Only 38 percent of all deliveries are attended by a trained health worker (MD or midwife), with 4 percent attended by the midwives of the MOH Maternal and Child Health Centers. The others are presumed to be attended by dayahs.

Immunization activities appear to be far below acceptable levels. For polio and DPT vaccination, the rates of coverage are: 1st dose: 35 percent, 2nd dose: 30 percent, 3rd dose: 28 percent, booster dose: 2 percent. This low coverage explains the fact that these childhood preventable diseases are still encountered on the list of morbidity and mortality (see Appendix B). Measles is another preventable disease for which immunization coverage is negligible. (Measles vaccine is not produced by the Jordan Vaccine Institute.) BCG vaccination appears to be adequate (75 percent coverage). However, the bulk of this vaccination is administered during the first school year. The level of immunization among infants is about 10 percent and in preschool years about 35 percent. An aggressive contact investigation may compensate for this low level of immunization.

In conclusion, it can be said that the adult population of Jordan enjoys a rather adequate state of health with good prospects of dying at an older age with more degenerative than infectious or parasitic

diseases. Potential mothers and their children, particularly those in the preschool age, are still at great disadvantage and many of the causes of disease and death afflicting them can be avoided or prevented. A substantial reduction in morbidity and mortality of this group could and should be achieved in the following decade.

#### NUTRITION

An examination of data from nutritional studies conducted over the past 15 years in Jordan, in combination with an analysis of infant and early childhood mortality rates and patterns of infectious disease, indicate that protein-energy malnutrition in the 0-5 year age group remains a major health problem in Jordan. It is responsible for significant morbidity and mortality, and contributes to an increased risk of severe illness and death from infectious diseases, principally diarrhea and pneumonia.

Frank protein-energy malnutrition affects approximately 10 percent of the Jordanian childhood population, with the greatest majority of those in the infant (0-1 years of age) and post-weaning (1-2 plus years of age) groups. Subclinical protein-energy malnutrition contributes significantly to the current high rates of infant and early childhood morbidity and mortality from infectious diseases.

The nutritional status of the children has improved significantly over the past decade. To what extent this has been due to specific nutrition programs, and to what extent to general improvements in the standard of living of rural and urban poverty populations, is presently unknown. (There is a lack of data on dietary intake.) A major proportion of the improvement in infant and early childhood mortality rates over the past decade can be attributed directly or indirectly to this improvement in nutritional status would do more than any other single factor or combination of factors (except possibly the provision of safe water supplies to the vast majority of the population), to further reduce early childhood mortality in the next decade.

Currently, within the protein-energy malnutrition syndrome, frank protein deficiency has decreased in importance relative to caloric deficiency. Hospital admission trends indicate that 20 to 30 percent of children admitted to government hospitals are clinically malnourished; probably 75 percent of these children are marasmic, that is, suffering primarily from caloric deficiency. Current data are not available to determine if these hospital ratios of caloric-to-protein malnutrition are accurately reflective of the national pattern, but it is highly likely that this is so.

In the childhood population, in addition to protein-energy malnutrition, iron-deficiency anemia and Vitamin A deficiency remain significant problems (although Vitamin A deficiency has declined). Other deficiencies do not seem to be highly prevalent, though some Vitamin D deficiency, rickets, and occasional Vitamin B<sub>1</sub>, B<sub>2</sub>, and C deficiencies occur.

The nutritional status of childbearing women, especially the vulnerable pregnant and lactating groups, is less clear. A significant proportion of these women are probably at the margin of adequate nutrition, especially with regard to the increased needs for iron and calories related to pregnancy, lactation, and short childbearing intervals. Recent data from other countries have shown that a relatively small increase in caloric intake during pregnancy may result in an increase in birth weight sufficient to reduce infant mortality by a substantial amount. This has major implications for improved prenatal care and nutritional supplementation during pregnancy as a means to increase infant survival rates (directly, by higher birth weights, and indirectly, by the presence of a healthier mother available to nurse and care for her infant).

There are virtually no data available in Jordan regarding the nutritional status of the work-force and aged segments of the population. The lassitude and concentration difficulties in school children produced by anemia and/or hunger may be detrimental to school performance and thus to future adult earning and productive capacities.

Despite the improvement in nutritional status of the population over the past decade, several potential threats to nutrition should be kept in mind. With increasing urbanization and dependence on a cash economy, the prevalence of bottle feeding in urban populations is likely to increase, as it has in virtually all other countries. There is the very real risk of an increase in infant and second-year malnutrition and diarrheal disease because of inadequate and/or unsanitary formula feeding without adequate early supplementation with other foods (which should begin in Jordan by the fourth month of life).

Preventive measures which need to be taken at individual and governmental levels include promotion of prolonged breast feeding with early and adequate supplementation, discouragement of bottle feeding unless its safety, adequacy, and supplementation can be assured, efforts to insure availability of safe and nutritious intermediate and weaning foods, and promotion of birth-spacing to allow for longer intervals between pregnancies and prolonged lactation.

Persistent and marked inflation in recent years poses a threat to improvement in nutritional status, especially for vulnerable mothers and children who have recently migrated from rural areas into urban poverty settings.

The most vulnerable groups in terms of the interaction between malnutrition and infectious disease in Jordan are infants and young children, pregnant and lactating women, and perhaps school-age children. Population groups at highest risk include urban poverty and rural populations, especially nomadic and semi-nomadic groups. Improving the nutritional and health service components of an integrated maternal and child health service, available to all of the population, is one major way to consolidate the gains and effect further improvement in the nutritional status of the most vulnerable groups.

A coordinated national nutrition policy, designed to survey and to stimulate action upon economic, educational, agricultural, and cultural factors as well as health and nutritional services, is necessary for maximum effectiveness and efficiency in dealing with the problem. Given agricultural credit, food production and distribution, cost of living and food costs, formal (in-school) and mass education to promote better use of available foods (including breast milk), training of health and nutrition workers at various levels, and continued surveillance of the nutritional status of the population--all these issues cannot be addressed in a coordinated fashion without the development of a national nutrition policy. Most of the nutrition activities carried out in the past in Jordan have been, in reality uncoordinated and isolated feeding activities. There is at present little evidence that these programs have significant impact on nutritional status of groups served. Many of the programs have been aimed at school-age children, who are clearly less at risk and less benefitted by supplemental feeding than infants and preschoolers. The efficiency and effectiveness of these programs from a cost standpoint has been relatively low.

Continued and regularly up-dated assessment of nutritional patterns in all age groups is required for development of a national nutrition policy and for monitoring the effects of intervention efforts and external social and economic factors.

## WATER SUPPLY AND SANITATION

Environmental links between disease agents and people are important to the health of Jordanians. Specific attention is given to the water supply and sanitation for several reasons:

- High prevalence of water-borne diseases and malnutrition frequently attributed to lack of adequate water supplies and/or water of safe quality.
- Inadequate sewage disposal facilities and practices which have led to the spread of many diseases.
- Expansion of sanitation technologies is dependent on careful planning and available resources because of the expense and complexity of public distribution of water supply and sewage disposal systems in Jordan.

These environmental issues in primary health services are analyzed and discussed in this section. The conclusions are summarized in Section VI, Recommendations.

### Water Quantity, Quality, and Accessibility

Water is extremely scarce in Jordan--rainfall averages from 600 millimeters per year in the highlands to 50 millimeters per year in the desert areas. In 1975, water consumption was estimated at 421 million cubic meters (40 million cubic meters for domestic use). Consumption of water per capita is estimated to be between 60 and 70 liters per day. In general, changes in water quality or quantity each affect water supply costs and will be dependent on financial and human resources available to be allocated by Jordanian policymakers. Jordan is now far below the minimal water supply of 100 to 200 liters per capita per day which is the national goal.

There were severe consumption level water shortages in 1975, especially for domestic use in the rapidly growing metropolitan areas such as Amman. In some cases this shortage was caused by the water source being located at great distances from the demand. In areas outside Amman and the Jordan Valley, water must be carried from springs, shallow dug wells, bored artesian wells, or polluted surface water. In 1973, about 372

villages, or half in this area, had piped water supply systems. The communities with distribution systems do not have sufficient water at all times. When residence or business reservoirs are empty and there is no water in the distribution system, water is purchased from both public and private tanker trucks by those able to afford the cost. The daily consumption rate in these 372 communities is approximately 40 liters per capita per day. People living in the 422 towns and villages without water distributed to homes (out of 794 total towns and villages) or who are otherwise without water service represent approximately one-third of the population. Water consumption for these people is less than 10 liters per capita per day.

In the Jordan Valley, irrigation and water supply systems were destroyed by the military events of the late 1960's and early 1970's. The present population of the Valley is estimated to be 70,000 and is distributed over 60 diverse settlement areas. Growth of these settlements is slow, and nearly all of them lack basic public utilities including domestic water supply.

The municipality of Amman witnessed rapid population growth with resulting water supply problems in the 1960s. During the rapid expansion years water supply revenues went into the Municipalities' general budget. Funds were not used for planning, developing, expanding, or repairing the system. Since then, areas of the city have gone weeks without piped water, and one area reportedly received water only on three occasions in a 12-month period. There are more water tanker trucks (private and municipal) in Amman per capita than any other city in the world.

Since establishment of the Amman Water and Sewerage Authority in 1972, the average amount of water provided in 1975 per capita per day was 40 liters. Of the 18.8 million cubic meters pumped in 1975, 54 percent was unaccounted for because of leaks and other losses. Amman received 98 percent of its domestic water from wells penetrating two main aquifers. As the municipality improved its sewage collection and storm water drainage systems, the rate of water recharge significantly

dropped. Of the total available water in these two aquifers, only 28-32 million cubic meters per year can be extracted and utilized within the boundaries of Amman. With a minimum projected demand of 78.4 million cubic meters per year by 2002, approximately 50 million cubic meters per year must be purchased from outside the Amman area.

Standards for water quality (approximately equal to World Health Organization levels) are used in Jordan. Although routine testing is no longer conducted, there is evidence that unreliable chlorination, variations in water pressure, and breaks in water pipes contribute to impurities in domestic supplies throughout the country. Standards for water quantity, accessibility, and quality each affect the cost of supplying water to underserved population groups. Water quality and quantity must be considered together by policymakers on the basis of available funds, technologies, and other resources required for water supply improvements.

#### Sanitation Facilities and Practices

There are only two cities in Jordan, Amman and Salt, that currently have community type sewage collection, treatment and disposal systems. The Amman system is new and being built in stages by the Amman Water and Sewerage Authority, and budgeted in the Three and Five Year Plans. The sum of JD 3.25 million is budgeted in the Five Year Plan for continued expansion of the Amman sewage collection and treatment facilities. The sewage system for Salt is old, inadequate, and in need of renovation. Engineering studies were completed for the Ministry of Interior for Municipal and Rural Affairs during the Three Year Plan for renovation of the Salt system and the construction of new community collection and treatment facilities for the cities of Zarqa and Jerash. Construction is scheduled to begin for these systems during the years 1977 and 1978 of the Five Year Plan within the budget of the Ministry of Interior for Municipal and Rural Affairs.

Jordanian homes, businesses, and other institutions with water-carried wastes that are not connected to the Amman or Salt systems have individual sub-surface seepage units (cess pools). Since both the soil

(sand, gravel or fractured rock formations) and climate are conducive to this type of liquid waste disposal there is little apparent problem on the surface water. When and if the pits need emptying, there are available both municipal and private waste pumper trucks. The problem with this type of liquid waste disposal, from a health standpoint, is that in most cases the waste percolates through the sand and the gravel into the communities' water supply aquifer.

Most of the population centers of Jordan are similar to Amman in that they are situated wholly within a single drainage basin (watershed) with the populace and their liquid waste located in the upper portion and the water and some food sources located in the lower portion. The liquid human waste receives some biological treatment and filtration in the substrata before being diluted with rainwater contained in the water bearing aquifer and later emerges, clear, odorless and contaminated in village springs and shallow wells, where it is used for irrigation and/or chlorinated and returned to the people as drinking water. Amman and Salt have speeded up this recycling process by collecting their sewage at a point much closer to their water and food sources.

The Ministry of Health Environmental Health Section has only two professional sanitarians, one of whom is assigned to the Amman Municipality. The one remaining sanitarian spends most of his time checking on complaints. This section covers most of the environmental health activities outside of water supply and waste disposal, and centers mostly in the area of sanitation with the food, milk, and beverage industries. As a result, there is no general sanitation program per se at the national level. The large municipalities such as Amman, Zarqa, and Irbid are the only places with sanitation programs.

### III THE EXISTING HEALTH CARE SYSTEM

## PROVIDERS

Jordan's health care system is characterized by a relatively large number of provider organizations operating to a significant degree independently of each other. This structure has grown up in ad hoc fashion, often in response more to the needs of the providers of health care than to those of the recipients. The fragmented character of the delivery system is particularly noticeable in a country of only two million people, most of whom living in a relatively small area of the country. The various providers of health care have been functioning largely in an uncoordinated manner, leading to duplication of efforts, an unequal spread of resources both geographically and between providers and, thus, an inefficient use of these scarce health sector resources.

As shown in Table 3 , the three major public sector providers are the Ministry of Health (MOH), the Royal Medical Service (RMS), and the University of Jordan through the teaching hospital of the Faculties of Medicine and Nursing. Other public sector health service activities are carried out through the Ministry of Education (school health), Ministry of Labour and Social Affairs (health insurance schemes), Municipal Health Departments of Amman, Zarqa, and Irbid, and still others. Nongovernmental providers include modern private practitioners, traditional midwives and other practitioners, the United Nations Relief and Works Agency (UNRWA), and various religious and charitable bodies.

MOH institutions received more than half of all hospital admissions (with less than 40 percent of all beds) and dealt with two-thirds of all outpatient contracts. Aside from the UNRWA, the ministry is virtually the only provider of preventive care. It also has legal responsibility for supervision of the private sector and development of national health policy. Only in the area of birth delivery is the ministry not the most important

TABLE 3

PERCENT DISTRIBUTION OF SELECTED FACILITIES  
AND SERVICES BY MEDICAL CARE SECTOR; JORDAN, 1975

Provider	Hospital Beds	Hospital Admissions	Outpatient Facilities	Outpatient Visits	Physicians
<u>Government</u>					
Ministry of Health	39.1	52.9 <sup>a</sup>	81.2	68.3 <sup>a</sup>	36.2 <sup>a</sup>
Royal Medical Service	30.9	24.4	4.6	26.2	28.2
University of Jordan	11.5	N/A	0.0	N/A	N/A
<u>Private</u> <sup>b</sup>					
Private Physicians	18.5	22.8	9.3	5.5	32.5
UNRWA	0.0	0.0	4.7	N/A	3.0
<u>Traditional</u> <sup>b</sup>					

<sup>a</sup>Includes University of Jordan

<sup>b</sup>Traditional midwives (dayahs) are assumed to assist most of the births not delivered at hospitals, which total 62% of all births. Hospital deliveries account for 34% of all births with the remaining 4% occurring at other health facilities.

provider of health care. Although there is a fee structure, its services are most often provided without charge. Although anyone may use these services, the ministry's major target population consists of those not eligible for RMS and UNRWA services.

The Royal Medical Service provides care to active military and security personnel and certain of their dependents, in all an estimated one-fifth of the population. The major facility of the RMS is the King Hussein Medical Centre.

The University of Jordan has a single (teaching) hospital facility that operates primarily as an independent body. It serves referred MOH patients, but collects fees from private patients.

UNRWA carried some degree of responsibility for about 600,000 refugees and displaced persons. Perhaps one-third of these live in camps, but the rest are settled in other places and rely to a significant degree on the same health care services as the rest of the population of the country. UNRWA provides primary care only, including preventive activities. Hospital patients are referred to MOH facilities, where they are served without charge. There is an agreement under which UNRWA is supposed to reimburse the MOH for these services.

Private practitioners are concentrated in Amman and Zarqa, although some small private hospitals are located elsewhere. More than half the hospital beds in the private sector are operated by the Red Crescent Society and similar charitable groups. Although fees are charged at these hospitals, they are generally lower than at proprietary institutions. The major contribution of the traditional sector appears to be in the area of maternity care, where it is assumed that dayahs assist most of the 62 percent of all births that do not take place under the supervision of a trained health worker.

The Jordan Medical Association (JMA) is a professional body whose membership consists of all non military physicians in the Kingdom. Its principal function is to insure that the medical training of physicians

seeking to practice in Jordan meets recognized standards. This is necessary because of the diversity of foreign locations in which applicants receive medical training. The JMA examines the applicant's programs of study and certifies for the Ministry of Health that the programs are of acceptable quality. The Ministry then issues medical licenses, following passage of an examination by the applicant.

#### FACILITIES

The geographic distribution of both inpatient and outpatient facilities is not in balance with that of population. About 72 percent of all hospital beds are located in Amman, resulting in a bed-population ratio of 1:440 in the Amman Governorate compared to 1:860 for the country as a whole. This imbalance will be exacerbated further with the opening of the new 300-bed Islamic Hospital in Amman. Also under discussion for development in Amman is an expansion of the University Hospital and construction of a new large private hospital by a group of 50 private practitioners.

Studies of hospital service areas, both by this team and as reported in the Annual Morbidity Reports, indicate that around 90 percent of all patients come from areas immediately surrounding the hospital in question. Areas more than 30-50 kilometers from hospitals are very much less adequately served. The population not living close to hospitals must rely on a disparate group of outpatient facilities. Aside from the larger ones having their own physicians, these facilities to a very significant degree have the capacity to offer care only once or twice weekly when visited by a physician based at one of the larger health centers.

MOH hospitals account for somewhat over half of total inpatient admissions, with the balance being divided almost evenly between military and private sector hospitals. Bed occupancy rates were generally low;

71 percent in Ministry hospitals, 59 percent in RMS institutions, and 51 percent in the private sector. Average lengths of stay for the three sectors were 7.8 days for the RMS, 6.7 for the MOH and only 4.5 for private institutions. As would be expected, the country's three tertiary (referral) hospitals experienced relatively long average lengths of stay. However, it is not clear why these varied from 12.4 at the King Hussein Medical Centre, to 8.1 at the University Hospital, to 7.7 at Ashrafiyeh, the MOH referral institution.

There are two mental hospitals near Amman, which are operated by the Ministry of Health. There is also a Swedish Mental Institute for mentally retarded children. Construction of a 250 bed psychiatric hospital was proposed in the 1976 - 1980 5-Year Plan, and may commence in 1977. There are eleven qualified psychiatrists in Jordan - four with the Ministry of Health, three with the Royal Medical Service and four in private practice. Facilities and programs for the rehabilitation of the mentally and physically handicapped are at an early stage of development. Medical rehabilitation services are reported to be adequate, but occupational therapy practices are reported to be custodial and diversionary, and services such as speech therapy, vocational rehabilitation and sheltered workshops are practically non-existent.

#### EXPENDITURES AND PLANNING

Detailed expenditure data are available only for the Ministry of Health. From the following tables (see Tables 4 through 6) it can be seen that the curative program of the Ministry of Health accounts for over three-quarters of total recurrent spending (including most of the expenditure under the headings "X ray" and "laboratories"). About one-sixth of the recurrent budget goes to preventive work, around 5 percent for administration, and only 3 percent for training and education. These proportions have remained fairly constant over the years 1968-1976 (except for the years 1973 and 1974).

TABLE 4

 MINISTRY OF HEALTH RECURRENT EXPENDITURES<sup>a,b,c</sup>; 1968 - 1978  
 (in 000's of JD's)

	1968	(%)	1969	(%)	1970	(%)	1971	(%)	1972	(%)	1973	(%)	1974	(%)	1975	(%)	1976	(%)	Total 1968-1976
Curative <sup>c</sup>	1,313	( 70)	1,293	( 71)	1,465	( 70)	1,409	( 73)	1,545	( 70)	1,613	( 59)	2,501	( 59)	2,939	( 71)	4,295	( 72)	18,373
Preventive <sup>d</sup>	280	( 15)	273	( 15)	313	( 15)	258	( 13)	386	( 17)	430	( 15)	593	( 14)	649	( 16)	911	( 15)	4,093
Training and Education	40	( 2)	34	( 2)	47	( 2)	47	( 2)	51	( 2)	66	( 2)	94	( 2)	133	( 3)	154	( 3)	666
Other <sup>e</sup>	<u>235</u>	<u>( 13)</u>	<u>228</u>	<u>( 12)</u>	<u>263</u>	<u>( 13)</u>	<u>236</u>	<u>( 12)</u>	<u>241</u>	<u>( 11)</u>	<u>675</u>	<u>( 24)</u>	<u>1,045</u>	<u>( 25)</u>	<u>417</u>	<u>( 10)</u>	<u>591</u>	<u>( 10)</u>	<u>3,931</u>
Total	1,868	(100)	1,828	(100)	2,088	(100)	1,950	(100)	2,223	(100)	2,784	(100)	4,233	(100)	4,138	(100)	5,951	(100)	27,063

<sup>a</sup>Source: Budget Law for Fiscal Years 1970-1976, Budget Department, Kingdom of Jordan.

<sup>b</sup>Re-estimates, except for 1975 and 1976 which are first estimates.

<sup>c</sup>Includes dentistry and for 1968-1970 the item labelled 'health insurance'.

<sup>d</sup>Includes vaccine laboratory

<sup>e</sup>Except for 1973 and 1974, which include some special items, roughly half for 'administration' and half for 'x-ray' and 'laboratories'.

TABLE 5  
 MINISTRY OF HEALTH RECURRENT EXPENDITURES: 1976 and 1971<sup>a</sup>  
 (000's of JD's and %)

	<u>1976</u>	<u>%</u>		<u>1971</u>
				<u>%</u>
Personnel	3,330	56		58
Materials and Supplies	2,334	39		33
Rent	115	2	)	
			)	
Travel	76	1	)	
			)	9
Utilities	57	1	)	
			)	
Other	<u>42</u>	<u>1</u>	)	<u>    </u>
			)	
Total	5,954	100		100

Source: Budget Law for Fiscal Years 1970-1976, Budget Department, Kingdom of Jordan.

<sup>a</sup>Pharmaceuticals, but also including food, minor hospital equipment, etc.

TABLE 6

MINISTRY OF HEALTH CAPITAL EXPENDITURES<sup>b</sup>: 1968 - 1975

(in 000's of JD's)

	1968	(%)	1969	(%)	1970	(%)	1971	(%)	1972	(%)	1973	(%)	1974	(%)	1975	(%)	1976	(%)	Total 1968-1976	(%)
Curative <sup>c</sup>	866	( 83)	833	( 84)	1,086	( 85)	193	( 52)	130	( 64)	104	( 47)	448	( 64)	564	( 59)	423	( 65)	4,647	( 72)
Preventive <sup>d</sup>	143	( 14)	139	( 14)	140	( 11)	152	( 40)	22	( 11)	57	( 25)	89	( 13)	225	( 23)	118	( 18)	1,085	( 18)
Training and Education	-	( 0)	-	( 0)	-	( 0)	-	( 0)	-	( 0)	-	( 0)	-50	( 7)	155	( 16)	15	( 2)	220	( 3)
Other <sup>e</sup>	36	( 3)	24	( 2)	46	( 4)	32	( 8)	52	( 25)	64	( 28)	111	( 16)	18	( 2)	95	( 15)	478	( 7)
Total	1,045	(100)	996	(100)	1,272	(100)	377	(100)	204	(100)	225	(100)	698	(100)	962	(100)	651	(100)	6,430	(100)

<sup>a</sup>Source: Budget Law for Fiscal Years 1970-1976, Budget Department, Kingdom of Jordan.<sup>b</sup>Re-estimates, except for 1976, which is a first estimate.<sup>c</sup>Includes dentistry.<sup>d</sup>Includes vaccine laboratory.<sup>e</sup>X-ray and laboratories.

Recurrent expenditures between 1968 and 1971 grew hardly at all in money terms, but over the years 1971-1976 they almost tripled, from about JD 2 million to JD 6 million with close to half that increase taking place in the current financial year. Depending upon which inflation deflator is used (10-12 percent seems to be acceptable as an average for the years 1971-1976), growth in the Ministry of Health recurrent budget in real terms between 1971 and 1976 can be calculated at between 12 and 14 percent.

Personnel costs are taking 56 percent of the recurrent budget, a slightly smaller share than in 1971 when the comparable figure was 58 percent. The item "materials and supplies," which is primarily composed of pharmaceuticals, now takes 39 percent of total expenditure, compared to only 33 percent in 1971.

The capital budget of the ministry averaged JD 1.1 million between 1969 and 1970 and then declined to an average of around JD 270 between 1971 and 1973 before rising to an average of JD 770 for the three years 1974-1976. These expenditures follow very closely the pattern of recurrent expenditures: about three-quarters for curative projects, one-sixth for preventive work, and three percent for training and education.

The 1964-1970 Seven-Year Program set its goals as:

1. A major reduction in the external balance of trade deficit and such reduction in dependency upon budget support as Jordan may be able to sustain.
2. An increase in per capita income (growth) at as rapid a rate as possible, consistent with 1, above.
3. A reduction in the level of unemployment.

These goals represented a change in the priority order from those laid down in the earlier Five-Year Program, that is, income, employment, and balance of trade, in that order. The seven-year plan document argued that raising in importance the goal of reduced dependence upon budget support would "reduce the vulnerability of the Jordanian economy to external change of policy."

The 1973-1975 Three-Year Plan set its objectives, in the following order, as:

1. employment
2. growth
3. better distribution
4. balance of trade
5. increasing budgetary independence

This plan raised the employment objective to first priority, at the expense of trade and budgetary considerations, and for the first time explicitly mentioned improved distribution as a major objective.

The present 1976-1980 Five-Year Plan orders its objectives as follows:

1. Structural change in the economy through an increased share in GDP of the commodity-producing sectors
2. growth/income
3. better distribution
4. employment
5. balance of trade
6. increasing budgetary independence

Points 1 through 6 above (point 1 is of a different order) cover the same five areas as the previous Three-Year Plan and, except for raising growth and distribution at the expense of employment, follow the same ordering.

The same general objectives are stated in all the plan documents, except that better distribution does not appear explicitly until the 1973-1975 plan. And yet there appears to be little relationship between the stated overall objectives of the plan and their health sectors. In fact the extremely high priority given in terms of spending to hospital development clearly runs counter to such objectives as better income distribution, employment creation, improved trade balances, and increasing budgetary independence. With regard to the growth objectives, it is certainly not enhanced by hospital development and is more likely to be hindered. Smaller health facilities will be better distributed and thus accessible to more people than are hospitals, will employ a greater volume of lower- and middle-level personnel, depend less upon imported materials, and cost less to produce comparable units of output than do hospitals. All of this would be in keeping with overall plan objectives.

Perhaps most important with regard to health plan development is the gap between stated objectives and spending priorities. Thus the current plan states its top health goal to be to "expand and improve preventive services, with special attention to student health care and mother and child care." And yet only a small fraction of proposed plan spending is actually directed toward the accomplishment of that goal. That the same situation continues at present is evidenced by the ongoing discussion concerning the possibility of substantial new hospital developments, located mostly in Amman and Irbid, and developed primarily under the auspices of the private, university and military sectors.

There is only a gap between stated objectives and proposed expenditures, but also little correlation between proposed and actual expenditures, as evidenced by the health sector results of the 1973-1975 Three-Year Plan. The lack of sufficiently clear expenditure data in the health sector makes it difficult to monitor plan performance against plan projections.

One other glaring issue is the lack of integrated planning by the various "pillars" making up Jordan's health delivery system.

The multi-annual plans do not include the private sector (although some estimates are included), UNRWA, and the military. This lack of integrated planning is one major factor contributing to the continued duplication and inefficient use of resources.

Most of the issues pointed to above stem from a failure of planning, although not necessarily planning in any technical sense. In any event, an improved health planning capacity within the country is a matter of some urgency, if some of the problems discussed above are to be avoided in the future.

#### COORDINATION

The lack of planned development and coordination between the various providers of health care has contributed to the maldistribution and inefficient use of scarce health sector resources. There is an overconcentration of beds in Amman, relatively too many tertiary level beds as each major provider develops its own facility, no organized planning for the production of health manpower, overlapping and disorganized services, and too little relationship between the overall configuration of the system and the health care needs of the community and individual patients. These problems are made worse by the lack of horizontal communication within the various health sector "pillars," as well as between them at governorate and local levels.

The maldistribution of resources discussed all through this report represents a failure, in terms of potential health service outputs, to use resources more efficiently. However, the system (or lack of one) has worked particularly to the disadvantage of the rural and urban poor, who are most dependent upon the services of the Ministry of Health. It is these people (actually a majority of the country's population) who most need better coverage by an appropriate basic health services system. Such a system can only be developed under the leadership of the MOH, which carries the basic responsibilities for the health care needs of the bulk of the country's population. And yet at present the ministry suffers from

many disadvantages when compared to other health sector providers, even those in the public sector.

The obvious need for a health policy coordinating body could be met through either of two existing bodies: the Supreme Health Council or the Health Policy Reference Group (HPRG). The latter body is wider in scope than the former and extends beyond the normal ranks of the health providers, who comprise most of the membership of the Supreme Health Council. Thus, in addition to health sector representatives, the HPRG includes others from the Ministries of Finance, Labor, and Social Affairs, the National Planning Council, and the Prime Minister's Office. Because of this wider composition and the inclusion of key groups which, although not direct providers of health care themselves, play a critical role in the development of health sector policy, it is desirable that the HPRG act as the country's top health policymaking group.

There are several policy issues which will have to be addressed as a virtual precondition to further organized health planning efforts. One of these will be to determine the lines of responsibility and authority for various health sector providers. Three issues, resolved or currently under discussion, appear to be particularly important. The first of these concerns eligibility of military dependents and retirees for the Royal Medical Services. The second concerns development of occupational health insurance schemes. The third focuses on possible development of a new private hospital in Amman, and relates to the more general question of further (especially tertiary) hospital development. These particular issues are cited not only for their intrinsic importance but because any decisions which one provider makes in these areas will have very significant impact on all other providers.

At present, about one-fifth of the Jordanian population is eligible for RMS hospitalization and outpatient care. This figure includes both active and retired personnel, their dependents, and certain other relatives. Within the next ten years a very high proportion of young men will pass through the army, because of both the military draft and the

creation of reserves. This will greatly increase the size of the Royal Medical Service eligibility group. In time almost the entire population of the country could qualify, a situation that would make little sense either in economic, administrative, or health service terms.

Occupational health insurance will affect all sectors because it will provide major new financing for the health sector which may or may not be spread equitably among potential providers. At present, those employers who support health care do so through contracts with specific private sector providers. The current system, in effect, subsidizes the private sector to the possible detriment of the public separate clinics for insured patients, but this would create an additional provider organization in an already highly fragmented field. It is strongly recommended that the additional health sector resources which will become available through the new insurance schemes be used for strengthening the delivery capacities of the MOH.

There is a proposal by fifty private physicians to create a "first class" hospital and outpatient clinic in Amman. Questions have been raised because of the already excessive number of hospital beds in the capital, but private physicians claim to experience difficulty in referring patients to facilities in other sectors. This is a situation in which greater cooperation between providers might reduce the dangers of a further uneconomic duplication of effort. This issue relates to other proposals for major hospital developments in Amman and Irbid. If Jordan is going to quickly achieve its goals with regard to an effective primary care system, it will be necessary to reconsider these various proposals in the light of the totality of resources likely to become available to the health sector in the near future. It is also pertinent to examine the outreach role of the hospitals in the development of a more effective primary care and related referral system.

After considerable experience it is now generally understood that the creation of formal planning structures does not by itself guarantee the making and implementation of good health. And yet the existence of such structures are a necessary, if not sufficient, condition for sensible planning.

The history of health planning efforts in Jordan shows, among other things, that planners have lacked the necessary legal authority and staff to be effective. Both the MOH Planning Committee and Directorate for Planning and Foreign Relations have had far too many immediate and routine responsibilities either to take the long-range view or to carry out the necessary technical work for proper planning. In any event, many of the skills needed for comprehensive health planning have not been available. It will be necessary to establish an upgraded Health Planning Unit within the Ministry of Health. Discussions should begin immediately on the necessary legal arrangements and staff development programs.

It is not possible for the Ministry of Health by itself to make broad health policy decisions that would be binding upon other health sector providers; this is the task of the HPRG. The technical and staff requirements of this group will reside in the Planning Unit of the MOH and will be available to the HPRG through its chairman, the Minister of Health.

The proposal to place the Planning Unit within the health ministry is based upon the central legal and operational role of the ministry as the primary health care provider in the country. This is as it should be, in terms of the health care needs of the Jordanian people, and this central role of the ministry should be enhanced in every reasonable way. And because the Ministry of Health has the primary responsibility to ensure adequate health care to the people of Jordan, the Ministry of Health will necessarily be the major implementing agency for policy recommendations. In addition, planners should not be isolated from day-to-day operational problems; they should be in frequent contact with ministry directors. However, they should not have more routine administrative responsibilities than are absolutely necessary.

The Planning Unit should not be another "line directorate" running parallel to the others, but rather a separate body linked directly to

the Under-Secretary for Health (see later discussion on Ministry organization).

Certain authority with regard to the collection of data from all health sector providers is an absolute requirement for the Planning Unit's proper functioning. It will also have as one of its key duties the responsibility to review and make recommendations concerning the development or expansion of any health facility in the country.

The Health Planning Unit should be headed by a social sector planner, with a strong economic and public health background. He or she need not be a physician. In fact, it seems highly unlikely that a physician could be found who would meet these requirements. The individual selected should have good skills in data interpretation and should have sufficient background in management and administration to appreciate the practical obstacles to program implementation. There should be at least two or three other experienced personnel on the staff, with skills in statistics, manpower, and nutrition planning being especially desirable.

#### MANAGEMENT AND INFORMATION

Effective organization and management processes in the Ministry of Health (MOH) are necessary to accomplish objectives stated in this report. For purposes of the following discussion these organization and management functions include: program budgeting and decision-making processes, supervision of services, monitoring of community resources and needs, and evaluation of services and programs. Organization and management issues related to the ministry may be summarized as follows:

Ministry of Health departmental organization appears to be inefficient for the purpose of implementing basic health services programs. Twenty-five department and other directors have legally authorized access to the undersecretary, whereas a much smaller number of directorates is typical of countries much larger than Jordan. In practice, regional health directors deal primarily with the Director

of Administration and hospital directors go to the Director of Curative Medicine. There appears also to be a strong tendency for decisions to be made at higher levels than is necessary for the matters being considered. General ministry personnel seem overburdened with routine administrative tasks and diverted from program planning and development. In recent years, Ministry of Health tasks and resources have been examined by numerous expert groups from within the ministry and other agencies, including consultants from outside Jordan. In each case adjustments were made to ministry departmental structure and patterns of authority. Nonetheless, the fragmented organizational structure appears to inhibit development of primary care programs and prevent a unified approach to manpower planning and training.

Responsibility for manpower planning, training, and management is currently fragmented among a number of directorates, including Curative Medicine, Dental Services, Nursing, Education and Training, and Administration. Manpower planning does not come under any single directorate, and each directorate provides for personnel training and development only within narrow categories. Were a health manpower plan to be developed now, there would not be a suitable ministry department to oversee implementation.

The Ministry of Health lacks sufficient people with management training. No MOH department managers or hospital administrators have received formal administrative training. Department and facility directors would seem to require training in such administrative matters as resource allocation decision making, project design and budgeting, project implementation (including personnel selection and organizational control operations), and program monitoring and evaluation. This type of training is not now available in Jordan.

There are no separate budgets for specific programs, hospitals, or health regions (except for malaria eradication). The size of the total budget is largely determined by economic factors beyond the

control of the Ministry of Health. There is no process of cost accounting or detailed budget making. MOH officials tried several times in the past to implement cost accounting. Costs are now determined in aggregated form for six items: salaries, allowances, rent, utilities, materials, and miscellaneous expenses. Personnel and materials in the curative medicine area (70 percent of the ministry budget) are aggregated into one total account. Little useful cost control information is available.

Certain information important for planning and management is unavailable on a timely basis from present MOH data-handling activities. A detailed investigation of health-related data and information gathered by all Jordanian government agencies shows that most of the data elements needed for health planning exist (except information on the private and traditional sectors and on specific program and operation costs), although not always in a useable format. This data is often too aggregated for analysis to be done on individual programs or health problems.

Overall, the use of data for analysis and feedback into the actual programming and budgeting decisions appears to be minimal. If an increased planning capability is to be established, a review of data needs for planning and management is needed. Coordination between data collectors (often different agencies), data processors, and the end users should flow from this review.

#### IV HEALTH MANPOWER

## INTRODUCTION

Health manpower constitutes a major resource for the delivery of health services to meet defined health needs. The adequacy and appropriateness of the types, numbers, distribution, utilization, and training of health manpower resources are both determined by and evaluated against choices concerning the priority health needs to be addressed and the mix, organization, and distribution of services to be provided.

The demographic, epidemiological, nutrition, and health services portions of this report have stressed Jordan's need to balance the continued development of secondary and tertiary care services with an increased emphasis on expanding those basic health services which will meet the critical health needs of high-risk groups: infants, young children, mothers, and especially those in underserved areas. The choices as to how Jordan will achieve this balance will be reflected in a national health plan and will constitute the basis for both the formulation of a national health manpower policy and the plan to implement it.

## ISSUES

The detailed review of Health Manpower Resources contained in Appendix D of this report identifies a number of factors which must be taken into consideration in the development of a national health strategy. The following summarizes the key points.

### Education

There has been a striking rise in levels of educational attainment in Jordan and, concurrently, an increasing social value placed on such attainment. Consistent with these developments, however, are several trends important for health manpower planning. People with higher-level qualifications are significantly more internationally migratory than those with lower-level educational attainments. Potential labor outflows, which currently run as high as 30 percent, can have a drastic

effect on Jordan's trained health manpower resource pool. One of the most promising methods for stemming this outflow is to broaden training opportunities at the less migratory lower levels of educational attainment. By setting entry requirements at levels which reflect the increasing social value placed on high educational attainment, Jordan's health training institutions have inadvertently narrowed the pool of potential applicants and placed health training in competition with an expanding range of occupational training and employment opportunities, including many outside Jordan. The effects are evident in declining enrollment at some health training institutions and the loss of trained workers to training and employment opportunities in other occupations.

#### Projection Methods

Attempts to project both health manpower need and demand in Jordan have been characterized by a methodology which uses "standard ratios" of health workers to national aggregate populations. These standards are often derived from international sources and bear little relation to the health needs of Jordan, the types of services to be staffed, the divisions of labor and functional interrelationships among workers, or the realistic resource constraints of the Kingdom. Furthermore, these standards mask problems of maldistribution among geographical areas, among subsectors, and among different types of facilities. It is essential that a comprehensive health manpower policy and plan be developed using a methodology that is significantly different from the standard ratio approach. The recommended "functional approach" is based on careful delineation of the type of health system and mix of services appropriate to the health needs and resources of Jordan, identification of the specific functions and tasks required to carry out the appropriate mix of services, and defined allocation or distribution of functions and tasks among different types of health workers, including new types such as auxiliaries.

#### Manpower Supply, Utilization, and Training

Even in advance of a comprehensive health manpower strategy, which is linked to choices regarding the types and distribution of services,

a number of observations can be made regarding supply, utilization, and training of particular types of health manpower in Jordan. The findings are summarized below.

*Physicians.* While the number of physicians in the government sector has increased 55 percent between 1971 and 1976, much of this increase results from employment of physicians at the University of Jordan Medical School and Hospital after 1972. There is also evidence that increasing growth is taking place in the private sector, where a specialist, for example, can earn up to JD1000 per month, compared with JD350 in government service. Inequities in income and fringe benefits between the private and public sectors have a marked effect on the subsectoral distribution of physician supply. Critical issues include compensation differentials among the RMS, MOH, and University, and compensation and reward structures which discourage general practice. While the nature and frequency of health problems in Jordan point to the need for greater emphasis on basic health services, incentives and trends in the professional development of physicians are toward specialization. It is notable that even detailed calculations using the standard ratio approach indicate that Jordan has nearly achieved its set goals for the number of specialists in many fields, except those most critical to the delivery of basic health services: general practice, internal medicine, obstetrics and gynecology, pediatrics, and public health or community medicine. Further, there is a striking geographical maldistribution of physicians among the governorates. The trends toward specialization, toward concentration in Amman, and toward private practice show few signs of being reversed and make it unlikely that basic health services can be distributed equitably to those in need without development of auxiliary cadres and other types of health workers.

*Qualified nurses (RNs).* Jordan has faced severe problems in recruiting qualified nurses at the post-secondary level. Of those trained, between 26 and 33 percent are lost to the health system through migration, alternative employment, or withdrawal from the labor force. Those nurses who remain are overwhelmingly oriented toward and employed in hospital settings and largely concentrated in Amman. Health manpower policy and planning in Jordan must consider the tasks and functions that qualified nurses are to perform in the health system, particularly in relation to other types of health workers. If their tasks were principally administrative and supervisory, qualified nurses might not be in such short supply, even at their present numbers. Similarly, it is evident that many of the factors now seen as contributing to the difficulties in recruiting qualified nurses ("low occupational status," for example) are a function of the aspirations and expectations of the pool of women from which these nurses are sought. Women of lower socioeconomic classes and lower educational attainment are less likely to hold these attitudes.

*Midwives, other birth attendants, and MCH workers.* Before any determination is made about demand for midwives, it will be necessary

to delineate the range of services to be provided to mothers and children, and to make decisions concerning the desired location of deliveries and the distribution of tasks among all existing and potential workers who may provide these services. Only 38 percent of deliveries are attended by trained personnel (including qualified midwives and obstetricians in all locations) and only 4 percent are attended by midwives based in government maternal and child health centers. It is assumed that many of the remaining 62 percent of births are attended by traditional midwives (dayahs), whose tasks must be examined closely and whose functions must be taken into account in planning for appropriate services and the personnel to render them. Evidence in this report concerning the inadequacy of access to and coverage by basic services for mothers and children strongly points to a need for having these services more widely available and delivered by a variety of health manpower in many locations.

*Practical or assistant nurses.* There has been a steady stream of graduates from practical nurse (P/N) training programs in Jordan, substantiating the contention that nursing at this level can be regarded as a desirable occupation. Yet despite the relative availability of this health manpower resource, there is considerable evidence that, in some settings, these nurses are not fully utilized. In part, underutilization has been explained by variations in training and qualifications. This justification should be reexamined in light of the fact that graduates of 18-month training programs since 1971 now number nearly half of the approximately 1,650 P/Ns in Jordan. Underutilization of practical nurses has been particularly noted at those locations in government rural clinics where the P/N is the only permanent staff person. While these clinics are at the closest point of contact with the populations to be served, there are virtually no health promotion, prevention, sanitation, or education services provided by the P/Ns and, in most locations, the P/Ns are also constrained from providing even minimal basic curative services except first aid or those services required on an individual follow-up basis by the supervising physician.

Staffing these facilities and the range of services provided through the clinics are priority issues. By virtue of their hospital-oriented training, P/Ns in their present form may not be the most desirable cadre of health workers to staff community clinics. It is likely that a delineation of tasks and functions to be performed in these clinics will point to the need for development of new auxiliary types of workers. If this is the case, it will necessitate a training facility.

#### Continuing Education

Particularly outside Amman, planned programs and opportunities for

- Difficulties in recruitment (especially for qualified nurse training), declining enrollments (among these nurses and medical technicians in particular), as well as the basic nature of many tasks to be addressed by Jordan's health system, point to the need for a central look at policies which reflect the view that "highest is best" in the definition of admission standards and required credentials of health workers.
- Policies and plans for the education and training of physicians currently proceed without careful regard for the total service and manpower needs of the Kingdom's health system or for fundamental resource constraints. Proposed development of a second medical school at Yarmouk must be examined in light of these factors. Policy makers should raise questions concerning (a) the numbers, types, roles, and distribution of physicians required by coordinated health services and manpower policies and plans; (b) the comparative and alternative costs of expanding the presently low intake at University of Jordan Medical School, versus developing a new school; (c) the alternative costs of developing hospital and other facility-based teaching situations in Amman, which would be required to support expanded intake of students, versus the development of new sites to support a new medical school; and (d) the alternative costs of developing more physicians, versus investing in and utilizing less costly types and levels of health manpower.

#### IMPLICATIONS

The issues detailed in Appendix D of this report and highlighted above point to a number of implications.

1. Jordan requires both a comprehensive health manpower policy and a detailed manpower plan to link development and utilization of human resources to overall health policy and its objectives. Projected health manpower needs, the roles and allocation of tasks among various workers, and education and training must be defined concurrently and comprehensively. This must be done not only in relation to the health

continuing education and skills development are lacking for virtually all kinds and levels of health workers serving in all types of facilities. This lack constitutes one set of disincentives to service in the governorates, and inhibits geographical spread of the health services system.

#### Education and Training Institutions

Admissions policies, intake and output capacities, curriculum content, teaching methods, length of training, and ultimately, the products of Jordan's health manpower education and training institutions must be linked to the nature and emphasis of health services which are to be provided. Effecting this linkage requires development of a national health manpower strategy.

Jordan's health training institutions can, potentially, provide a small but steady stream of health manpower. However, those institutions--and the production of health manpower in Jordan generally--must address a number of issues:

- Lack of planned coordination among health manpower education and training institutions for the production of health personnel is reflected in differentials in entry requirements, curriculum content, practical versus theoretical emphasis, length of training, certification, and the quality and quantity of material resources.
- The lack of planned coordination also results in an inefficient and less-than-optimally effective use of scarce resources: money, facilities, equipment, and staff required to conduct education and training.
- The differentials among programs noted above (particularly in the case of assistant or practical nurses and medical technicians) also make it difficult to effect clear occupational delineations and, in turn, may inhibit attempts to develop (a) official systems of task differentiation and delegation, (b) structures for wages and appropriate rewards and incentives, (c) career ladders, and (d) status as professional health workers.

needs of the population and the services organized to meet them, but also to available resources.

2. Planned and balanced attention to the development of basic health services, as well as realistic resource constraints, point to the desirability of developing the lower levels of health manpower, including new types of auxiliary workers.

3. The extension and integration of basic services imply more effective utilization of existing workers through expansion and integration of current tasks and functions.

4. Improved geographical distribution of services and their continued effective delivery require opportunities for continuing education and the growth of skills and knowledge. These requirements apply to all kinds of health workers, in all types of facilities.

5. Policies concerning development of high-cost physician skills must be formulated and carried out in the context of (a) overall health system needs, (b) comprehensive manpower policies which include all types and functions of health workers, and (c) efficient utilization of resources.

V SELECTED ISSUES IN HEALTH SERVICES

## INTRODUCTION

This section highlights issues in basic health services that have the potential for the greatest impact on the health status of the population, and for lowering morbidity and mortality among the most vulnerable population groups. Data supporting parts of the analysis are presented earlier in "The Setting," Section II, and in the material in Sections III and IV describing the resource base of health services from the organizational, economic, and manpower perspectives.

Areas highlighted in this section are: (a) maternal and child health, (b) water supply and sanitation, and (c) preventive services.

Maternal and child health (including nutrition) and preventive services are obvious issues for priority consideration. Mothers and children make up approximately 70 percent of the Jordanian population,\* and their needs in the areas of disease prevention and nutrition are paramount. Many of these needs are amenable to an integrated, health-promotive, disease preventive approach.

While considerations of safe water supply and sewage disposal are usually not placed in the category of basic health services, they are included here to emphasize the health benefits (especially among the most vulnerable groups) to be gained by reducing water-associated diseases at the local level.

Several major premises underlie the analysis in this section, and lead to the recommendations presented in Section VI. These major premises can be stated as follows:

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\* Fifty percent of the total population is under 15 years of age or less--with almost half of this group aged 0-5; 20 percent of the total population are reproductive-aged females.

- To the extent that health services per se contribute to improved health status, the greatest increase in health status will be gained by assuring wide-spread distribution, equity of access, and a basic standard of quality of health services.
- These parameters must be developed and measured against the cost and availability of health resources.
- The basic health services available to all Jordanians must, more than in the past, be focused upon the most vulnerable and at-risk groups (i.e., infants, young children, and mothers), especially those currently under-served in rural and urban poverty areas.
- A network of rationally-organized and cost-efficient health services can only flow from a carefully-articulated and constantly monitored national policy concerning health services priorities, organization and administration, and manpower development and utilization. Health services and health manpower policies are inseparably linked, and must be considered within a "cost framework" of available resources.
- While much of the analysis in this section refers to government health services, especially those provided by the Ministry of Health, the themes articulated are applicable to all other government and private sectors. The coordination of these sectors, as stated in Section III, is a necessary cornerstone of national health services and health manpower policy.
- At policy, planning, and operational levels, the balance between an emphasis on expanding basic health services and the continued growth of secondary and tertiary hospital and specialized-care services necessarily involves choice. Not all things can be done; resources committed to one activity mean a lessened availability of finite resources for other activities. The crucial functions of a coordinated national health and manpower policy are to delineate the optimum balance of choice among activities and sectors and to ensure that the greatest health benefits (in terms of effectiveness, efficiency, and acceptability in the society) will result from the balanced application of finite and limited resources.

#### MATERNAL AND CHILD HEALTH SERVICES

The Ministry of Health's Maternal and Child Health (MCH) Centers target their services on that segment of the population--new mothers,

infants and pre-school children--which, according to the epidemiologic evidence presented in Section II of this report, is most at risk of disease and death. The MCH program and other activities related to the needs of women and children are thus potentially as important an instrument for increasing life expectancy in Jordan as any other activity in the health service system. Yet MCH services are not available to, or not utilized by, the majority of these vulnerable groups; one-fifth of young children receive nutrition and health services through MCH centers and clinics. Less than 40 percent of all births are attended by trained health workers; less than 25 percent of infants are immunized against diphtheria, pertussis, tetanus, and polio; and virtually no infants served by the public sector receive measles immunizations. These utilization figures have correlates in the high rates of morbidity and mortality from infectious disease among young children in Jordan.

#### MCH Facilities and Resources

As of 1976, there were 41 MCH centers, half located in towns with populations over 10,000, half in smaller communities. Twelve MCH centers are physically integrated in the same building with MOH health centers. The remaining MCH centers are located near health centers. Twelve centers are staffed with two midwives each; one additional center currently has three midwives; the main MCH training and service center in Amman has seven midwives. The remaining 27 centers are staffed with one midwife each. Each midwife is supported by one or two full or shared-time nurse aids. Physician services are provided to the MCH centers by health officers from nearby health centers. Currently, each health center is responsible for medical support to three MCH centers. There are also three midwife-inspectors in the MCH system, who are responsible for general supervision and on-the-job training.

A MCH center midwife is responsible for registration, observation, follow-up, mother-craft instruction, and referral to the physician of any high-risk pregnant women in their catchment area. In addition, the midwife is responsible for actual attendance at, and immediate post-partum follow-up of, home births. The midwife is also responsible for

child health monitoring, conducted both in the MCH center and during home visits and for the direct supervision of MCH center employees. Overall supervision of MCH center activities and personnel is the responsibility of the covering physician, who also performs routine clinical examinations of registered mothers and children and special treatment of high-risk cases.

Responsibilities of the nurse aids include preparation of equipment and records, weight and height measurements, urine examinations, and immunizations under the direct supervision of the midwife.

The MCH Training Center in Amman provides four months of basic training for midwifery students at the MOH school. MOH nursing college students rotate through the Amman MCH center every four months while Princess Muna Nursing College students study for two months at the Center. It has been intended that one month of pre-service training and, periodically, one month of in-service training, be available at the training center in Amman for graduate midwives. However, because of the shortage of housing in Amman and the lack of available personnel to cover midwives from outlying centers, these training efforts have been hindered.

The MCH program, like other MOH departments and sections, has no fixed budget. While MCH activities do receive external aid for such activities as start-up, recurrent budget support from governmental sources remains uncertain. MCH program activities include the provision of delivery services to approximately 3,000 mothers per year, representing less than four percent of all deliveries in the country. In 1975, 33,732 expectant mothers received prenatal services from MCH centers, representing about 35 percent of the country's total pregnancies. The average number of prenatal visits per expectant mother was 1.89. Fifteen percent of these were provided on a domicillary basis by a trained midwife. Usually, the first prenatal visit occurs in the second trimester. Some 4,878 mothers received postnatal care from MCH personnel and centers in 1975, representing 6 percent of all deliveries.

Over 19,000 infants received the triple vaccine and polio immunizations in MCH centers, or less than one per four infants born. The full schedule of immunizations covers an even smaller proportion (18 percent) of all newborns. This coverage is not substantially increased by the addition of immunizations provided by the private sector or the RMS. Similarly, BCG vaccinations in the first year of life were administered to approximately 13 percent of newborns, in collaboration with the staff of the Chest Disease Control Program. No other preventive services except for mother's health education and supplemental food distribution was offered by the MCH centers.

The MCH program's access to and coverage of its target population is thus clearly inadequate. No other area of health service activity is in greater need of immediate remedial efforts. In most MCH centers, only one service is provided each day of the week. Therefore, a mother who has, for example, an on-going gynecological condition, a sick child, and who also thinks she might be pregnant, would have to present herself to the clinic on three different days of the week.

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The manner in which well-child visits are processed needs improvement. Children are weighed and measured, yet no growth chart (a chart on which child's weight for age or weight for height is plotted) is consistently used. David Morley's "Road to Health" charts could be given to each mother in an attempt to make the mother a more active participant in the health care of her child. This can increase her understanding of the importance of adequate nutrition to the child's health. (See Morley, Paediatric Priorities in the Developing World, 1973.) Little attempt is made at the time of examinations to educate mothers. Instead they are encouraged to come on a specific morning to a lecture-demonstration on health and nutrition.

Detailed proposals for improving the coverage, service-effectiveness, and cost-efficiency of health services for mothers and children are presented in Section VI of this report. Major issues for attention include:

- Improved training of existing MCH workers of all levels, and the probable development of new types of auxiliary workers.
- Increased emphasis on prenatal, birth, and post-partum care by trained midwives, auxiliaries, and probably by increased training and supervision of the existing category of "dayahs."
- Integrated nutrition and health services for mothers and children, emphasizing the issues discussed in Section II of this report on nutrition, rather than merely supplementary feeding.
- Completed immunization of all infants and children against diphtheria, tetanus, pertussis, polio, and measles, and ensured BCG vaccination at or shortly after birth, should be a major and sustained effort, working through the basic health services.

Successful efforts in these areas will depend upon the development of a national health manpower policy that articulates the optimal pattern of training and utilization of available human resources balanced by the costs of this training and employment. It is probable that the most effective resource mix will be heavily weighted toward auxiliaries working in the most peripheral health centers and clinics and visiting homes in villages and urban neighborhoods (perhaps performing multiple basic health service functions), but the precise delineation of the manpower pattern must await the development of a national health manpower strategy.

#### WATER SUPPLY AND SANITATION

Deficiencies in the national water supply and sanitation services situation are well known to the Jordanian Government. In the Three Year Plan, 1973-1975, developed by the National Planning Council and other government agencies, water supply was given high priority and a budget in excess of JD 8 million. To expedite this water supply construction mandate, the Water Supply Corporation was established in 1973 and given responsibility for planning, design, implementation, management, operation and maintenance of water supply projects in the

Kingdom, with the exception of the City of Amman and the Jordan Valley.

During the Three Year Plan, the Water Supply Corporation completed a number of projects, as well as the implementation of another six major projects to be completed within the current Five Year Plan. The following is a summary of the projects budgeted in the Five Year Plan 1976-1980, excluding the Jordan Valley and Amman proper (see Table 7).

TABLE 7  
SUMMARY OF WATER SUPPLY PROJECTS - 5 YEAR PLAN

(JD 000)

Location/Year	1976	1977	1978	1979	1980	TOTAL
a. Irbid Governorate 7 Projects	2291	2323	1375	1200	200	7389
b. Amman/Balqa Gov. 6 Projects	647	348	216	250	600	2061
c. Karak/Ma'an Gov. 6 Projects	5380	6381	1330	320	380	13791
TOTAL	8318	9052	2921	1770	1180	23241

Source: National Planning Council

When these projects are completed in 1980 approximately 90 percent of the population inside the Kingdom and outside the Jordan Valley and Amman municipality will have improved water supply sources.

Table 8 shows the quantity of domestic water pumped in 1973, 1975, and 1980 (projected), as well as the number of beneficiary municipalities, villages, and other population centers, excluding Amman and the Jordan Valley.

TABLE 8  
 QUANTITY OF DOMESTIC WATER PUMPED  
 JORDAN, 1973, 1975, and 1980 (Millions of Cubic Meters)

Governorate/Year	1973	1975	1980	No. of Villages
Irbid	4.10	4.65	10.10	322
Amman/Balqa	1.56	2.10	4.90	250
Karak/Ma'an	1.03	1.50	3.70	201

Source: National Water Corporation

The estimated population of these 773 population centers in 1980 will be approximately 1.4 million. Use of this population figure and the estimated water supply of 18.7 MCM, results in a projection that average 1980 daily consumption will be less than 40 liters per capita per day.

In the Jordan Valley, as the period of disruption and dislocation ended about 1971, a program of rehabilitation and development was prepared and included in the Three-Year Plan. To meet the requirements of planning for the East Jordan Valley on a permanent basis, the Jordan Valley Commission was created in early 1973 and entrusted with the sole responsibility of planning and implementing the socio-economic development of the Valley. To discharge this responsibility the Commission was given broad administrative and executive powers. The Commission spent the first two years studying and planning, and in 1974 prepared a Seven-Year Plan covering the period from 1975-1982. The ultimate aim of the Seven-Year Plan is to achieve full development of the Valley by the optimal utilization of its resources to yield a decent level of income, health, and living conditions for its inhabitants. The Jordan Valley Commission Seven-Year Plan will reduce the existing scattered settlements to 36 by using 31 of the existing ones and establishing 5 new ones.

At the present time the two most promising bulk water sources outside Amman are the Qastal Area, and the King Talal Dam. The Natural Resources Authority has been conducting a ground water exploration project in the Qastal area with very encouraging results. Preliminary

estimates are that approximately 15 MCM per year could be extracted from this area. The King Talal Dam was constructed for irrigation purposes as part of the overall development scheme of the Jordan Valley. For this reason, the Jordan Valley Commission and other high government officials have been reluctant to allow any of this water to be pumped to Amman. However, AWSA reportedly obtained water rights of approximately 15 MCM per year from the King Talal Dam and is presently negotiating with engineering firms for the study and design of this system, which could be supplying water to Amman by 1980 at a cost of approximately JD 20 million. This project and expenditure would be in addition to the projects contained in the Five Year Plan. This Plan provided only improvements in the local sources, pumping, distribution and storage. The budget was broken down as shown in Table 9.

TABLE 9  
BUDGET FOR WATER DEVELOPMENT, 1976-1980  
(JD 000)

	1976	1977	1978	1979	1980	Total
AWSA Funds	150	250	1000	1000	-	2400
Loans	-	250	1000	1000	-	2250
Total	150	500	2000	2000	-	4650

Source: National Planning Council

The following table summarizes the existing and projected water supply picture in Jordan (see Table 10). It shows that with the population increasing from 1.9 to 2.3 million, net water consumption (i.e., after leakage) should increase from approximately 30 to 45 liters per capita per day by making capital expenditures of JD 31.2 million. These figures are rough approximations at best and are presented to show the gradual improvement taking place during the Five Year Plan.

TABLE 10

## WATER SUPPLY, JORDAN, 1975 and 1980

Area	Population	1975		5-Yr. Plan (Mil)	1980		
		Water Pumped (MCM)	Con. Rate (l/c/d)		Population	Water Pumped (MCM)	Cons. Rate (l/c/d)
Amman	652,000	18.8	40 <sup>1</sup>	4.7	765,000	29.1	58 <sup>2</sup>
Jordan Valley	70,000	0.3	10	3.3	120,000	3.5	80
Bal. of Jordan	1,178,000	8.3	20	23.2	1,415,000	18.7	40
Total	1,900,000	27.4	≈ 30	31.2	2,300,000	51.3	≈ 45

Source: National Planning Council

1. This represents a 54% loss due to leakage and other operational problems.
2. This represents a 48% loss.

## PREVENTIVE SERVICES

The Ministry of Health's Directorate of Preventive Medicine is responsible for disease and epidemic prevention, health education and other public health activities. It is also responsible for the supervision of preventive health activities carried out by institutions outside the Ministry of Health. There are five active divisions: environmental health and health education; malaria eradication; tuberculosis control; control health; and maternal and child health (including immunizations, except for mass vaccination in situations of epidemic disease). Health education activities apparently are carried out by all five sections without any central technical coordination even though the section directors meet at least once a week. The 1971 Public Health Law established additional sections for nutrition, public health nurses, vocational and industrial health, mental health, and old age care. To date, these have not been staffed. The Director has specifically requested staff for epidemiology, health education, and occupational health, but these have not yet become available.

The preventive activities of the Ministry of Health follow the traditional public health pattern of separate "vertical" categorical programs. This results in problems of poor coordination, duplicative use of scarce resources, and fragmentation of contact with the population. As detailed in Section VI, Recommendations, it is proposed that the budget, staffing, and service organizations of these currently categorical programs be "horizontally" integrated wherever possible. This will: integrate "preventive" with ambulatory care services and facilities; create multi-purpose cadres of staff, especially at the auxiliary level; share the use of vehicles, equipment and other resources; and maximize single contacts with individuals, families, and communities for multiple health promotive, disease preventive and primary diagnostic-curative purposes.

### The School Health Program

The school health program, started in 1975, is the product of collaborative arrangements between the Ministry of Education and the Ministry of Health. It is under the technical supervision of the Division of Preventive Medicine in the MOH.

With a defined target population and specified objectives and timetable of activities, this program has contacted 30,000 first and seventh grade school children. These 30,000 children represent 37.5 percent of all eligible first and seventh grade students or 8 percent of all students (372,000-1st through 7th grade).

The activities conducted by the school health teams include:

- Health and Sanitation Survey Work: The health survey includes a medical and dental examination conducted by a team either of one physician, two nurses (one male, one female) and a driver, or one dentist and one nurse during the morning. Each team is responsible for contact with approximately 5,000 students. Each team is also responsible for surveying the sanitary conditions within the school.
- Health Care Service: Each team is also available in the afternoons at the various services to school-age patients, some of whom they refer for follow-up medical and dental care determined during the health survey.
- Facilities and Resources: Eight mobile medical and three mobile dental units, plus one main fixed administrative and educational unit presently form the available facilities and resources. Future plans include the timed extension of school health activities to all first and seventh grade students in all areas of the country (approximately 80,000).

It is unclear at present to what extent follow-up of survey findings (medical and dental) are actually being achieved and with what results. The extent of the afternoon curative activities conducted within the clinics of the government ambulatory care network also is not clear. No immunizations are being given by the school health personnel, and there is apparently no effective liaison with the health personnel "permanently" available in the fixed health center facilities. Given

the extremely high cost of mobile screening and treatment programs, and their low cost-effectiveness in all but highly unusual circumstances, it is very probable that most of the work done by the school health program could be better done by a re-organization of this categorical program into the type of integrated health service proposed in this Report. It is proposed that the services could be improved by the expanded use of auxiliary personnel based at the fixed health centers and clinics near the schools, and regular visits to these facilities (and perhaps the schools) by specialized personnel (such as dentists) for consultation and continuing education of health center personnel and treatment of selected problems requiring their specialized skills. It is certain that the health survey (including medical and dental exams) and sanitation survey can be very adequately performed by a well-trained nurse or auxiliary. A vast proportion of treatment for the common acute treatable conditions uncovered could also be given by nurses or auxiliaries.

#### The Malaria Eradication Program (MEP)

This program provides coverage to all citizens of the country, including aliens at the ports-of-entry and at places of residence. The only sources of malaria cases in Jordan are foreign (Gulf states, Saudi Arabia, Pakistan, and India). The surveillance and control activities pertaining to the disease vector are seasonal (spring, summer and fall) and consist of:

- Detection, treatment, and follow-up of carriers, including the selective screening of immigrants and visitors coming in from endemic areas, the door-to-door screening of residents in areas where imported cases are found, the screening of clinic patients by malaria workers located at selected outpatient facilities, passive detection relying upon the referral of any suspicious symptomatic case from either of the three major health care sectors, treatment and follow-up testing of cases consisting of free dispensing of drugs, and home visits for ascertainment of carrier state.
- Vector surveillance and control, including entomologic survey work, residual home spraying, larvicidal activities in bodies of water, and drainage activities.

It should be noted that, of the 261 imported cases in the past year, 62 percent were detected by special surveys of non-Jordanians in the Karak region, and of immigrant workers in the Balqa region. Of the 261 imported cases, only 69 were detected upon arrival in Jordan, whereas 192, or 74 percent, were found after arrival; 254 or 94 percent of the cases came into Jordan through two ports of entry (Amman Airport and Mudawarah).

#### Facilities and Resources

The operating budget amounted to JD 292,300 in 1976. The Malaria Program employs 735 persons divided into five sections:

- Administration (54 employees)
- Laboratory (14 employees)
- Operating (525 employees)
- Entomology (34 employees)
- Epidemiology (108 employees)

The majority of these workers (larvicidal activities workers) are seasonal, and engage primarily in environment modification work. Attention is focused, however, on the number of full-time field workers who are specialized in field activities ranging from epidemiologic survey (106 workers of which 62 are full time), to entomologic surveys (34 workers, mostly seasonal), to environmental operation workers (525, mostly seasonal).

The skills and experience of these specialized health workers can be utilized to perform valuable services in other spheres of health activity, notably in the areas of environmental sanitation, and perhaps in immunization and tuberculosis case-finding and follow-up without incurring increased risks of malaria outbreaks by reducing the effectiveness of the malaria program. This could be done without diluting the intensive program of immigrant and visitor screening at points of entry and detection and follow-up of secondary cases. Similarly, laboratory screening, treatment, and case-detection and follow-up can be carried out by auxiliaries and nurses operating out of the MOH clinics and health centers if the principle of an integrated health service is adopted.

## The Chest Diseases Control Program

Activities and Population Coverage. Aside from occasional radiologic surveys of select occupational groups (e.g., phosphate miners) the major objectives and activities of this program consist of tuberculosis control in the general population. These activities include:

- A BCG vaccination program: Vaccine has been administered at least once to approximately 75 percent of the population, mostly without prior tuberculin testing. Vaccination is administered primarily during the first year of school. This 75 percent coverage is considered very adequate. However, caution must be exercised in inferring that protection is adequate in Jordan. The prime reason being that immunizations are not usually administered during the first year of life, when susceptibility of infection and active disease may be the greatest. Only a small proportion of infants and young children are in contact with MOH centers, TB centers, and hospitals.
- A sputum examination screening program: This detection method is applied to symptomatic chest disease patients who present themselves or are referred to facilities acting as chest disease centers. Approximately 5,000 such patients are evaluated per year. These patients have a high yield of positive findings, and account for approximately two-thirds of all positive sputum smears. In addition, smear detection methods are applied to special high risk groups, such as persons in contact with active TB cases, and as pre-employment exams for selected occupations. Sputum examination activities are also an integral part of TB treatment activities for evaluation purposes.
- A sputum bacteriologic culture program: This additional case detection program usually accounts for one out of every five detected active cases of tuberculosis. In Jordan, it is dependent on the capabilities of the Central Laboratories.
- Radiographic screening: Because of the high cost per positive case yielded, x-ray screening is confined to selected occupational or migrant groups.
- Tuberculin testing: The extensive BCG coverage of the population precludes the extensive use of skin testing for the detection of TB infection. This test is, however, used occasionally to determine eligibility for vaccination as well as determining the success of immunization.

- Treatment activities, involving almost all new and old cases, is carried out according to a schedule. Usually there is an initial hospitalization episode (2/3 months), followed by an ambulatory treatment regimen with hospital treatment when necessary. The number of patients in these various treatments is not readily available, nor is the time and cost related to each approach.
- Registration activities rely on uniform records used by all clinics. The central registry unit has an attached statistical unit and a formal information transmission system.
- Educational activities. Education forms an integral part of the activities of the main center for Chest Disease Control.
- Non-Tuberculosis Activities. As mentioned previously, little is done at present regarding chest diseases other than tuberculosis.

Relationship with other Health Services Activities. There is definite evidence that the Chest Disease Control program is integrating its activities with those of the fixed out-patient and in-patient care facilities in the governmental sector, primarily rural clinics and MOH centers where chest disease teams visit to conduct BCG vaccinations. The program is also training some midwives in BCG vaccination procedures. There is no evidence of current integration of resources and services between the Chest Disease Control Program and the School Health Program. This implies multiple contacts with the school population for activities which could be conducted simultaneously. Similarly, there is no evidence of coordination between the Chest Disease Control Program and the Malaria Eradication Program. Finally, there is no formal integration between the Chest Disease Program, and either of the Royal Medical Services or the private sector, except in 3 areas:

- The provision of BCG vaccine to the Royal Medicine Services upon request
- The referral of suspected cases to the chest division of health centers and hospitals
- Occasional continuing education activities conducted by the Chest Disease Control Program for the Jordan Medical Association.

Facilities and Staff. In-patient facilities include 137 beds, regionally distributed in three chest hospitals:

Amman	50 beds	(450 admissions per year)
Mafraq	50 beds	(165 " " " )
Ma'an	37 beds	( 70 " " " )
Total	137 beds	(685 admissions per year)

These admissions account for 24,566 patient days, with an occupancy rate of 78 percent in Amman, 32 percent in Ma'an and 75 percent in Mafraq. Out-patient facilities include eight treatment stations, ten microscopic stations, and six chest centers. All are integrated with other out-patient facilities of the government. The staff of the Chest Disease Control Program includes 174 personnel, divided as follows:

Physicians	11
Staff nurses, practical nurses, laboratory and x-ray technicians, and home visitors.	71
Support staff	92

It is probable that case finding, treatment, and follow-up activities could reach a larger proportion of the population, by integrating tuberculosis activities with, on the one hand, malaria activities as discussed above, and, on the other, with multi-purpose health services using auxiliaries and nursing personnel attached to health centers and village health clinics. There is persuasive evidence from other countries that, especially with the aggressive early case-detection, treatment, and follow-up that could flow from an integrated health services as proposed, most TB cases can be treated at home on an ambulatory basis. This would obviate the need for long and costly hospitalization. This integrated health service approach would enhance early BCG vaccination of infants and young children, allow for greater access to the population at large seeking other health services via the health center and clinics, and allow for efficiency by shared use of vehicles and mobile personnel working in malaria and environmental sanitation.

## VI HEALTH STRATEGY RECOMMENDATIONS

The goal of the recommendations presented below is to enable the Jordanian health care system to move toward making the maximum possible contribution to the continued improvement of the health of the population in the context of maximum cost effectiveness. It must be emphasized that a strategy of this type requires:

- (1) detailed analysis of the determinants of health and disease in the population and of the availability of potential human and capital resources;
- (2) policy and planning capability by which to choose among possible courses of action;
- (3) detailed assessment of the complete economic and social costs of alternative health service activities and selection of the best balanced resource mix applied to different areas;
- (4) implementation and monitoring capability with which to carry out the choices decided upon, and to evaluate continuously the effects and costs of those decisions, modifying future actions as necessary.

We have organized our recommendations into two major groups. The first concerns the development of a coordinated national policy for health services and health manpower in Jordan and more effective and efficient management and evaluation systems so that activities flowing from the recommendations can be implemented with the best possible results.

The second group of recommendations discusses the need for broad distribution and access to basic health services for the large segments of the population (especially in rural and urban poverty settings) that are currently underserved. They also deal with the need for a health strategy that will have maximum impact on the groups most vulnerable to avoidable and preventable disease and death (in particular, infants, young children, and women of child-bearing age).

GROUP ONE: DEVELOPMENT OF INSTITUTIONALIZED  
HEALTH POLICY, PLANNING, AND MANAGERIAL CAPACITY

INTRODUCTION

Health care delivery in Jordan is highly fragmented and uncoordinated, is geographically maldistributed, and places excessive emphasis on hospital care at the expense of primary curative and preventive care. Resources for health care are scarce: they are currently used inefficiently due to duplication of effort, inappropriate use of technical manpower, and inadequate preventive care activity. According to one counting, fourteen governmental agencies have legally designated health responsibilities, and at least five ministries are involved in food policy. Although it is not clear that so many agencies should be involved, the question for the moment is the need for greater coordination.

Although the Ministry of Health has legal responsibility for development of national health policy, specific health duties, such as maternal and child health, vital registration, prison health, forensic medicine, and municipal health are officially assigned to other ministries. Fragmentation causes both duplication (especially in hospitals and training) and neglect of certain areas (occupational health and health education, for example); and it appears likely to increase unless strong coordinative efforts begin soon.

Coordinative efforts so far have been handicapped both by the absence of legal authority for policy development and by lack of technical staff support. Effective program management requires that responsibility, authority, and technical capacity all be linked together in the same office or, preferably, in the same individual. Responsibility assumes good job descriptions and personnel policies based on merit evaluations. Authority requires clear lines of communications and delegation of authority to the lowest level where it can be properly handled. Technical capacity requires both training in management and adequate data flow and communication to permit informed decision-making. The Ministry of Health has the potential for developing these capacities, but responsibility, authority, and technical capacity are not yet linked at the appropriate places. The recommendations which follow are addressed to the issues discussed above.

## RECOMMENDATIONS

1. The Health Policy Reference Group (HPRG) should be given a permanent and legal status as the major body for setting national health goals and policies, coordinating intersectoral developments and, in keeping with the above, determining guidelines and monitoring developments within each "pillar" of the health sector.

a. The role of the Ministry of Health (MOH) must be strengthened in all possible ways in keeping with its central responsibility for the health of the nation. The basic direction of this report reflects this, and at many places indicates more specifically how this goal might be reached.

b. The Royal Medical Service should focus on uniformed personnel and certain of their most immediate dependents. Given the nature of medical military services, it is inevitable that their unit output costs will be very high relative to civilian services; as such, the number of people eligible to use them must be kept to the smallest number possible.

c. Those in the private sector must be helped to coordinate their work more closely with national health goals and policies. Private sector interaction with public sector institutions should develop in keeping with responsibilities of the public sector, and the Ministry of Health in particular, for the health care needs of the entire community.

d. A strong relationship should be established between the MOH and those in private practices in the traditional sector, especially the dayahs.

e. In the probable event that the new social insurance scheme is put into effect by the Ministry of Labor and Social Welfare, the medical component should be organized to keep to a minimum the development of independent medical facilities and services. These are justified only in the relatively few situations in which they are very clearly indicated for reasons of efficiency; for example, an infirmary in the center of an industrial area. This approach is necessary if the development of another health care "pillar" is to be avoided. The substantial sums that will be raised for health care through the insurance system should be channeled into the Ministry of Health as payments for the care of insured workers.

f. The University Hospital should join more closely in the expanded effort to create a comprehensive basic health services network to serve the entire country. It can best do this by limiting its claims to scarce health sector resources, turning out physicians and nurses that are better fitted to serve as health care providers, and directing its research interests to areas relevant to national health objectives.

2. HPRG, with its present composition, should be established within the Prime Minister's office as an independent body under the chairmanship of the Minister of Health.
3. HPRG should appoint a group to review all statutes pertaining to the health responsibilities of different health sector providers and to re-define and alter them, whenever appropriate, in keeping with the division of roles outlined above.
  - a. The HPRG should have the authority to require all health sector providers to make available to a designated planning group all necessary health planning data, thus creating a single statistical reporting system.
  - b. The HPRG should have the authority to approve or disapprove any major new health facility development.
  - c. The HPRG may under certain circumstances have the authority to mandate cooperation between health sector provider organizations, or to require any particular provider to implement a health project, such as an immunization program or the setting of laboratory, hospital, or licensure standards.
4. Because of the importance of nutritional status to the determination of patterns of morbidity and mortality, as well as its intersectoral character, it is appropriate for the HPRG to consider at a very early date the issues involved in the development of a nutritional planning capacity for the country.
5. HPRG should initiate planning activities directed toward the creation of a new national 10-year health plan that will take into account the contributions to be made by all health sector providers and the central role of the MOH. Among other things, this plan will be concerned with certain of the issues discussed earlier, such as:
  - a. The full use of existing and new health care facilities, services, and other resources by avoiding any duplication of construction;
  - b. The smooth referral of patients between sectors;
  - c. Joint efforts with regard to public health programs and training of health manpower.
6. HPRG should initiate the creation of governorate-level health policy and planning groups.

- a. To the greatest degree possible these should be similar in scope to the HPRG itself, but should also include the municipal and other local authorities.
  - b. It should be the aim of these groups to coordinate all health care activities within the governorate, but particularly with regard to the creation of a single basic health services network accessible to the whole of the population, regardless of sectoral responsibility or eligibility.
7. In order to avoid duplication of scarce resources and conflict of responsibilities, the health planning unit should be located in the Ministry of Health. This unit would be an intrinsic technical body of the MOH but would respond to requests from the chairman of the HPRG, as well as offer recommendations to that group through its chairman.
8. The Planning Unit should be headed by a senior social sector planner with a strong background in economics and public health. This individual should have good skills in data interpretation and experience in management and administration. There should be at least two or three other staff members with skills in statistics, manpower and nutrition planning being especially desirable.
9. The priority responsibility of the planning unit should be the development of a 10-year plan for health and the manpower and facilities services sections within that plan.
  - a. The manpower portion of the plan would be absolutely central and directed toward the staffing of a comprehensive national basic health services network.
    - A detailed plan must be developed that sets out the types and numbers of health workers to be trained over the next decade or so.
    - This plan must be based upon the types of health services that will be developed, the functions and tasks of the health workers concerned, and the relationships (in terms of such factors as numbers and functions) between the different groups of health workers.

- New and expanded cadres of auxiliary health workers are essential for the development of an appropriate basic health services network.
- Common training of personnel by several health sector provider organizations is highly recommended.
- In conjunction with the health manpower plan, arrangements should go forward for the development of an auxiliary training program and the possible construction of additional facilities that will produce several different types of cadres for the MOH as well as other-primarily, but not necessarily exclusively-public sector bodies.

b. The facilities/services section of the plan would also be directed toward the development of a comprehensive basic health services network. Among other things, this would mean a major strengthening of the rural health infrastructure.

- Consideration should be given to the addition of a 2 to 4-bed maternity delivery units at the health centers and clinics
- With regard to hospital development, emphasis should be placed upon improving their existing performance capacities, rather than on enlarging facilities. The outreach capacity of the hospitals in offering greater support to the health infrastructure must be strengthened.

10. The planning unit should become a center for supporting and coordinating research and data development and collection pertaining to the health sector. These activities should be developed in conjunction with the National Council for Science and Technology and the Royal Scientific Society.

11. With development of new policy structures, plans, and services as suggested in this report, a review of health system structure and process will be needed. A careful study of Ministry of Health organizational arrangements, management capabilities, and assignment of authority is needed to identify ways of improving ministry efficiency and effectiveness toward the proposed new objectives. The recommendations cited above imply that:

- a. a single manpower directorate is needed to provide effective control over personnel-related functions;
- b. a single directorate is needed to facilitate the services integration which is indicated above;
- c. consideration be given to a reduction in the number of central directorates. Implications for regional and local health service activities, which result from these changes, must be considered.

12. Expand the pool of trained middle managers by training additional people in health administration at programs outside Jordan and by establishing short-term administration courses in Jordan, perhaps in conjunction with the Public Administration Institute.
13. In cooperation with the Ministry of Finance and National Planning Council, improve budget and cost accounting procedures in the Ministry of Health. Such changes could increase the control of directorate personnel over costs associated with health services programs.
  - a. Add at least one cost accounting and budgeting specialist to the Directorate for Administration.
  - b. Determine the types of categories under which to group expenditures; develop cost codes.
  - c. Implement the new system for six to nine months, and then develop program budgets based on this experience.
  - d. Provide cost data to the Research and Evaluation Unit and encourage periodic cost-effectiveness studies.
14. Practical planning, decision-making, implementation, and evaluation require limited amounts of carefully selected data. The following measures should be taken to provide specific data for administrative, regulatory, and clinical purposes:
  - a. Using current reporting arrangements and data accumulated at health centers, hospital outpatient clinics, and village clinics develop information to reflect health problems, diagnoses, and other clinical aspects of the work.
  - b. Investigate ways of recording and transmitting birth and death information that are less prone to rapid deterioration than are the present Registration Books.
  - c. Incorporate data which describe family utilization of health services into the health planning process. Records of Maternal and Child Health Center utilization, for example, could be sampled and analyzed to provide systematic descriptions of service patterns.
  - d. Pharmaceutical production, distribution, and utilization cannot be facilitated or controlled by the Ministry of Health with available information arrangements in spite of the large annual expenditure for these products.

e. Investigation is needed to design a small but effective reporting system for analyzing production and import cost, logistical distribution support, clinical prescription, and family expenditure for drugs and pharmaceuticals.

15. Several additional skills are needed to strengthen important functions of the Ministry of Health. Personnel needed to be trained and employed, which in some cases are also suggested elsewhere in this report, include the following:

a. Health records technicians and medical record clerks to strengthen the clinical, regulatory, and administrative usefulness of clinical records and in some cases to reduce the amount of health service and medical recordkeeping.

b. Health education specialist to develop further maternal and child health and school health programs.

c. Engineers and sanitarians to develop and enforce water quality standards and improve water supply and sewerage treatment facilities.

16. Incentives are needed to promote general physician practice rather than specialized practice and to encourage continued participation by physicians in Ministry of Health programs. Pay levels (wages and fringe benefits) should be made more equitable for physicians and other health workers whether employed by the health ministry, Royal Medical Service, or University of Jordan for equivalent amounts of professional experience and degree of responsibility.

GROUP TWO: DEVELOP AND IMPLEMENT A HEALTH SERVICES AND MANPOWER STRATEGY WHICH DIRECTS RESOURCES TO THE POUPLATION GROUPS MOST AT RISK, AND WHICH HAS GREATEST EFFECTS UPON AVOIDABLE AND PREVENTABLE DISEASE AND DEATH

INTRODUCTION

The Existing Needs

The avoidable and preventable diseases associated with reproduction and early childhood are the main determinants of life expectancy in Jordan. These diseases include gastro-enteric and respiratory infections, preventable infectious diseases of childhood, and clinical and sub-clinical nutritional disease. Over the past two decades a definite improvement has taken place in both infant and early childhood mortality rates and life expectancy. Still, it is clear that greater improvement needs to be achieved, and can be achieved by the broad distribution of basic health services.

The promotion of health, and the prevention and treatment of the diseases listed above can lower infant and early childhood mortality, reduce suffering, and increase life expectancy. The roots of these diseases lie in poverty and economic inequality, poor environmental sanitation, low nutritional status, incomplete coverage of immunization, and in the health behavior of both the providers and recipients of health services.

The Existing Systems

Jordan's present health system is not effectively addressing these problems.

- The state of environmental sanitation is inadequate, with most water supplies and excreta disposal mechanisms hazardous to health, and a consistently high prevalence of diseases associated with fecal-oral transmission.
- Low nutritional status is documented both by direct measurement of malnutrition and by the incidence and prevalence of diseases to which poor nutrition is frequently a major contributing and underlying factor.
- The health care system currently fails to immunize between 70 and 75 percent of all infants against the common diseases of childhood.

- A small minority of the population are in effective and continuous contact with basic health promotive, disease preventive, and simple diagnostic-curative services for common diseases.

The existing health care systems are relatively well equipped to deliver specialized curative services for complex problems which both are comparatively rare, and have a relatively small effect upon the overall health of the general population.

### The Population At High Risk

Those segments of Jordan's population most vulnerable to the major causes of death and to the conditions which underly these causes are mothers, infants, and preschool children, totaling almost 45 percent of the population. With falling childhood death rates and persisting high birth rates, this group will form an increasing proportion of the population in years to come.

### Impact

Adoption of these recommendations can be expected to effect the health status of the Jordanian population substantially. A 50 percent reduction in infant mortality (death before age 1) between 1960 and 1970 in Jordan produced a 12 percent increase in life expectancy. The present infant-early childhood mortality is still, however, very high--more than one child in ten dies before reaching the fifth birthday. A major portion of these infant deaths can be avoided or prevented by the effective implementation of the measures recommended in this Report. This would increase life expectancy from the present estimate of 57.4 years to as high as 65.1 years of age, a 13 percent increase. In addition, however, this would have considerable effects upon the rate or growth of the population and underscores the importance of a balanced decline of both death rates and fertility rates.

## RECOMMENDATIONS: SERVICES

1. Extend coverage of basic curative, promotive, and preventive health services (particularly to all women of child-bearing age and their children of pre-school age).

- a. Ensure the identification of those women and children as a first step to linking health services to their families and communities.
  - Establish cooperative relationships between the dayahs (presumably responsible for the delivery of 2 out of 3 newborns) and the clinic-based practical nurse and midwife with the aim of obtaining the identification of all births).
  - Birth registration centers should regularly transmit information on new births to appropriate MCH centers to enable identification and follow-up in MOH facilities and in the home of those mothers and children in need of MCH services.
- b. Expand and improve access to the basic health services for mothers and children in health centers and clinics and through the development of services delivered in the home and community. This will require expansion of roles and redistribution of functions among existing health workers, as well as the development of new types of auxiliary health workers. The details of such a system depend upon the development of a national health manpower policy, as described in Recommendation 9.
  - Deliver preventive services at home or at pre-arranged locations (such as the Mukhtar's residence); these services should emphasize immunizations (DPT, Polio, BCG, Measles), and health education directed toward environmental sanitation, home and personal hygiene, and nutrition, especially information and advice pertaining to the weaning period and birth spacing.
  - Facilitate the entry into the curative health care system whenever curative health needs are uncovered. This implies the expanded use of health personnel in health centers and clinics, both in terms of their numbers of auxiliaries and in terms of the functions that they are trained and authorized to perform.
  - Identify additional existing health care needs, promote registration in MCH centers and stress prenatal, safe delivery, and postnatal care in the home and in community-based facilities.

- Offer multiple curative services to mothers and children on the same day at MCH facilities. (At present, services for non-pregnant mothers, pregnant or suspected pregnant women, and children are offered on different days.) This pattern of service delivery is a disincentive to utilization of MCH centers.
  - Incorporate the provision of improved health and nutrition education into each patient contact and into patient waiting time.
2. Integrate preventive and curative services within existing Ministry of Health facilities, and base expanded out-reach and home-visiting activities, and community environmental health services, on a national health manpower strategy making extensive use of auxiliary personnel.
- a. Explore the possibilities for maximum horizontal integration of school health, malaria, tuberculosis, and environmental health programs and staff, so that field workers perform multi-purpose functions wherever possible, and share the use of facilities and equipment.
  - b. Create a base for preventive and environmental health activities within the MOH health centers and clinics, so as to take advantage of all possible cross-overs between facilities-based and community outreach services, and among health promotive, disease preventive, and curative services.
3. Emphasize basic health services by continuing to utilize existing hospital facilities and undertaking construction of new facilities only after careful review of needs, alternative resources and population concentrations, and ensuring that priority is given to developing an adequate country-wide network of health centers and clinics.
- a. Regional health committees should consider and implement wherever possible the shared use of inpatient facilities by both MOH and RMS.
    - These inter-sectoral committees should undertake an immediate review of existing facilities to define the number and location of facilities, beds, and available equipment and physician and paramedical resources, (with particular attention to identifying special equipment and services which need not and should not be duplicated).

- Guidelines should then be drawn for the shared use of resources where appropriate, for patient referral, and for mutually advantageous physician admitting privileges (to be accorded in exchange for specified services).
  - These committees should also participate in the development of laboratory and hospital standards and continuing education for staff members.
- b. Regional health committees should review all requests for the construction of new facilities or addition of new beds and/or added specialty services. Decisions to construct and/or renovate should be made by the National Health Policy Reference Group in accordance with demonstrated need and priority use of resources, based on the health service requirements of the populations and facilities in the immediate locality, adjacent regions, and nationally. These decisions should be made only after consideration of other alternatives, such as introducing a limited number of staff and beds at Health Centers and MCH centers.

## RECOMMENDATIONS: MANPOWER

4. Create new cadres of auxiliary health workers as the basic manpower resource to augment the work of physicians and nurses in the extended coverage and delivery of basic promotive, preventive, and curative services. Depending on the specific detail of the national health manpower plan, many of these new auxiliaries may be multi-purpose workers.

- a. The development and implementation of plans to create these new cadres should be carefully set in the context of the national health plan and should proceed, at every step, with consideration for the resource requirements and implications of the choices to be made. It is anticipated that the new types of auxiliary health workers will serve in all subsectors of health and that collaboration among the subsectors will be required to ensure efficient utilization of resources in the training process.
- b. Tasks for which auxiliaries will be trained must be defined at the outset, and their roles vis a vis other health workers delineated.
  - Appropriate tasks should be identified in the areas of: health promotion, maternal and child health services, hygiene, nutrition and health education, sanitation, casefinding, immunization, collection of vital health data, and curative functions.
  - In the definition of curative functions decision-makers should seriously consider evidence that the preventive activities of auxiliary health workers gain better acceptance by the population when the auxiliaries are competent to deliver a well-specified range of curative services which meet the immediate felt needs of the population to be served.
- c. Recruitment methods and selection criteria must be determined. Among the issues to be considered are:
  - The need to control potentials for upward mobility into other health occupations (nursing and medicine).
  - The choice of entry-level educational requirements which will ensure a sufficient pool of trainee candidates;
  - The desirability of selecting and training persons who have strong attachments to the kinds of communities which will be served;

- The potentials for incorporating existing MOH clinic practical nurses and other existing cadres of health workers into accelerated training; and
  - The sex composition of the auxiliary cadre. Women who have the necessary educational qualifications and who have family ties in the communities to be served should be considered along with men as candidates for auxiliary training. The very geographical ties which might usually make these women "inappropriate" for civil service are the same qualifications which give them an intimate knowledge of all aspects of community life pertaining to health and given them special access to mothers and children.
- d. Determinations as to characteristics of auxiliary training site(s), methods and duration of training should be made after considering carefully the tasks the auxiliary will perform and the environment in which such tasks will be carried out. Efforts should be made
- To achieve the shortest feasible training period consistent with intended functions
  - To use teaching methods which develop specific skills to carry out the defined set of tasks and which measure "learning" by the ability to perform those tasks effectively,
  - To involve those types of personnel (Health Center physicians and nurses, MCH and public health workers) with whom the auxiliary will be expected to collaborate.
- e. A uniform plan for deployment of the auxiliaries should be developed.
- A clear, standardized, and centrally authorized delineation of auxiliaries' tasks and responsibilities and integration of auxiliaries into the existing health system with particular attention to the supervisory role of the Health Center physician.
  - Definition of appropriate civil service status must be effected.
  - From the outset, a defined career ladder for auxiliaries should be planned which will permit limited upward mobility within the cadre and ongoing programs for continuing education should be established.

- Facilities, curriculum development, training staff, subsidy of trainees are all cost factors which will be dependent upon decisions as to the actual configuration of the proposed program. The costs of establishing such a program should however be balanced against alternative costs of training higher levels of health workers (MD's and Nurses) to meet the basic needs which the auxiliary will address. For example, in other developing countries, total costs of training one auxiliary have ranged approximately between US\$3,000 and \$5,000, depending upon the length of training (usually one to two years). By comparison, total costs of training one physician range between US \$40,000 and \$60,000 (usually a five to six year process). Similarly, the recurrent costs of maintaining auxiliaries differ significantly from those of maintaining physicians.

More widespread coverage of the population at appropriate levels of care, at lower cost and with more efficient utilization of other health manpower resources can be extended with an auxiliary-based system.

5. Expand the functions of existing health workers.

- a. Expand the functions of Practical Nurses now staffing MOH rural and community clinics, within the limits of their capabilities and training.
  - On a regular basis, have P/Ns compare recorded births with documented immunizations and conduct follow-up investigation of discrepancies to determine the immunization status of these children. Non-immunized children should be reported to the supervisory physician and MCH workers, and steps taken to complete immunizations of those not covered.
  - Using simple observable, and standardized criteria, including the maintenance and analysis of growth charts, practical nurses can assess the nutritional status of children in the communities they serve. Those children showing evidence of low nutritional status should be identified and appropriate remedial actions (e.g., supplemental feedings, nutrition and food preparation education for mothers) initiated.
  - Develop regular and ongoing contacts between practical nurses and the Health Center sanitary inspectors who currently pay regular visits to the communities in which clinics are located. Practical nurses can facilitate and augment the work of the sanitary inspectors by carrying out such tasks as examination of food and water sources in the villages and of home hygiene.
  - In a manner consistent with the findings of actions in recommendation 6b, below, develop linkages between the

practical nurse and the dayahs serving the same community. The principal purpose of this linkage is to obtain identification and reporting of the names and locations of pregnant women, mothers delivered, and newborns in need of additional health.

- Redistribute selected functions of MCH Center midwives and other staff to enhance health education, identification of target population and out-reach capabilities.
  - During regular patient contacts midwives can conduct on-the-job training of practical or aid nurses in the provision of maternal and child health and nutrition education services. Eventually, there should be a transfer of major responsibilities for health and nutrition education to these workers.
  - In remote areas, when MCH midwives do not have ready access to transportation, they should undertake outreach by sharing transportation resources of health center physicians and other health workers. During these outreach visits midwives may conduct case-finding activities, follow-up of non-immunized children and pregnant or newly delivered mothers identified by the P/N, and conduct health and nutrition education activities
  - If deemed consistent with the role of the dayah established in the national health manpower policy and its plan, consider having the dayah perform selected functions to augment the tasks of health workers in the organized basic services system.
    - Such tasks might include: pre-natal checks, post-natal follow-ups, birth reporting, identification of non-immunized children to MCH midwives or Health Center workers, health and nutrition education.
    - Eventually, develop short (1-2 week) training courses which focus on improving dayahs' capabilities to carry out the above tasks.
    - Consider an appropriate system for compensating dayahs for their MCH extension activities (provision of supplies, according of some professional recognition, and/or small monetary and/or in-kind compensation might be considered).
- b. Identify the current tasks, functions, qualifications of dayahs and explore the legal, administrative, and sociocultural feasibility of involving dayahs to a greater extent in the activities of the organized health services.

- Determine the potential and desired role of the dayah within the context of an overall health manpower policy. If they are to be more closely linked to the organized health system, it may be necessary to achieve more general licensure or registration of the dayahs. Criteria for licensure should be uniform (e.g., evidence as to number of births attended and observation of delivery methods according to a checklist of desired practices). It may be necessary to compensate dayahs with appropriate incentive.
- c. Develop liaison between village teachers and health and social welfare workers.
- Ensure that all teachers become regularly and actively involved in health and nutrition education of children in the classroom and, when appropriate, their families.
    - Include teachers in regular training sessions for health workers on the subject of health and nutrition education.
  - During and after school hours, have teachers engage in outreach activities, including identification of non-immunized children, identification of children who give evidence of having health problems (e.g., poor nutrition, skin or eye problems, mental retardation, emotional difficulties) and identification of those who have social problems.
  - Have teacher refer all identified under the previous step to appropriate health and social welfare workers. Health and social welfare workers should advise teachers of what actions were taken.
- d. Integrate selected outreach functions into the ongoing activities of existing malaria worker.
- Build upon malaria workers' intimate knowledge of, and contact with, communities by engaging them in collection of information pertaining to environmental quality and personal health status, during regular community surveillance visits.
  - Institute reporting of these conditions to clinic nurses, health center physicians, MCH workers and sanitary inspectors as appropriate. In no way should the integration of additional functions be allowed to impede or detract from the important malaria surveillance responsibilities with which these workers are charged.

- e. Engage Health Center physicians in the identification of tasks and functions which can effectively be delegated to paramedical workers.
    - Begin the process of evolving the Health Center physicians' role into Health Team leader or supervisor by having him or her identify tasks among his own functions which can effectively be delegated to other health workers, as well as other tasks which health workers should be carrying out in the interests of community health.
    - Develop task descriptions for all workers engaged in delivering basic curative and preventive services and supervise all workers on the basis of these task descriptions.
6. Upgrade the "professional milieu" of all professional and paraprofessional workers.
- Institute regular in-service training, short-term retraining, and continuing education programs for workers at all levels and in all sectors, with emphasis on conducting the largest proportion of educational activity possible at the service delivery sites.
    - a. Regional Medical Directors of the MOH and their counterparts in the military and private sectors should engage existing health workers (grouped according to their common occupations and functions and/or according to institutional affiliation) in identification of their training and continuing education needs and interests.
    - b. At local and regional levels, identify resources for meeting the educational needs identified above. Regular teaching rounds and conferences, visiting and local staff speakers, and short seminars might be instituted with the use of these resources.
    - c. A working group on continuing education should be part of the MOH and should sponsor development of programs for continuing professional and paraprofessional education, emphasizing use of resources from all sectors and stressing "mobile programs" which can be repeated in various regional locations.
    - d. Establish and disseminate regularly to all health workers a national bulletin containing information on training, continuing education and promotional opportunities, reports of research, lectures and seminars.

7. Examine and remedy the factors which are resulting in declining enrollment in nursing and technician training.

- a. Continue, expand and strengthen efforts to alter the perception of the nursing profession as a low-status occupation. Such efforts include mass media campaigns directed toward parents and school children, establishment of a health careers recruiter at the national level, liaison with school systems to reach students in the career decision-making years. The Department of Women's Affairs should be an integral part of these efforts.
- b. Continue efforts to make salary and fringe benefits more equitable among comparable levels of health workers, not only among health sub-sectors but between health and other occupations. Delineate career ladders and advancement opportunities which will facilitate upward professional mobility within given occupations.
- c. Adjust entry requirements to Health occupations training programs to widen the pool of potential applicants. Such measures include admitting students with less than Tawjihi attainment.
- d. Consideration should be given to opening the B.S. nursing program at the University of Jordan to general rather than strictly Science Tawjihi recipients, and to further development of health vocational training at the secondary school level.

8. Enhance the job-relevance of existing training programs.

- a. Review and, as needed, revise training curricula to increase on-the-job task orientation, and to reduce unnecessary or irrelevant theory.
- b. Continue planned coordination among the University, the RMS, and (potentially) the MOH and the Ministry of Education to widen the pool of training staff and facilities resources which will strengthen the practical training components of present programs.
  - At part of this effort, immediate and specific steps should be taken to determine the status of the technician training program at the University of Jordan.

9. Develop a national strategy regarding the education and post graduate training of physicians.

- a. Define and prepare those policies and guidelines for physician education and training which will be consistent with Jordan's new overall Health Policy. For example, to be consistent with the intent of these recommendations and the new type of Health System it implies, this strategy would:
  - Emphasize the education of general practitioners over the production of specialists;
  - Encourage broader geographic distribution of physicians, but especially of general practitioners, through training opportunities and fringe benefit incentives;
  - Consider rural service rotations for conscripted physicians;
  - In the subsidy of advanced physician training abroad, give immediate and particular emphasis to shortage specialties such as pediatrics, OB Gyn, and public health and internal medicine; and
  - Re-examine proposed plans to develop another Medical School at Yarmouk University, in light of overall health manpower development policies and priorities.
- b. Determine appropriate linkages between the national strategy on education and training of physicians and national policy on science and technology.
- c. Stress, in Jordanian medical education, and in continuing education for all physicians serving in Jordan, the skills and attitudes by which physicians can effectively function as teachers, supervisors, and back-up consultants to front-line nurses and auxiliary personnel working to promote health, to prevent disease, and to provide basic health care services.

## RECOMMENDATIONS: NUTRITION

10. At the health services delivery level and as detailed later in subsequent recommendations:

Health workers (especially, but not exclusively, MCH workers) should be prepared to carry out the following nutrition activities as part of the integrated health service recommended in this report:

- a. Assessment of the growth and nutritional status of infants and young children including simple growth charting. (A locally-appropriate version of the "Road-to-Health" chart, kept in the mother's possession as an educational and motivational aid, should be considered for use in Jordan.)
- b. Early identification of nutritionally high-risk children, provision of preventive education and treatment, and/or referral to an appropriate service based at the nearest MCH facility.
- c. Nutrition education, in both homes and health care facilities, stressing the needs of young children and pregnant and lactating women, but also aimed at promoting good nutrition among school-age children, the labor force, and the aged. Major themes to be stressed are: the importance of prolonged breast feeding (until well into the middle of the second year) accompanied by early and inadequate addition of solid foods to the baby's diet to supplement breast milk.

11. At the national level, especially with regard to activities undertaken by the Ministry of Health and the University:

- a. Investigation and research regarding the causes and factors contributing to malnutrition most appropriate and individual health and nutrition education methods and materials relevant to specific cultural practices and beliefs in Jordan, and also to both positive and negative aspects of traditional feeding practices. (Examples of important research issues include current dietary intake patterns in Jordan, the need for foods that can be purchased and prepared with locally-available resources, questions of food preferences and acceptability, problems of mass and individual health and nutrition education aimed at illiterate or semi-literate families, the potential uses of mass media for health and nutrition education, and ways to actively involve mothers and school children in the promotion of health and nutrition for their families.)

b. Implementation of nutrition educational and service activities based on findings from the above (and other) research. These activities may involve mass campaigns, school-based activities, MCH facilities as well as all other health provider organizations. They carry important implications for the training of all health workers.

c. The need for the early steps towards the development of a national nutrition policy, for broader than purely health sector considerations, has been discussed in Recommendation 4.

d. In addition to the research and service activities outlined above, a mechanism for continuing assessment of the nutritional status of the Jordanian population is needed. These activities should be coordinated with surveys already planned or in progress.

## RECOMMENDATIONS: WATER SUPPLY AND SANITATION

12. Expand the coverage and accessibility of water supplies in a manner consistent with available water, personnel, and financial resources. National planning of water resources must continue and build on the development plans already adopted. The following options should be considered by Jordanian officials to strengthen the continuing water supply planning effort to maximize health benefits of improved sanitation.

- a. Make water more accessible to low income families through home improvements with modern plumbing in communities already receiving improved and expanded water supply distribution systems.
  - The Housing Corporation through coordination with the Ministry of Interior for Municipal and Rural Affairs could make available to the low income families within these communities home improvement grants and/or guaranteed loans with the following stipulations:
    - the home receives community water service,
    - the home improvements include kitchen and bathroom facilities, and
    - the plumbing include spring loaded faucets, showers with flow restricting devices, and special toilets requiring minimum water for self-cleaning.
  - Give these improvements would benefit low income families and be a combination of grants and guaranteed low interest loans these funds should be readily available from internal and external loan/granting agencies.
- b. Villages being supplied by public fountains should be constructing distribution systems and plumbing the homes.
  - This recommendation can best be implemented through a "cooperative Home Improvement Program" between the Ministry of Interior for Municipal and Rural Affairs, the Housing Corporation, the villages and the village residents along the following lines:
    - the Ministry would organize the village council and furnish them the technical assistance and piping materials for distribution systems.
    - the Village Council would organize a voluntary village construction force and install the system in accordance with approved plans and specifications.

- The Housing Corporation would furnish through grants or guaranteed loans the plumbing and building materials to modernize the village homes.
- The villages' residents would furnish labor for both distribution systems and home improvements and possibly some home building materials.

- Since there is local equity invested through labor and materials and income through increased water consumption these funds should be readily available from internal or external loan or granting agencies.

- It is estimated that these home and village improvements would cost approximately JD900 per village residence. Using the existing personnel within the two agencies approximately 500 village homes could be served and improved per year at an annual budget of JD 450,000.

c. Communities with water distribution systems should be repairing and replacing leaky and undersized water pipes, faulty meters, installing flow restricting devices at each meter, and restructuring their water rate system.

- The Ministry of Interior for Municipal and Rural Affairs with their staff, experienced in working with community governments, begin this immediately by:

- Establishing a cooperative program between them and the Water Supply Corporation whereby they would use the corporation's funds, regulations, designs and specifications.
- Conduct flow, pressure, and demand studies in each community before initiating design or construction, and
- Scheduling this work with the corporation so that as the communities are connected to the bulk water supply systems their distribution system will be improved.

- Since these water distribution improvements and costs will result in significant decreases in water losses and increases in income from water uses these funds should be readily available from the same internal and external sources presently used by the Water Supply Corp.

- The Ministry and Corporation working in cooperation should be able to make the recommended improvements for a minimum of 100,000 water service connections per year at an estimated annual cost of JD 15 million.

13. The Ministry of Health should elevate, upgrade and expand its general environmental sanitation activities. This activity can best be improved by:

- a. Separating this activity from the previously described environmental engineering program and
- b. Raising administratively the environmental sanitation program to the same level within the Ministry of Health as the other professionally oriented programs, and
- c. Giving the elevated program administrative and budgetary support to recruit, employ and train a minimum of two additional sanitarians for the central office and one for each of the Regional Health Offices.
- d. Developing a national program with uniform regulations, inspections, and enforcement,
- e. Working across channels with other government agencies, regions, municipalities and institutions,
- f. Expanding program into institutional sanitation in hospitals, schools and other institutions.

14. The Government of Jordan should upgrade and expand its water quality and pollution control efforts.

- a. This activity can best be done in the Ministry of Health using its existing laws, regulations, experience, and staff as a starting point by:
  - Raising administratively the Environmental Engineering Program to the same level within the Ministry of Health as the other professionally oriented programs such as Dentistry, Pharmacy, Nursing, etc.
  - Giving the elevated program administrative and budgetary support to recruit, employ, and train a minimum of two additional engineers for the control office and one for each of the Regional Health Offices.
  - Establishing and opening inter-agency channels of communication between the Environmental Engineering Program and other related agencies.
  - Appointing the Chief Environmental Engineer to the policy making boards of the Natural Resources Authority, Water Supply Corporation, Jordan Valley Commission, Ministry of Interior for Municipal and Rural Affairs, Ministry of Development, and the Amman Water and Sewerage Authority.
  - Reestablishing within the Central Government Laboratory or elsewhere a water and waste chemistry capability to combine engineering and laboratory resources to conduct extensive water quality studies.
  - Developing and enforcing realistic water quality standards for water supply and waste disposal for the unique Jordan environment.

- Requiring the review and approval of all municipal, industrial, and institutional water supply and waste disposal plans and specification by the Chief Environmental Engineer.
  - Encouraging through administrative and budgetary process the expansion of the Environmental Engineering Program into other related areas such as, air pollution, building and plumbing codes, occupational safety and health, solid waste disposal and environmental control over pesticides and other toxic chemicals.
  - Designing and initiating immediately, with available engineering and laboratory resources within the Ministry of Health, other government agencies, and affected municipalities, special studies to evaluate, locate and correct public health hazards within community water supply systems; with special attention directed at the effectiveness and reliability of chlorination procedures.
  - Reevaluating the designs for new and approved sewage treatment facilities at Amman, Zarqa, Salt, and Jerash by considering the type of treatment, location of effluent discharge, and the obvious reuse of the effluent; with consideration given to treating the sewage in a series of carefully located and designed lagoons constructed of local materials, requiring space but only a minimum of operative and maintenance costs.
  - Locating industrial zones for industries having undesirable liquid wastes outside important watersheds and requiring all such industries to treat their wastes in concrete lined total retention evaporation lagoons.
  - Locating all sanitary landfills or other refuse disposal sites outside important watersheds and community water supply recharge areas.
- b. The cost of such a program will be determined by the ability to employ and train six additional engineers with the required overhead, and equipping and staffing the chemistry laboratory.



## VII SUGGESTED POLICY ACTIONS

Many of the recommendations set out above require the appropriate authorities to agree and take the necessary policy decisions (see Level One in Table 11). Of course, follow-up issues would arise from this first set of decisions that would then have to be addressed immediately. A second level of recommendations are a reflection of broader level policy decisions. Implementation of these recommendations mostly can be accomplished within the existing health delivery framework. Certain proposals set-out in this report belong more properly to a third category of recommendations that focus more on certain specific planning, management, and service activities requiring additional planning and managerial inputs.

Consideration of the first level policy recommendations by appropriate senior level officials are the very first order of business with regard to the implementation of this report (see Figure 3).

Discussion of the second-level recommendations can begin immediately also. With regard to the planning unit, an appropriate head should be appointed quickly who would also be responsible for the staff work arising out of this report. It is likely that external training will be required for some of the new members of the planning unit and that the recruitment of expatriate planners for varying periods of time may be required. A particularly pressing issue is the need for a detailed manpower plan which sets out the types and numbers of health workers to be planned. This will require the services of a full-time manpower planner for a period of between 6 and 12 months, depending upon specific arrangements and the provision of additional short-term support. Also, there is a need for personnel trained in management, budgeting, and cost accounting who may be assembled as soon as arrangements would permit.

Consideration of the third-level recommendations is primarily dependent on the policy and planning steps taken in the matters discussed above. A variety of initial actions is suggested within these recommendations, but most are proposals for a significant scale of change and adaptation within the Jordanian health sector. In many cases these will require detailed attention to questions of design and development. It is possible that technical or financial assistance will be required to implement certain aspects of these third-order recommendations.

TABLE 11  
HEALTH PLANNING PHASE TWO RECOMMENDATIONS  
SUMMARIZED BY POLICY LEVEL

Policy-Level One

- I-1. Health Policy Reference Group (HPRG) should be given a permanent and legal status, etc. (p.87)
- I-2. HPRG, with its present composition, should be established within the Prime Minister's Office as an independent body under the chairmanship of the Minister of Health, etc. (p.88)
- I-3. HPRG should appoint a group to review all statutes, etc.(p.88)
- I-4. HPRG ... development of a nutritional planning capacity, etc. (p.88)
- I-5. HPRG initiate planning activities directed toward creation of a new national 10-year health plan, etc.(p.88)
- I-6. HPRG should initiate the creation of governorate-level health policy and planning groups, etc. (p.88)
- I-7. Health planning unit should be located in the Ministry of Health, etc. (p.89)

Policy-Level Two

- I-14. Measures should be taken to provide specific data for administrative, regulatory, and clinical purposes, etc.(p.91)
- I-15. Several additional skills are needed to strengthen important functions of the Ministry of Health, etc. (p.92)
- I-16. Incentives are needed to promote general physician practice rather than specialized practice and to encourage continued participation by physicians in Ministry of Health programs, etc. (p.92)
- II-1. Extend coverage of basic curative, promotive, and preventive health services (particularly to all women of childbearing age and their children of pre-school age), etc. (p.95)
- II-2. Integrate preventive and curative services within existing Ministry of Health facilities, and base expanded out-reach and home-visiting activities, and community environmental health services, on a national health manpower strategy making extensive use of auxiliary personnel, etc. (p.96)
- II-3. Emphasize basic health services by continuing to utilize existing hospital facilities and undertaking construction of new facilities only after careful review of needs, alternative resources and population concentrations, and ensuring that priority is given to developing an adequate country-wide network of health centers and clinics, etc. (p.96)
- II-4. Create new cadres of auxiliary health workers as the basic manpower resource to augment the work of physicians and nurses in the extended coverage and delivery of basic promotive, preventive, and curative services, etc. (p.98)
- II-5. Expand the functions of existing health workers, etc. (p.100)

TABLE 11 (Continued)

Policy-Level Three

- I-8. The planning unit should be headed by a senior social sector planner with a strong background in economics and public health, etc. (p.89)
- I-9. The priority responsibility of the planning unit should be the development of a 10-year plan for health and the manpower facilities services sections within that plan, etc. (p.89)
- I-10. The planning unit should become a center for supporting and coordinating research and data development and collection pertaining to the health sector, etc. (p.90)
- I-11. Careful study of Ministry of Health organizational arrangements, management capabilities, and assignment of authority, etc. (p.90)
- I-12. Expand the pool of trained middle managers by training additional people in health administration, etc. (p.91)
- I-13. In cooperation with the Ministry of Finance and National Planning Council, improve budget and cost accounting procedures in the Ministry of Health, etc. (p.91)
- II-6. Upgrade the "professional milieu" of all professional and paraprofessional workers, etc.(p.103)
- II-7. Examine and remedy the factors which are resulting in declining enrollment in nursing and technician training, etc. (p.104)
- II-8. Enhance the job relevance of existing training programs, etc. (p.104)
- II-9. Develop a national strategy regarding the education and post graduate training of physicians, etc. (p.104)
- II-10. At the health services delivery level and as detailed later in subsequent recommendations, health workers ... should be prepared to carry out the ... nutrition activities, etc. (p.106)
- II-11. At the national level, especially with regard to activities undertaken by the Ministry of Health and the University (conduct various types of nutrition-related work), etc. (p.106)
- II-12. Expand the coverage and accessibility of water supplies, etc. (p.108)
- II-13. The Ministry of Health should elevate, upgrade, and expand its general environmental sanitation activities, etc. (p.110)
- II-14. The Government of Jordan should upgrade and expand its water quality and pollution control efforts, etc. (p.110)

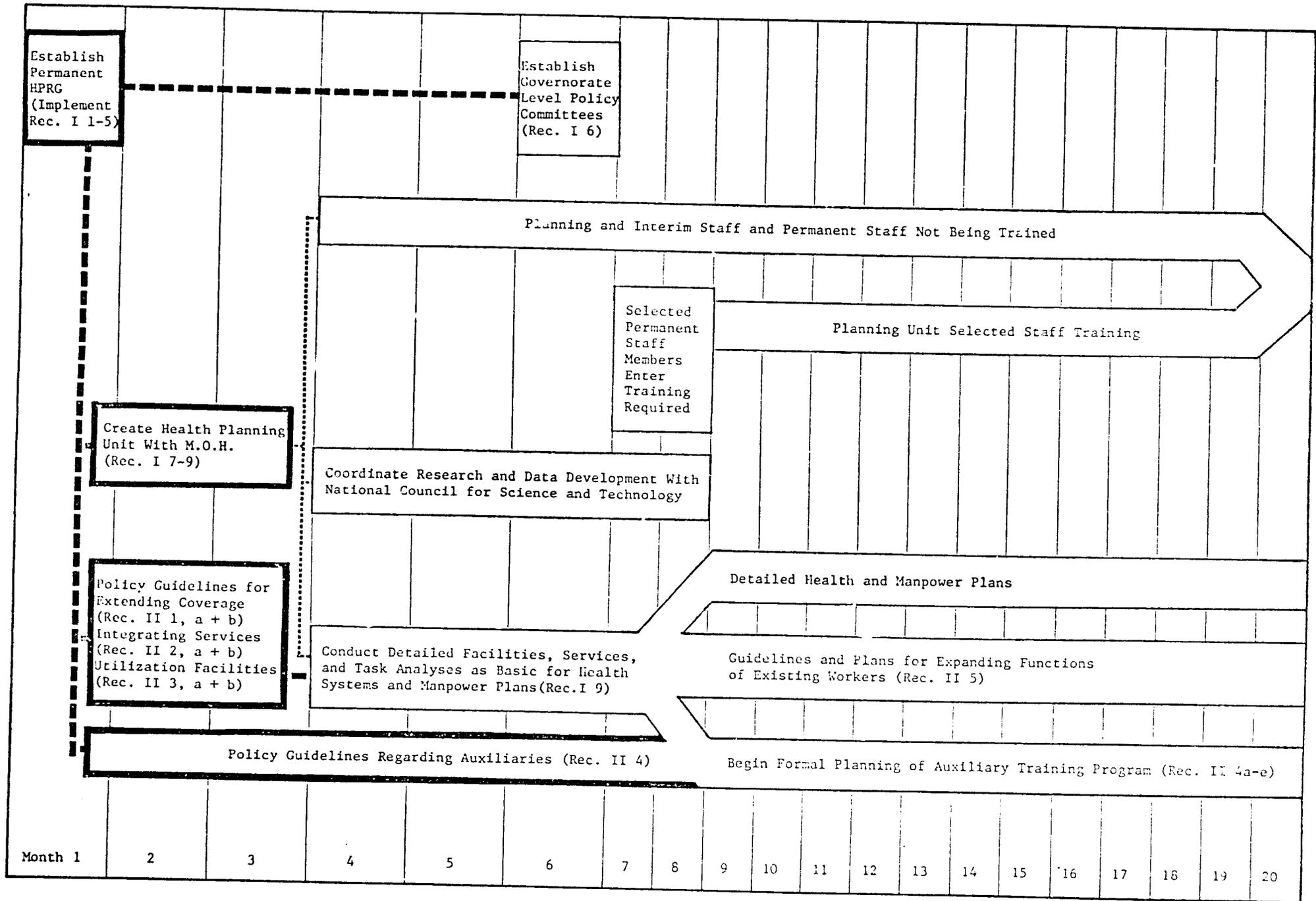


FIGURE 3. POSSIBLE SEQUENCE OF HPRG ACTIONS IN CONSIDERING FIRST AND SECOND LEVEL POLICY RECOMMENDATIONS

APPENDIX A

DEMOGRAPHICS

## DEMOGRAPHIC SUMMARY

The major demographic indicators for Jordan (East Bank) are summarized in the Demographic Profile (Table A-1). The total size of the nation was approximately 2.0 million in 1976. The birth rate of 46.8 per 1,000 population in combination with moderately declining death rates, produced a high annual growth rate of 3.23 percent. If maintained, this new rate for 1970-74 will lead to a doubling of the population in 22 years. Short-term growth may indeed be more rapid, since there is evidence that the death rate of 14.5 per 1,000 during 1970-74 is declining. Gains in life expectancy were about 1 year per annum during the 1960's and expectation of life at birth now stands at 59.1 for females and 57.4 for males. This is a direct result of the reduction of preventable infant mortality (by 44 percent during the 1960's).

Infant and early childhood mortality, though declining, remain at high levels: the infant mortality rate is estimated at 80-90 per 1,000 live births and the death rate for ages 1-4 is near 10 per 1,000 population annually. Out of an average of 8.2 children ever born to wives by the end of their reproductive period, only 6.8, on the average, survive.

TABLE A-1

## Demographic Profile of the East Bank

Population Segment	Percent of Population
Under 15 years, 1975	51
65 years and over, 1975	3
Registered refugees with UNRWA, 1976	32
Residents of refugee camps, 1976	12
Covered by Royal Medical Service, 1975	22
Living in Amman city, 1975	34
Labor force participation of males, 1975	35
Labor force participation of females, 1975	4
Unemployed, 1974	5
Illiterate, 1974	35
Enrolled in school, 1974	33
Urban (town 10,000 f)	70

In 1974 there were 81,490 live births, and this number is rising rapidly with the expansion of the reproductive population. A pattern of both early marriage and childbearing coexists with high birth rates well into the older ages. As a result, the median age of mothers is about 28 and the median birth order is the fourth. This means that half the births are born to women older than 28 with 3 or more children. These statistics point to unfavorable conditions for survival of infants, as well as for ill effects on maternal health. There is a rapid increase in risks of pregnancy complications and infant mortality with ages older than 25 and for 4th and higher birth orders.

As a result of continued high fertility, the population of Jordan is young (51 percent are under age 15). This imposes heavy demands for maternal and child services.

As a result of rapid and massive rural-urban migration, 70 percent of the population live in cities, with 34 percent in Amman city alone. Health and other institutions and functions have been overconcentrated in Amman, causing problems of access to health care in smaller towns and rural areas.

#### POPULATION SIZE AND GROWTH

A reasonable total population estimate for the East Bank as of mid-1976 is 2.0 million. Further precision is difficult for a number of reasons. First, the last census was conducted in 1961 and official estimates for subsequent years are based on crude assumptions about annual rates of growth. Second, as a result of the June 1967 war, about 0.3 million Palestinians were forced to move to the East Bank from the West Bank; this, as are all estimates of displaced persons and refugees, is subject to a wide margin of error - on the order of 25 percent. Third, there continues to be a considerable migration not only between East and West Banks but also between the East Bank and the Gulf states. Employment opportunities and wages are relatively attractive in the latter areas. The extent of net migration between these areas and the East Bank, however, can only be conjecture.

Table A-2 shows two notable features of Jordan's population growth since the first census in 1953: rapid growth and the shift of population from the West to the East Bank. Natural increase (the balance of births and deaths) continues at a high level (above 3 percent annually). The Department of Statistics population estimates since 1961 are based on the following annual growth rate assumptions:

1961-69	3.1%
1970-74	3.2%
1975-79	3.3%
1980-84	3.4%
1985-2000	3.5%

At the current rate of 3.3 percent, the population would double in 21 years - sooner if the higher projected rates are actually realized. The projected 1980 and 1985 populations shown in Table A-2 are based on a Population Council projection model and assume slight declines in fertility and mortality, no net migration, and annual growth rates of 3.4 percent. This means an addition of about 70-100 thousand persons per year to the population of the East Bank between 1975 and 1985.

Major shifts in population between Banks are also shown in Table A-2. In 1953, the West Bank claimed the majority of the population. By the 1961 census, the East Bank had a slight majority and the imbalance was further swelled by migration to the East Bank of persons displaced by the June 1967 war. The fraction of Jordan's population in the East Bank increased from 53 percent in 1961 to 71 percent in 1975.

#### POPULATION COMPOSITION BY HEALTH SECTOR

Table A-3 shows that about half the total Jordanian population is eligible for health care through membership in two special organizations: the Royal Medical Services (RMS) and the United Nations Relief and Works Agency (UNRWA). Those eligible for RMS care are a primary population of individuals employed in the military (including those on active duty, reserves, and retired) and in special nonmilitary agencies, such as the security forces. The dependents of these employees, based on RMS

TABLE A-2  
 POPULATION TRENDS FOR EAST AND WEST BANKS, 1953-1975<sup>a</sup>  
 (In Thousands, Includes Refugees and Displaced Persons)

Year	East Bank	West Bank	Total
1985	2,697	N/A	N/A
1980	2,273	N/A	N/A
1976	2,014	N/A	N/A
1975	1,949	N/A	N/A
1974	1,890	770	2,660
1973	1,831	746	2,577
1972	1,774	723	2,497
1971	1,723	694	2,417
1970	1,668	680	2,348
1969	1,600	650	2,250
1968	1,126	1,007	2,133
1967	1,074	977	2,051
1966	1,059	947	2,006
1961	901	805	1,706
1953	587	742	1,329

<sup>a</sup>Sources: 1953-1974: Department of Statistics, Statistical Yearbook, 1974.  
 1975-1976: Department of Statistics, Unpublished data.  
 1980-1985: Population Council, Unpublished data.

TABLE A-3  
POPULATION BY HEALTH SECTOR<sup>a</sup>  
(East Bank, 1975)

Health Sector	Number (in thousands)	Percent
<b>Royal Medical Services</b>		
Primary Military Population	82	5
Primary Nonmilitary Population	23	1
Dependent Population	315	16
<u>Subtotal</u>	420	22
-----		
<b>Refugees Registered with UNRWA</b>		
Eligible for Health Services	571	29
Other	52	3
<u>Subtotal</u>	623	32
-----		
<b>Other Civilian</b>	906	46
-----		
<b>TOTAL</b>	1,949	100

<sup>a</sup>Sources: Royal Medical Service and Reference 5,  
UNRWA, Reference 4.

hospital utilization rates, are estimated to be triple the number of the primary (employee and ex-employee) population. The total covered by the RMS is an estimated 20-25 percent of the population. This fraction is not firmly fixed, however, and can be substantially changed by RMS policies regarding eligibility of dependents and reserves for health care. Likewise, government policies on conscription and military service can affect the population served by the RMS.

An even larger share, 29 percent of the population, is eligible for health care through UNRWA. These are the 571,000 eligibles, or 92 percent of the 623,000 refugees registered with UNRWA.

#### GEOGRAPHICAL DISTRIBUTION OF POPULATION

The population of the East Bank is largely confined to a quarter of the land area along a strip on the western border. The balance is desert or semi-desert populated by scattered nomadic or semi-nomadic groups with a density of 3 persons per square mile. The settled areas, in contrast, had an estimated density of 273 per square mile in 1971.

The heaviest concentration of population is located in the northwest corner of the country of Jordan. The three largest towns (Amman, Zarqa, and Irbid) account for 6 of every 10 residents, and Amman alone accounts for 3 out of 10. Jordan is 70 percent urbanized (defined as places of 10,000 or more inhabitants plus certain administrative places irrespective of size). Table A-4 lists the population estimates for places of 5,000 or more inhabitants.

The five governorates of Jordan and their recent population trends are shown in Table A-4. The two largest, Amman and Irbid, have been growing at the fastest rates and now account for 85 percent of the total population.

These two largest governorates are expected to continue to grow fastest by attracting rural-to-urban migrants. The large cities in these areas are the major foci of expanding employment opportunities, as well as institutional activities. The new University of Yarmouk (with a pro-

TABLE A-4  
 DISTRIBUTION OF POPULATION  
 BY GOVERNORATE AND MAJOR TOWN  
 (April and May 1975)

Governorate/Town	Population	
	Number	Percent of Total
<b>Amman</b>		
Amman	652,000	34.3
Zarqa	244,700	12.9
Ruseifa	38,200	2.0
Madaba	27,300	1.4
Wadi Esseer	14,616	0.8
Suweileh	13,466	0.7
Sahab	8,709	0.5
Population Centers under 5,000	92,364	4.9
<u>Subtotal</u>	1,091,355	57.5
-----		
<b>Irbid</b>		
Irbid and Barqa	128,000	6.7
Ramtha	24,016	1.3
Husun and Husun Refugee Camp	15,788	0.8
Mafrak	15,081	0.8
Suf and Suf Refugee Camp	14,100	0.7
Ghaza Refugee Camp	9,844	0.5
Jarash	9,843	0.5
Shcna Shamalya	7,487	0.4
Noremah	7,189	0.4
Kureiyima	7,117	0.4
Masharieh	6,920	0.4
Kufrinja	6,494	0.3
Anjara	5,612	0.3
Wadi el Yabis	5,119	0.3
El Turra	5,057	0.3
Mazar Shamalya	5,029	0.3
Population Centers under 5,000	258,609	13.6
<u>Subtotal</u>	531,305	28.0
-----		

TABLE A-4 (continued)

Governorate/Town	Population	
	Number	Percent of Total
Balqa		
Salt	26,800	1.4
Abu Nuseir and Balqa Refugee Camp	44,014	2.3
Deir Alla	6,168	0.3
Population Centers under 5,000	47,278	2.5
<u>Subtotal</u>	124,260	6.5
-----		
Karak		
Karak	11,871	0.6
Tafila	11,016	0.6
Chor Safi	5,754	0.3
Population Centers under 5,000	73,713	3.9
<u>Subtotal</u>	102,354	5.4
-----		
Ma'an		
Aqaba	15,886	0.8
Ma'an	11,997	0.6
Population Centers under 5,000	22,193	1.2
<u>Subtotal</u>	50,081	2.6
-----		
<u>TOTAL</u>	1,899,355	100.0

<sup>a</sup>Source: Department of Statistics, Agricultural Quick Count, April and May 1975.

jected enrollment of 15,000) is to be in Irbid. Projections to 1980 and 1985 shown in Table A-5 assume that rural-to-urban migrants will continue to be attracted to Amman, resulting in a 4.4 percent growth rate at the expense of the populations of Balqa, Karak, and Ma'an. No net migration is assumed for Irbid; the result is a 3.2 percent annual growth rate. The basis of this assumption is that development of Irbid will be sufficient to retain migrants who would otherwise be attracted to Amman. Department of Statistics projections assumed equal growth in all areas and therefore were not used. See Table A-4 for a comparison.

#### AGE-SEX-COMPOSITION

The very young, the aging, and adult women tend to be heavy consumers of health services. Table A-6 shows that all governorates have the same age composition: 20-25 percent under age 5 and only 10-12 percent at ages 45 and older. The very young age structure of Jordan is depicted in Figure 1. It shows that the population under age 15 represents half the total.

One consequence is a very high young-age dependency not only for health, but for social and economic services. In 1976 the ratio of education to health expenditures was 2.92. Health and education expenditures are more nearly equal in developed countries, where birth rates, death rates, and dependency ratios are low. In developed countries, dependency ratios are well below 100 (about 80 dependent age per 100 ages 15-64).

In Jordan, there are 114 persons of dependent age (under 15 and 65 and over) per 100 persons of economically productive age (15-64). This ratio will continue to be unfavorable until annual numbers of births decline. Age-sex population estimates are shown in Table A-7.

Women of reproductive age (15-44) are another population segment important to health planning. In 1975, they numbered 363,000, or one-fifth of the total population. The data in Table A-7 shows a doubling of their numbers between 1961 and 1975, but no change in their percentage of total population. In 1974, these women produced about 82,000 births for a general fertility rate of about 225 births per 1,000 women ages

**TABLE A-5**  
**DISTRIBUTION OF THE POPULATION OF JORDAN BY GOVERNATE<sup>a</sup>**  
 (1961 and 1975, with Projections to 1980 and 1985)

Governorate	1961		1975			1980	1985
	Number	Percent of Total	Number	Percent of Total	Percent Increase 1975 Over 1961	Projected Number	Projected Number
Amman	433,618	48.1	1,092,130	57.5	151.9	c 1,354,000	c 1,680,000
Irbid	273,976	30.4	531,819	28.0	94.1	d 622,000	d 729,000
Balqa	79,057	8.8	123,458	6.5	56.2	e 134,000	e 145,000
Karak	67,211	7.5	102,565	5.4	52.6	f 111,000	e 120,000
Ma'an	46,914	5.2	49,383	2.6	5.3	f 55,000	f 60,000
<b>TOTAL</b>	<b>900,776</b>	<b>100.0</b>	<b>1,899,355</b>	<b>100.0</b>	<b>110.9</b>	<b>2,276,000</b>	<b>2,734,000</b>

<sup>a</sup>Sources: 1961: Department of Statistics, Statistical Yearbook, 1974.  
 1975: Department of Statistics, Agricultural Quick Count, April and May, 1975.  
 1980, 1985: See below.

<sup>b</sup>Assuming a 4.4 percent annual growth rate.

<sup>c</sup>Assuming a 3.2 percent annual growth rate.

<sup>d</sup>Assuming a 1.6 percent annual growth rate.

<sup>e</sup>Assuming a 2.0 percent annual growth rate.

<sup>f</sup>Department of Statistics projections assume equal growth rates for all governorates and therefore were not used. For 1980 they were (in thousands): Amman (1,191), Balqa (148), Irbid (655), Karak (121), Ma'an (78), and total (2,293).

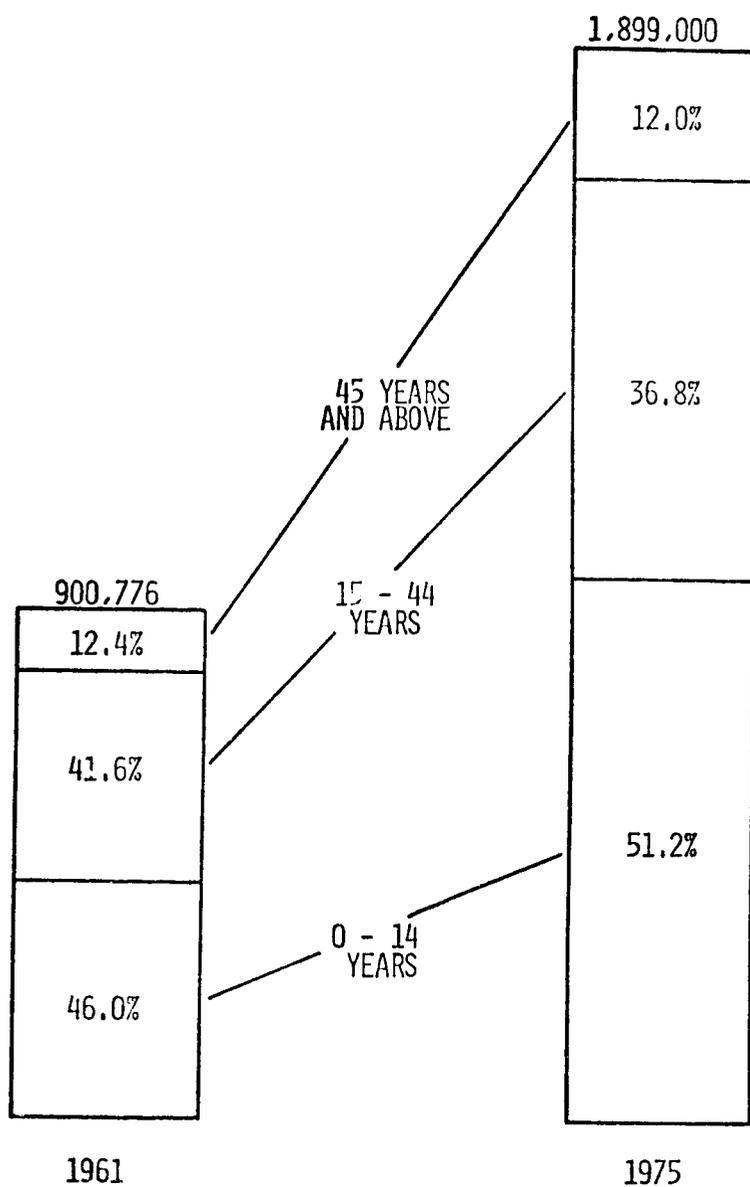


Figure 1 Age Distribution of Jordan Population

TABLE A-6  
AGE DISTRIBUTION OF THE POPULATION OF JORDAN,  
BY GOVERNATE<sup>a</sup>  
(1975)

Age Group	Amman		Irbid		Balga		Karak		Ma'an	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Under 5 Years	223,887	20.5	123,914	23.3	28,642	23.2	25,231	24.6	11,704	23.7
5-14	327,639	30.0	155,291	29.2	34,691	28.1	27,897	27.2	15,161	30.7
15-24	188,938	17.3	89,877	16.9	20,124	16.3	16,000	15.6	8,691	17.6
25-44	220,610	20.2	98,918	18.6	24,692	20.0	21,539	21.0	9,136	18.5
45-64	100,476	9.2	47,864	9.0	11,358	9.2	8,308	8.1	3,802	7.7
65 and Over	<u>30,580</u>	<u>2.8</u>	<u>15,955</u>	<u>3.0</u>	<u>3,951</u>	<u>3.2</u>	<u>3,590</u>	<u>3.5</u>	<u>889</u>	<u>1.8</u>
TOTAL	1,092,130	100.0	531,819	100.0	123,458	100.0	102,565	100.0	49,383	100.0
PERCENT OF TOTAL	57.5		28.0		6.5		5.4		2.6	

<sup>a</sup>Age distribution determined on the basis of data from the Multipurpose Household Survey (1975).

Sources: Department of Statistics, Agricultural Quick Count, April and May 1975.

Department of Statistics, Multipurpose Household Survey, 1975.

**TABLE A-7**  
**AGE-SEX COMPOSITION: EAST BANK, 1961, 1975, and 1985<sup>a</sup>**

Age/Sex	1961 <sup>b</sup>		1975 <sup>c</sup>		1985 <sup>d</sup>		Percent Increase	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	1961-1975	1975-1985
<b>Under 5 years</b>								
Male	87,862	9.8	212,728	11.2	256,000	9.5	142.1	120.3
Female	85,140	9.4	199,432	10.5	242,000	9.0	134.2	121.3
<b>Subtotal</b>	<b>173,002</b>	<b>19.2</b>	<b>412,160</b>	<b>21.7</b>	<b>498,000</b>	<b>18.5</b>	<b>138.2</b>	<b>120.8</b>
<hr/>								
<b>5 - 14</b>								
Male	124,017	13.8	292,501	15.4	391,700	14.5	135.9	133.9
Female	117,799	13.0	267,809	14.1	367,000	13.6	127.3	137.0
<b>Subtotal</b>	<b>241,816</b>	<b>26.8</b>	<b>560,310</b>	<b>29.5</b>	<b>758,700</b>	<b>28.1</b>	<b>131.7</b>	<b>135.4</b>
<hr/>								
<b>15 - 24</b>								
Male	89,805	10.0	159,546	8.4	215,100	9.1	77.7	153.6
Female	81,252	9.0	163,345	8.6	251,600	9.3	101.0	154.0
<b>Subtotal</b>	<b>171,057</b>	<b>19.0</b>	<b>322,891</b>	<b>17.0</b>	<b>490,700</b>	<b>18.4</b>	<b>88.8</b>	<b>153.8</b>
<hr/>								
<b>25-44</b>								
Male	104,190	11.6	176,640	9.3	314,400	11.7	69.5	178.0
Female	99,524	11.0	199,432	10.5	295,200	10.9	100.4	148.0
<b>Subtotal</b>	<b>203,714</b>	<b>22.6</b>	<b>376,072</b>	<b>19.8</b>	<b>609,600</b>	<b>22.6</b>	<b>84.6</b>	<b>162.1</b>
<hr/>								
<b>45 - 64</b>								
Male	40,820	4.5	91,169	4.8	128,900	4.6	123.3	141.3
Female	41,987	4.7	81,672	4.3	117,100	4.3	94.5	143.4
<b>Subtotal</b>	<b>82,807</b>	<b>9.2</b>	<b>172,841</b>	<b>9.1</b>	<b>246,000</b>	<b>9.1</b>	<b>108.7</b>	
<hr/>								
<b>65 and over</b>								
Male	14,384	1.6	32,289	1.7	43,200	7.6	124.5	133.8
Female	13,996	1.6	22,792	1.2	45,100	1.7	62.8	197.9
<b>Subtotal</b>	<b>28,380</b>	<b>3.2</b>	<b>55,081</b>	<b>2.9</b>	<b>88,300</b>	<b>3.3</b>	<b>94.1</b>	<b>160.3</b>
<hr/>								
<b>All ages</b>								
Male	461,078	51.2	964,873	50.8	1,379,300	51.1	109.3	143.0
Female	439,698	48.8	934,482	49.2	1,318,100	48.9	112.5	141.1
<b>Subtotal</b>	<b>900,776</b>	<b>100.0</b>	<b>1,899,355</b>	<b>100.0</b>	<b>2,697,400</b>	<b>100.0</b>	<b>110.9</b>	<b>142.0</b>

<sup>a</sup>Sources: 1961 Jordanian Census;  
Department of Statistics, Multipurpose Household Survey, 1974 and 1975;  
Department of Statistics, Agricultural Quick Count, April and May, 1975;  
Population Council Projections.

TABLE (continued)

A-7

<sup>b</sup>Excludes population of West Bank for purposes of comparability

<sup>c</sup>Represents total population as derived from the Agricultural Quick Count (1975); the age and sex distribution of the population were determined on the basis of data from the Multipurpose Household Survey (1975).

<sup>d</sup>Unpublished projections prepared by the Population Council.

15-44. For planning of future maternal and child health needs, the population of women ages 15-44 is multiplied by a fertility rate of about 225 per 1,000 to estimate an expected number of annual births. In 1985, for example, 547,000 women ages 15-44 are projected. The expected number of births in 1985 (assuming current fertility rates) would be  $547 \times 225$  or 123,075.

## FERTILITY

### Levels and Trends

The birth rate in Jordan is estimated to be in the range of 45 - 50 births per 1,000 population per year. This level has been maintained as long as recorded information is available and is consistent with the young broad-based age structure of Jordan's population. Birth registration statistics are estimated to be more than 90 percent complete and thus provide useful indices of fertility.

A second source is the 1972 National Fertility Sample Survey (NFSS). It has provided not only retrospective fertility data, but also a population base of women of reproductive age. Projections from this base and calculation of annual fertility indices have been made by the Population Council. Table A-8 shows the levels of these indices for five year periods from 1970-74 through 1980-84. The projections assume a small decline in fertility rates. Annual numbers of births will increase because of the rapidly growing number of women of reproductive age. Women ages 15-44 are projected to number 547,000 by 1985, a 50 percent increase from 1975. Department of Statistics projections were not used because they do not include age-sex detail and do not project fertility and mortality separately.

The projections assume a slight improvement in mortality such that the proportion of newborn daughters surviving to the end of the reproductive period rises from 78 percent to 83 percent during the ten year period. Also projected is a 13-percent decline in age-specific fertility over a ten-year period. This is summarized by the total fertility rate (TFR) dropping from 6.8 to 5.9 per woman. The TFR is the hypothetical number of live births a woman would have if the age

TABLE A-8  
 ESTIMATED AND PROJECTED LEVELS OF  
 FERTILITY: EAST BANK  
 1970-74 and 1980-84

	1970-74	1975-79	1980-84
Crude Birth Rate per 1,000 Population	46.8	46.2	45.1
General Fertility Rate per 1,000 Women 15-44	245.2	232.5	223.2
Annual Number of Births	82,900	96,600	111,600
Total Fertility Rate Per Woman	6.8	6.3	5.9

<sup>a</sup>Source: Population Council, unpublished projections  
for East Jordan, January 1975

specific birth rates of a particular year were to apply throughout the childbearing period.

Table A-9 shows the age distribution of the TFR, which is assumed to remain unchanged: each age group experiences a 13-percent decline in birth rates between 1970-74 and 1980-84. The data indicates that even with the decline, more than one out of every three women between the ages of 20 and 35 will give birth during any given year of the 1980-84 period.

#### Health implications

The age pattern of fertility in Jordan is broad based. That is, childbearing is not concentrated in a few years but rather is spread out over the entire fertile period. Fertility under age 20 is somewhat curtailed by age 17 as the legal minimum for marriage. Marriage is nevertheless early and universal. Twenty-five percent of women are married by age 17, 50 percent by age 20 and 75 percent by age 23. Table A-10 shows the marital status distribution of East Bank women, as derived from the 1972 NFSS.

Strong norms both to marry and to procreate are reflected in the rapid rise in the number of children born according to age. From less than 1 child per ever-married women under age 20, the average increases to 2.4 children by ages 20-24 and reaches 8.2 by the end of the childbearing period at ages 40-49. By that time 53 percent of the mothers have had 9 or more children (bottom panel of Table A-11).

A strong need for protective and preventive maternal health care is demonstrated in Tables A-11 and A-12. Fertility is both early and late; it is maintained at a high level. The children ever-born figures should be inflated by at least 15 percent to obtain the total number of pregnancies needing care, since some result in fetal loss (stillbirths).

The fertility data also implies a strong need for infant and child care. A fair portion of total fertility is lost through high infant and child mortality rates. About 1 of 10 live births succumb during the first year of life, and unusually high death rates prevail up to age 5. The resulting loss is reflected in the number of surviving

TABLE A-9  
ESTIMATED AND PROJECTED BIRTH RATES BY AGE:  
EAST BANK, 1970-74 and 1980-84<sup>a</sup>

Age of Woman	Age-Specific Birth Rate Per 1,000 Women (ASBR)		Percent Distribution ASBR
	1970-74	1980-84	Both periods
15 - 19	144	125	10.5
20 - 24	363	315	26.5
25 - 29	426	370	31.5
30 - 34	393	341	29.0
35 - 39	24	21	2.0
40 - 44	7	6	.5
TOTAL FERTILITY RATE	6.8	5.9	

<sup>a</sup>Source: Population Council, unpublished projections for East Jordan, January 1975.

TABLE A-10  
 PERCENT DISTRIBUTION OF WOMEN AGES 15 TO 49 YEARS,  
 BY MARITAL STATUS (1972, East Bank) a,b

Age	Single	Married	Widowed	Divorced or Separated
All women, 15 to 49 years	25.2	70.6	2.4	1.8
15 to 19 years	71.0	28.3	0.1	0.7
20 to 24 years	28.7	67.8	1.3	2.1
25 to 29 years	7.0	89.4	1.3	2.3
30 to 34 years	3.7	90.5	3.3	2.5
35 to 39 years	2.9	92.2	3.2	1.7
40 to 44 years	1.9	90.8	5.5	1.8
45 to 49 years	4.9	81.1	11.3	2.7

<sup>a</sup>The base of the percentage is the number of women of known marital status in each age group. Percentages may not add to 100.0 due to rounding.

<sup>b</sup>Source: National Fertility Sample Survey.

TABLE A-11  
 CHILDREN EVER BORN AND CHILDREN SURVIVING, 1972 <sup>a</sup>  
 (Per Ever-married Woman)

Age of woman	Children Ever Born (1)	Children Surviving (2)	Ratio (2)/(1)
15-19	.8	.7	.88
20-24	2.4	2.2	.92
25-29	4.4	3.9	.89
30-34	6.1	5.4	.89
35-39	7.5	6.5	.87
40-49	8.2	6.8	.83
All ages	5.1	4.4	.86

ALL MOTHERS: DISTRIBUTION OF CHILDREN EVER BORN<sup>a</sup>

Age of Woman	Number	Birth Order (Percent)					
		1-2	3-4	5-6	7-8	9-10	10+
15-19	508	96	4	-	-	-	-
20-24	936	55	36	8	1	-	-
25-29	1104	17	35	34	12	1	-
30-34	953	7	18	32	30	10	3
35-39	771	5	9	18	30	24	13
40-49	921	7	6	13	22	28	25
All ages	5214	27	20	20	17	11	7

<sup>a</sup>Source: Reference 6 and unpublished tabulations, Department of Statistics.

TABLE A-12  
 CHILDREN EVER BORN AND CHILDREN SURVIVING  
 PER WOMAN AGES 40-49: 1972<sup>a</sup>

	Children Ever born (1)	Children Surviving (2)	Ratio (2)/(1)
National	8.2	6.8	.83
Urban	8.1	6.8	.84
Semi-urban	8.7	7.5	.86
Rural	8.3	6.5	.78
Illiterate	8.6	7.0	.81
Preparatory and Primary	7.3	6.5	.89
Secondary/Vocational	4.7	4.5	.96
University	-	-	
Socio-economic Class			
Class 1	8.6	6.9	.80
Class 2	8.0	6.9	.86
Class 3	5.3	5.0	.94
Age of First Marriage			
15	9.3	7.2	.77
15-19	8.5	7.0	.82
20-24	7.7	6.7	.87
25-29	5.6	4.7	.84
30-34	2.9	2.9	-
35-39	1.8	1.5	-
40-49	-	-	-

<sup>a</sup>Source: Reference 6 and unpublished tabulations,  
 Department of Statistics.

children as a fraction of all children ever born (last column of Tables A-11 and A-12).

In view of the expense of maternal and child health services, not to mention the economic and other hardships on the family, the present pattern of high fertility-high mortality is costly and inefficient. Some of the variables in Tables A-11 and A-12 give clues that may aid formulation of effective preventive maternal and child health programs:

1. Age of mother. Statistically, children born to mothers in their early 20's have the best chance for survival. The Jordanian data supports the findings of the Population Council for a range of other countries. If births were more concentrated in that optimum period of the childbearing span, then more would survive. Survival rates are lowest for children born to the very young and the very old.
2. Age at first marriage. Similar to the age of the mother, the early 20's as a marriage age are the optimum for survival of the children. Those married very young, especially under age 15, and those married at relatively older ages have proportionately higher mortality rates for their offspring.
3. Urban/rural residence. The data in Table A-12 shows unusually high infant and child mortality for those living in rural areas.
4. Class. The data for both educational attainment and socioeconomic class demonstrates inequalities in the survival of children. The ratio of surviving to all children ever born is near .80 for illiterates and those in the lowest socioeconomic class (Class 1). Clearly, many of these deaths are preventable.
5. Birth order. Although there is no data available for Jordan, all evidence from other countries, such as the United States and several Latin American countries, points to a strong positive correlation between

infant mortality and birth order. The relationship is also largely independent of maternal age and especially strong at the younger ages. The distribution of annual births by order is given in Table A-13. Nearly one third of the births are first or second, one-third orders 3-5, and one third 6th or higher.

A program of preventive health care should therefore consider prevention of high-order births at relatively young maternal ages, where the risk of loss of the infant is especially high.

6. Attendants at birth. Delivery of the newborn in hospitals or outside hospitals by trained midwives is associated with low levels of infant mortality. Since a large percentage of infant death occurs in the first few days or even hours after delivery, trained birth attendance often makes a critical difference. Since only 38 percent of deliveries in Jordan are attended by trained personnel, there would appear to be room for the introduction of new health cadres in this vital area.

## MORTALITY

### Levels and Trends

The basic fact of gross underregistration of deaths seriously limits any interpretation of mortality data. It is commonly accepted that only about 25-35 percent of all deaths are registered and that, consequently, recorded death statistics are of no use in assessing the level of mortality. For example, according to the 1974 Statistical Yearbook, the average annual number of deaths during 1970-74 is only about 6,625, as compared with an estimated 25,800.

The above-mentioned estimate yields a crude death rate of 14.5 per 1,000 population for 1970-74 and is based on Population Council estimates. These estimates are derived from population models of interrelations between age structure, growth rates, and surviving population. Thus, mortality levels are actually derived from censuses (1961) and surveys (1972 NFSS), rather than from vital statistics. Such figures are

TABLE A-13  
DISTRIBUTION OF BIRTHS, BY ORDER OF BIRTH: 1973<sup>a</sup>

Birth Order	Percent <sup>b</sup>
1st birth	17.0
2nd birth	13.9
3rd birth	13.3
4th birth	12.8
5th birth	11.4
6th birth	9.8
7th birth	8.1
8th birth	5.9
9th birth	3.6
10th birth and over	4.1
Median birth order	3.9

<sup>a</sup>Source: Statistical Yearbook, 1973.

<sup>b</sup>The base of the percentages is the number of births of known order. Percentages may not add to 100.0 due to rounding.

hypothetical but show a general decline in the crude death rate since 1960.

1950-54	21.0
1955-59	21.1
1960-64	18.3
1965-69	16.0
1970-74	14.5

Except for the 1970-74 estimate prepared by the Population Council for the East Bank, all of the above estimates were prepared by the United Nations and include East and West Banks. The crude death rate of 14.5 estimated for the East Bank for 1970-74 is close to the rate of 14.9 estimated for the West Bank for 1974.

#### Life Expectancy

Life table estimates provide an index of mortality that is independent of changes in age structure. The age structure has been changing because of continued high fertility and because of the major influx of refugees and displaced persons. But declines in the crude death rate reflect real improvement in age-specific mortality; this is documented by the following data on expectation of life at birth:

1950-54	44.5
1955-59	47.2
1960-64	49.7
1965-69	52.2
1970-74	56.2

Again, the last figure above refers to the East Bank estimates made by the Population Council and the other data to both East and West Banks, as estimated by the United Nations.

The above trend of improving mortality is corroborated by various estimates prepared from census and survey data on age distributions of women, their fertility patterns and proportions of their children surviving. Such estimates have been made for 1961 and 1972 because of the census and fertility survey, respectively, in those years. The

estimates of Ma'ayta of the Jordan Ministry of Health show a gain in life expectancy for both males and females between 1961 and 1972:

	<u>1961</u>	<u>1972</u>	<u>Gain in Life Expectancy</u>
Male	45.8	57.4	11.6
Female	46.5	59.1	12.6

The above estimates are close to unpublished data prepared by the United States Census Bureau.

The 1972 life tables for Jordan indicate a sex differential in favor of females. This is a pattern that is common to almost all modern industrial societies and becomes more pronounced with increasing development. The trends since 1961 for Jordan follow the expected pattern.

The gain in life expectancy in Jordan has been brought about by improvements in infant mortality. Infant mortality is discussed in the next section; the correlation with expectation of life is shown here. The data below shows that even greater major gains in expectation of life at birth in Jordan would be possible if future health programs were to cut infant mortality rates to half their 1972 levels; an example is given for males. (Females would show similar trends.)

	<u>1961</u>	<u>1972</u>	<u>Future Year</u>
Male infant mortality rate	159.3	91.3	45.7
Male life expectancy	45.8 yrs.	57.4 yrs.	65.1 yrs.
Gain in life expectancy (from 1961 level)	-	11.6 yrs.	19.3 yrs.

#### Age Pattern

The first column of the life table ( $n\% x$ ) shows the probability of dying per 1,000 for persons surviving to the stated beginning of the age group. The expected U-shaped pattern prevails for both males and females, with rates highest for the very young and very old. Levels for the young (under age 5) are particularly high, however, as compared with other countries. The probability of death for ages 1-4, for example, is

about 20 times that for the United States.

#### Infant Mortality

The infant mortality rates associated with the estimated life tables show improvement for both males and females:

	<u>1961</u>	<u>1972</u>
Male	159.3	91.3
Female	143.2	80.9

The above trends indicate a 44 percent decline in infant mortality. Unpublished Population Council estimates are 25 percent higher, comparing their 1970-74 figures with the above for 1972. A 1971 estimate by Darwish on the other hand, is 30 percent lower. All estimates show substantial declines in infant mortality. While the figures are subject to a wide margin of error, those tabulated above represent mid-range estimates.

Despite substantial declines, the current level of infant mortality in Jordan is high by international standards. The rate is near 10 per 1,000 live births in some countries of northwestern Europe. This means that it is socially and biologically possible for as few as 1 percent of all births to die in infancy, whereas the comparable figure for Jordan is 9 percent. The difference between these figures can be considered preventable; that is, as many as 8 percent of the total births in Jordan result in deaths in the first year of life that are preventable. In annual numbers, 8,000 are preventable infant deaths.

Certain variables such as maternal age, birth order, urban/rural residence, class, and medical service utilization that affect the survival of children are discussed in a later section. Estimates of differential infant mortality derived by Ma'ayta from the 1972 Fertility Survey further document the existence of high-risk population subgroups on which preventive health care should concentrate (see Table A-14).

Most of the differentials for which data is available probably reflect differences in social class and are largely economic differences. Above-average income and social position are associated with urban

residence, high educational levels, and presence of a husband. Sub-populations with unusually high infant mortality are those living outside urban areas, the illiterate, mothers without husbands, and the lowest socioeconomic classes.

#### Neonatal and Postneonatal Causes

In place of missing and deficient data for Jordan, data from comparable populations can be used for a more detailed analysis of infant mortality. The levels and disease patterns should apply. The data indicates a neonatal mortality rate (deaths under 28 days) of 30 per 1,000 live births and a postneonatal rate (deaths 28 days - 11 months) of 50 per 1,000 live births. Cause of death data indicate that prematurity (alone or in association with other causes) accounts for two-thirds of all neonatal deaths. The major causes of postneonatal deaths were different: diarrheal disease (alone or in combination, one third), respiratory infection (one-fourth) and malnutrition (mainly marasmus, one-fourth).

Thus, the postneonatal deaths both account for the majority of all infant deaths and are made up of largely preventable causes. It is precisely these causes that have been virtually eliminated in countries of low infant mortality (10-20 deaths per 1,000 live births).

#### Mortality of Ages 1-4

Whereas death rates for ages 5 and older are only 2-3 times those of low-mortality countries, early childhood mortality (ages 1-4) in Jordan is 10-20 times as high as that in low-mortality countries. The death rates for this age group have been estimated by Ma'ayta from the 1961 census and 1972 fertility survey data. The trend shows a considerable reduction in the annual death rate per 1,000, with females demonstrating the greater improvement.

	<u>1961</u>	<u>1972</u>
Male	34.1	10.3
Female	34.2	9.4

TABLE A-14  
 INFANT MORTALITY BY SOCIAL CHARACTERISTIC:  
 EAST BANK, 1972

Social Characteristic	Deaths under age 1 per 1,000 live births
Residence:	
Urban	78
Semi-urban and rural	96
Mother's education:	
Illiterate	96
Preparatory	75
Secondary and university	53
Socioeconomic class:	
Class 1	91
Class 2	75
Class 3	54
Marital Status:	
(Married once) husband present	85
Husband not present	105
Religion:	
Moslem	86
Christian	55

Still, the 1972 death rates for ages 1-4 shown above are high. As a consequence of early childhood and infant mortality, large proportions of births do not survive to school age.

### Emigration

A strong emigration stream of Jordanians who work and study abroad is evident from statistics dating from the 1961 census. Table A-15 shows that the emigrants are mainly men between ages 20-40, among whom the percentage abroad was 8.6-17.4 in 1961. A similar pattern is evident from the 1976 household survey data on Jordanians abroad. Evidently much of this emigration is not permanent and involves return migration of workers and students who then marry or rejoin their families in Jordan. That much of the emigration is compensated by return migration or immigration of persons from neighboring Arab countries is supported by the data in Table A-15. Out of gross totals of migrants numbering over a million, the net loss per year is only in the tens of thousands. Since 1970, however, the net loss has been increasing.

### Internal migration

Although data is extremely scarce and only indicative, there is evidence of considerable internal migration in Jordan. Between 1961 and 1975, the proportion of the population that is urban increased from 44 to 70 percent. This indicates considerable rural-to-urban migration. That most migration has been to Amman is evident from the 150-percent increase in the population of the Amman Governorate between 1961 and 1975.

The districts of Amman and Zarqa now constitute half the population of Jordan. Irbid, the third largest city, is also a growth point and focus of rural-urban migration. The Irbid Governorate nearly doubled in population between 1961 and 1975.

In addition to Amman, Zarqa, and Irbid, a fourth growth point is situated in Aqaba, Jordan's only port, at the extreme southern point of the nation. Rapid expansion of shipping and plans for industrial

TABLE A-15  
 JORDANIANS LEAVING AND ENTERING JORDAN, 1963-1975<sup>a</sup>

Year	Departures	Arrivals	Departures Minus Arrivals
1963	186,203	164,630	21,573
1964	213,557	188,706	24,851
1965	287,029	245,374	41,655
1966	343,468	321,201	22,267
1967	331,094	307,103	23,991
1968	374,540	344,245	30,295
1969	386,052	358,476	27,576
1970	394,555	385,615	7,940
1971	362,705	341,210	21,495
1972	379,655	345,232	34,423
1973	464,468	448,112	16,356
1974	583,409	547,929	35,480
1975	654,628	615,311	39,317
TOTAL, 1963-1975	4,961,363	4,614,144	347,219
TOTAL, 1968-1975	3,600,012	3,357,130	212,882

<sup>a</sup>Source: 1963 - 1974: Statistical Yearbook, 1974.  
 1975: Unpublished data, Department of Statistics.

development of Aqaba point to the growth of this city. A town planning department has been established to deal with the anticipated growth and urbanization of that city.

Special censuses of Amman conducted in 1961 and again in 1971 give an idea of the magnitude of the migration component of its growth. If we assume an annual natural increase rate of 300 percent during the ten-year period, the expected 1971 population of Amman would be only 414,000; the actual census count was 520,720. The difference (106,720) is an estimate of net migration. It accounts for half the growth of the city during the 1960's.

The feature of greatest significance, however, is the localization of massive migration to Amman. The city has grown three times as fast as the balance of Jordan during the past two decades. This process is common to developing countries, wherein cities of 100,000 or more increased three fold between 1960 and 1970. Amman is a classic example of a primate city - one whose size dominates all other cities in the nation. Primate cities tend to be in small countries where there is a short history of urbanization. Amman had only 10,000 people in 1930 and 60,000 in 1945; by 1966 its population grew to 322,000 and in 1975 reached 652,000.

Consequences of the primacy of Amman are the concentration of administrative, commercial, educational, and health facilities in that city. One particular problem is an imbalance in the distribution of health resources: there is little left over for the balance of Jordan with the growing demands for health care in Amman.

A second major problem concerns effects on the health status of the population in Amman. Massive and rapid internal migration has resulted in an acute housing shortage, shanty-towns, inadequate and contaminated water supplies, and pockets of unemployment. A particular problem for Amman are uncontrolled growth pockets like Mahata and Ashrafieh, which according to a United Nations (UNESOB) survey in 1971, have unusually poor living standards and remain unintegrated into the city. Many of

the residents of these areas are refugees and displaced persons who migrated from force of external events. Others moved in by choice; the search for employment was cited by about half as their reason for moving.

Planned decentralization, with location of suitable employment opportunities outside of Amman, would arrest these trends. The planning of health facilities and location of manpower should be coordinated with such development plans. Particular growth points to plan for include (1) Irbid and its new Yarmouk University and industries; (2) The Jordan Valley, which is a center of external assistance; and (3) Aqaba, Jordan's rapidly expanding port.

APPENDIX B

CURRENT HEALTH STATUS

## INTRODUCTION

The objectives of this appendix are:

1. To describe the magnitude of the toll presently levied by disease on the lives and welfare of the population of the East Bank of the Kingdom of Jordan.
2. To identify the specific population groups that are paying the highest toll to disease.
3. To identify the disease conditions responsible for this toll.
4. To determine and quantify the etiologic factors of the disease conditions identified in the preceding objective.

These objectives will be met in the following order of presentation:

1. An overall description of the level of mortality and morbidity observed in the Kingdom of Jordan.
2. A specific description of mortality and morbidity observed in selected population subgroups characterized by their greater vulnerability.
3. An analysis of the available data in order to parcel out the etiologic responsibility for the current state of health.

It must be pointed out that most statements of fact are only as valid as the data they are based on. In that regard, a deliberate attempt was made to describe the actual magnitude of the problem only in terms of measurements for which data of acceptable quality was available. Otherwise the statements of fact are limited to the description of the order of magnitude of the problem in relative terms. In some other instances special ad hoc surveys were conducted in order to obtain quantitative evidence that would not otherwise have been available. The methodologies of these ad hoc surveys must be evaluated in the context of the existing resources and time constraints.

## PROPORTIONATE DISTRIBUTION OF DEATHS BY AGE AND CAUSE OF DEATH

The severe underreporting of death and the neglect or inability to determine the cause of death at the local level (mayor's office), renders the value of allocating death responsibility to specific causes or categories of causes contingent on the level of the following two sources of bias:

1. That deaths at younger ages are more likely to go unreported than deaths after adulthood.
2. That deaths among the young are more likely to be caused by those diseases with quick outcomes, such as diphtheria, measles, pertussis, and severe respiratory and digestive disorders.
3. That 26 percent (1669) of the reported deaths occurred in hospitals.

Examination of the distribution of causes of death by age and cause among specified causes of death is shown in Table B-1.

Infant deaths comprise at a minimum 27 percent of all reported deaths. In fact, it is estimated that four infant deaths go unreported for each reported infant death. These deaths are primarily due to diarrhea and infectious respiratory disorders. These two cause categories alone account for almost two-thirds of infant deaths and maintain their dominant role until the age of five, following which accidents assume a dominant position during the school years. In adulthood degenerative diseases affecting the vascular system become the major cause of death. It is thus clear that a program of health care which aims at increasing the life expectancy of the Jordanian population must emphasize the potential impact of each saved infant life and direct its resources toward preventive and curative programs for this age group.

TABLE B-1

PERCENT DISTRIBUTION OF KNOWN CAUSES OF DEATH BY CAUSE  
FOR SELECTED AGE GROUPS, 1974<sup>a</sup>

Code	Cause of Death	AGE				
		Less than 1	1 - 4	5-14	15 and over	All Ages
26-30	Vascular diseases	4	7	17	44	23
18,19,39	Neoplastic diseases	N/A	1	7	10	5
31-33	Respiratory diseases	28	18	10	17	20
3,4	Enteritis & Diarrhea	36	26	7	N/A	16
47,48	Accidents & Injuries	1	9	25	12	9
43,44	Perinatal causes	15	N/A	N/A	1	6
22,23	Malnutrition, Anemias	6	4	3	1	3
	Other known causes	15	35	30	15	19
<sup>b</sup>	All known causes	100 (1733)	100 (627)	100 (342)	100 (2333)	100 (5035)
	All reported deaths	28 (1788)	10 (654)	6 (368)	56 (3636)	64 (6445)

<sup>a</sup>Source: Statistical Yearbook, 1974, Department of Statistics.

<sup>b</sup>Excludes codes 45,46.

## MORBIDITY AND HEALTH STATUS

Measurements of successive stages of morbidity will be described in the following section. These stages can be broadly characterized according to the stage of disease severity as follows:

1. Inpatient morbidity stage. This stage includes the most severe forms of the disease originating in the community, with the exception of delivery, which is a normal, uncomplicated event carried out in an inpatient setting for precautionary measures.
2. Outpatient morbidity stage or ambulatory care level. This level includes primary and followup care, and pertains to disease stages that are either less severe than the above or easier to treat. It also includes predisease and health stages which will be ascertained through the measurements of selected preventive medical services.
3. Disease in the community. This measurement represents the actual magnitude of disease in the population, including all stages of severity. The availability of such data is unfortunately limited to a few categorical diseases, or services such as nutrition surveys, school health surveys, and tuberculosis and malaria control programs.

Environmental health. This is considered an indicator rather than a measurement of disease magnitude in the community and will be described separately.

### Inpatient Morbidity

It is estimated that four out of every 100 East Bank residents were hospitalized (government, military, or private) for varying lengths of time during 1975. This represents a total number of 80,410 admissions, the vast majority of which consist of one admission only per hospitalized patient. The rate of hospitalization appears to have increased by 18 percent between 1972 and 1975. This is shown in Table B-2 which uses the hospital morbidity surveys of 1972 through 1975 and the demographic estimate of population size for each of these years.

TABLE B-2

ANNUAL HOSPITALIZATION RATE PER 1000 POPULATION 1972 TO 1975,  
KINGDOM OF JORDAN<sup>a</sup>  
(EAST BANK ONLY)

Year	No. of Admissions	Population Estimate	Hospitalization Rate per 1000	Percent Relative Increase <sup>b</sup>
1972	61,431	1,774,000	34.6	----
1973	68,927	1,831,000	37.6	9
1974	77,153	1,890,000	40.8	8
1975	80,410	1,899,355	41.2	1

<sup>a</sup>Source: Morbidity Statistics in Hospitals 1972-1975.

<sup>b</sup>Rate in given year minus rate in preceding year as a percent of the preceding year.

Table B-2 also shows a dramatic slowdown in the rate of admission to hospitals. This slowdown (1 percent relative increase in 1975), coupled with the fact that the hospital occupancy rate in 1975 was low (53 percent private, 59 percent RMS, 74 percent government), implies that the need for hospitalization is being met and that planning of medical care facilities should focus away from increasing the number of inpatient beds. However, these are aggregate figures for the country and it does not follow that each health care sector or region in the country conforms to this situation.

Five categories of health care providers have available inpatient facilities and admit patients. These are the government hospitals, the Royal Medical Service hospitals, the University of Jordan Hospital, the private hospitals, and the charity hospitals. All except University Hospital admission statistics prior to 1976 and none of these four has a distinct target population which allows the derivation of comparative rates of hospital admissions. Furthermore, one sector (RMS) serves a population with hospitalization uses that are likely to be substantially different from those of the population at large because of the preponderance of healthy young recruits.

In discussing the rate of hospitalization by region, it must first be noted that that region is defined as a mohafazzat. Thus five such regions exist in the East Bank with accountable admissions for 1975 only, and with estimated target populations. Comparative annual rates of hospitalization by region are shown in Table B-3.

TABLE B-3  
ANNUAL HOSPITALIZATION RATE PER 1000 POPULATION BY REGION, 1975<sup>a</sup>  
(EAST BANK ONLY)

Region	No. of Admissions	Est. Pop.	Rate/1000
Amman	42,294	1,092,130	38.5
Balqa	3,894	123,458	30.0
Irbid	22,760	531,819	40.4
Karak	8,460	102,565	78.3
Ma'an	2,645	49,383	51.3
TOTAL	80,043	1,899,355	41.2

<sup>a</sup>Source: Morbidity Statistics in Hospitals 1972 - 1975.

This table shows two distinct regional differences. First, Balqa has a clearly lower rate of hospitalization. This may be due to lower utilization of hospitals for deliveries. Second, there is a substantially greater rate of admission in the Karak and Ma'an regions that cannot be ascribed to easier access, but rather may be due to either more liberal admission criteria, or fewer nonhospital based medical care facilities, or yet to a greater prevalence of disease which is severe enough to warrant hospital care.

Use of inpatient facilities are known to differ among the four medical care sectors operating in the East Bank. These differences pertain to target populations served, level of specialization in care,

occupancy rate, financial structure, hospital management, and other features with definite relevance to the type of medical care services provided and the outcomes of these services. The distribution of admission is presented for the three sectors (government, military, and private) and for each region in Table B-4.

TABLE B-4  
 PERCENT DISTRIBUTION OF HOSPITAL ADMISSIONS  
 BY SECTOR AND BY REGION, 1975<sup>a</sup>

Region	Government Hospitals	RMS Hospitals	Private Hospitals	All Hospitals
Amman	64	12	25	100
Balqa	100	N/A	N/A	100
Irbid	70	5	25	100
Karak	72	N/A	28	100
Ma'an	100	N/A	N/A	100
TOTAL	68	8	24	100

<sup>a</sup>Source: Morbidity Statistics in Hospitals 1972 - 1975.

This table reveals that the responsibility of meeting the needs for hospital care differs among sectors overall as well as within each region. The outstanding regional differences are evident for the smaller regions of Balqa, Karak, and Ma'an, where most if not all hospital care needs are the responsibility of the government sector, although the target populations of the three sectors described have a more consistent distribution between the five regions. This unequal distribution is partly remedied through various local arrangements that allow one sector's target population to use the facilities of the other sector either on a formal basis or through personal contacts.

The sector differences in the distribution and utilization of inpatient facilities are further illustrated in Table B-5.

TABLE B-5

	Government Hospitals	RMS Hospitals	Private Hospitals	All Hospitals
Percent of all admissions	68	8	24	100
Percent of Hospital beds	44(1356)	35(1068)	21(638)	100
Occupancy ratio (percent)	74	58.5	53	
Average length of stay (days)	6.5	7.8	7.9	

This table shows that the government hospitals have proportionately fewer beds and more admissions than all other sectors, while using these beds the most efficiently, as shown by the occupancy ratio and the average length of stay.

Of 80,410 hospital admissions in 1975 for the East Bank, 20,522 or 25 percent were for surgical operations falling into essentially four categories. Thirty-six percent of surgical operations pertained to complications of delivery, abortions, sterilizations, and their consequences. An additional 22 percent were made up of hernia repairs (9 percent), tonsillectomies (8 percent), and appendectomies (5 percent). Thus a total of 58 percent of all surgical procedures in hospitals are comprised of these four major categories.

A substantial portion of inpatient activities are thus geared to a few well delineated conditions, the prevalence of which in the population at risk may indeed be unusually high or toward which a certain operative predilection is exercised.

Another strategy for the categorization of admission causes is as follows: Of the 80,140 admissions (surgical or medical), 24,523 or 30 percent pertain to deliveries, abortions, and complications of delivery, accounting for 332 deaths or a rate of 13.5 deaths/1000 admissions. These deaths deserve a case-by-case review. Of the remaining 70 percent, consisting of 55,887 admissions, 7,677 or 14 percent are due to injuries and accidents of varying description, and 7,118 or 13 percent pertain to conditions which can be considered as predominantly amenable to prevention. Thus a total of 27 percent of nonobstetrical admissions may be substantially preventable through either health education, environmental modification, nutritional improvement, chemoprophylaxis, or immunizations. This estimate varies at various categories of age and the means of prevention are different in successively older age groups. These estimates are summarized in Table B-6.

TABLE B-6

ESTIMATED PREVENTABLE HOSPITALIZATION (PERCENT)  
BY AGE GROUP AND MEANS OF PREVENTION<sup>a</sup>

Means of Prevention	AGE				
	Less than 1	1 - 4	5-14	15 and Older	All Ages
Total Preventable Number (Percent)	36 (1767)	16 (966)	11 (911)	9 (3474)	13 (7118)
Nutritional	58	45	21	14	131
Environmental	38	42	54	33	38
Immunization	3	13	7	9	8
Chemoprophylaxis	3	1	19	45	24
Total not Preventable (Percent)	64 (3109)	84 (5099)	89 (7718)	91 (33966)	88 (49892)
Total admission <sup>b</sup>	100 (4876)	100 (6065)	100 (8629)	100 (37440)	100 (57010)

<sup>a</sup>Source: Morbidity Statistics in Hospitals 1975. Department of Statistics.

<sup>b</sup>Excludes hospitalizations for reason of delivery or abortion.

## Outpatient Morbidity

In excess of 4 million visits for outpatient services were logged in 1975 (two or more visits/capita/year), compared to 1.7 visits in the United States. Of these visits, 42 percent are diagnostic and treatment visits, and 58 percent are preventive care or followup visits. The bulk of these services (70 percent or 2,892,160) are provided in government clinic facilities, mostly outside hospital outpatient departments, that is, in health centers and rural clinics, which account for 2,520,000 visits or 87 percent of ambulatory government services.

The major reasons for diagnostic and treatment visits can be summarized as follows: four out of ten visits are for conditions involving the respiratory system, and two out of ten visits are for conditions involving the digestive system. The remaining four visits are for conditions involving ear, nose, and throat disorders, muscle-skeletal and skin conditions, and specific infectious and parasitic disorders. The distribution of reasons for visit by age is shown in Table B-7.

TABLE B-7

### AD HOC SURVEY OF PERCENT DISTRIBUTION OF REASONS FOR FIRST VISITS TO A GOVERNMENT OUTPATIENT CLINIC (AJLOUN TABABA)

(Sample of 4 days From 1975 Logbook for Treatment Visits)

Reasons for Visit	Less than 1	1 - 4	5-14	15 and Older	All Ages
Infectious and Parasitic Conditions	0	2	22	1	5
Respiratory Conditions (includes sore throats)	46	60	45	29	42
Digestive disorders	33	20	6	18	18
Injuries and Trauma	0	2	7	3	4
Other	21	16	19	49	32
TOTAL	100 (52)	100 (50)	100 (109)	100 (152)	100 (354)

This table shows that respiratory and digestive conditions (diarrhea) are the most common disorders among infants and preschool children. Respiratory conditions alone are the major morbidity factor during the preschool years, and continue to assume a major rank in the following years of life. Infectious and parasitic diseases assume a distinct pattern by age in that they occur predominantly during school years. Injuries and trauma involve generally the school years as well as the years of adult life. The outstanding prevalence of sore throats among the disorders treated on an outpatient basis, or uncovered in surveys conducted by the school health section of the Division of Preventive Medicine, coupled with the unusually high number of hospitalized rheumatic fever and rheumatic heart disease cases, strongly implicate streptococcal infections as a major etiologic factor that is inadequately detected and treated.

Prenatal and postnatal care needs are only partially addressed by MCH centers and by hospitals in the three sectors. The problem of unmet needs is amply supported by the facts that one-fifth of the total population is comprised of women of reproductive age and that the fertility rate of 225 per 1000 among such women is high and compounded by conception spacing factors as well as by the wide age-range of mothers at conception.

To illustrate, fully 80 percent of all pregnancies receive no prenatal care, and 60-70 percent of all deliveries occur without professional or paraprofessional attendance. Probably similar proportions exist in terms of postnatal care.

The outstanding fact of infant care is that between 90-100 of every 1000 live births die before reaching their first birthday. Furthermore, in excess of 70 percent of these deaths can be attributed to preventable causes. This illustrates the magnitude of the disease problem among infants.

The second most important problem, at least as far as the infant is concerned, is the low level of immunization. The immunization coverage in the first year of life, mostly delivered through MCH centers (MCH Annual Report 1975), is discussed below.

### Triple Vaccine and Polio

First dose: approx. 65 percent of infants are not immunized

Second dose: approx. 70 percent of infants are not immunized

Third dose: approx. 78 percent of infants are not immunized

Booster dose: approx. 98 percent of infants are not immunized

These unmet needs are totally unacceptable.

### BCG

Although the coverage of the general population is indeed very satisfactory, the bulk of BCG vaccination are administered during the first year of school. Among infants, 90 percent are not immunized. This low rate of immunization may be unacceptable if the infection rate (positive tuberculin test) among infants exceeded 2 percent. This is not presently known in high-risk areas.

### Smallpox

The coverage of infants is largely dependent on the timing of mass immunization campaigns which have achieved spectacular results and minimized the importance of smallpox immunization in infancy.

### Measles

Aside from ad hoc limited availability of vaccine (about 15,000 doses, of which 5,000 were used some seven years ago, followed by a similar batch several years later), the need remains almost universal. This situation must be contrasted against 172 hospitalized measles cases, of which 13 or 8 percent died in 1975.

In the pre-school years the magnitude of the problems can best be illustrated by the fact that these are the years when the child is exposed for the first time to the extrafamilial environment. These are the years of diarrhea and respiratory conditions, as well as the years when booster immunizations are needed. Indeed, at this age these conditions account for approximately 80 percent of primary care utilization, 32 percent of hospitalizations (including 98 cases of measles, and 42 percent of registered deaths.

These conditions in those years are prime candidates for prevention programs based on nutritional and environmental considerations described elsewhere. These conditions are also curable and strongly implicate the inadequacy of curative services specifically directed to treat diarrhea and respiratory infections, including streptococcal infections. The implication that the needs for effective primary curative services during the preschool years are inadequately met results primarily on the observed number of deaths and hospitalizations for the age group 1-4, categorized by cause.

A 1975 Health Survey conducted by the school health section of the Division of Preventive Medicine (Ministry of Health) among first and seventh graders, identifies the distribution of disorders by area (Table B-8).

Although definitions of the conditions surveyed have apparently been left to the judgment of the visiting health team, it is nonetheless noteworthy that ear, nose, and throat disorders, with their component of streptococcal sore throats, and communicable diseases (mostly scabies) are unusually prevalent, as are vision problems (major component of the disorders of the eye). Additionally, the dental survey team found a high proportion of pupils with dental disorders: for example, between 22 and 35 percent with inflammation of the soft tissues and between 6 and 37 percent with evidence of fluorosis.

There are no independent estimates of the prevalence of morbid conditions usually associated with adult life, such as coronary heart disease, hypertension and its sequelae, diabetes, duodenal ulcers, and injuries and traumas. It would appear these conditions affect a sizable portion of the adult population, since they occupy a high rank among general as well as speciality outpatient clinic visits, as they do among hospitalized conditions and causes of deaths. Furthermore, these conditions use a substantial proportion of the curative health resources because of their chronic nature.

TABLE B-8  
PREVALANCE (PER 1000) OF SELECTED DISORDERS FOUND ON EXAMINATION  
OF FIRST AND SEVENTH GRADE PUPILS, BY AREA<sup>a</sup>

Disorder	Area Studied							1975-76 Total
	Madaba	Jerash	Salt	Karak	Ma'an	Mafrag	Tafilah	
Eye Disorders	31	44	71	30	24	28	45	36
Disorders of the Digestive System	62	36	182	27	42	95	151	71
Ear, Nose and Throat Disorders	223	242	159	40	177	94	146	144
Infectious skin Disorders	23	19	20	25	51	20	42	26
Communicable Diseases	20	54	112	10	20	35	71	38
No. of pupils examined	4949	3795	1885	6185	1393	3788	2424	24419

<sup>a</sup>Source: Annual Progress Report: Division of School Health 1975-1976.

## Epidemiologic Features of Selected Communicable Diseases.

Malaria assumes very distinct epidemiologic features in Jordan in that its presence among Jordanian citizens is non-existent, although a few cases were imported a few years ago from such neighboring states as Pakistan, Arab Gulf States, and Saudi Arabia. For example, of 18,107 blood examinations conducted in the first quarter of 1976, 66 or 0.36 percent were positive, all of which were imported, mostly into the region of Karak. These imported cases do indeed pose a threat to the vector and human populations of Jordan.

In most of the Kingdom of Jordan, tuberculosis appears to be well under control at present, in terms of the rate of newly discovered active cases (1.4/000 population per year or 500 new cases per year).

The sources of these new cases are primarily the newly settled or semi-nomadic population groups settling on the eastern fringes of the populated portion of the country. These new cases, as well as the previously existing ones, are being actively and effectively treated and their contacts traced and tested for vaccination or infection status. Simultaneously an active program of BCG vaccinations and of PPD testing for infection is being pursued in most areas of the country. The highlights of these two activities are:

1. The PPD testing of previously nonvaccinated population groups reveals a rate of infection of 0.7 percent (Amman), which is low indeed for the population tested (6 years of age), but which may go as high or higher than 1 to 2 percent of children in specific high-risk areas such as Madaba, Mafraq, and Ma'an.
2. The impressive coverage of the population with BCG vaccinations (75 percent) is not distributed according to susceptibility to infection. For example, the preschooler has the lowest immunization rate (35 percent). The nomadic and semi-nomadic populations are reported to have a substantially lower rate of BCG coverage while at the same time contribute a disproportionate share of the old and new cases of tuberculosis.

APPENDIX C

ORGANIZATION AND FUNCTIONS OF THE  
MINISTRY OF HEALTH

## INTRODUCTION

The legal functions and responsibilities of the Ministry of Health (MOH) are set forth in public laws of 1971 and 1976. Legal responsibilities include, among others:

1. provision of preventive, curative, and pharmaceutical services
2. health education and training
3. supervision of the private sector, including hospital, medical and pharmaceutical services, laboratories and health professions
4. development of health policy for the Kingdom.

Although the law does not define a target population for MOH services, it is by implication the entire population of Jordan except for those covered by the Royal Medical Service. Much of this report will focus on whether the MOH does, in fact, have the resources and authority to carry out the responsibilities set for it by these laws.

## STRUCTURE

The ministry's formal organizational structure is outlined on the attached chart. The ten directorates shown on the right-hand side of the chart constitute the central planning and administrative staff, while the eight health regions shown on the left are the actual health care providers. Three of the directorates have only recently been separated from the older organizational structure and given directorate status; bylaws detailing their functions have yet to be developed.

The 1976 budget law allocated funds to the ministry as follows:

	<u>Dinars</u>	<u>Percent</u>
Administration	181,100	3.9
X-Ray	123,850	2.7
Laboratories	170,530	3.6

	<u>Dinars</u>	<u>Percent</u>
Preventive Medicine	631,151	13.5
Curative Medicine	3,386,950	72.3
Training and Education	117,150	2.5
Dentistry	<u>70,700</u>	<u>1.5</u>
	4,681,430	100.0
	(\$14,143,293)	

There is, unfortunately, no simple way to attribute expenditures to the various directorates, but the overwhelming preponderance of funds is clearly allocated to curative medicine.

The present organizational structure authorizes direct access to the undersecretary by the following individuals:

- 10 department directors
- the legal advisor
- the Chief Clerk
- 8 regional health directors
- the director of Ashrafiya Hospital
- the director of the central health laboratory
- the director of the central warehouse
- the director of the college of nursing
- the director of medical technicians

In actual practice, it appears that the regional health directors deal primarily with the Director of Administration on any matter having financial implications and with other directors as the need arises. If dissatisfied, they may, and evidently do, appeal to the undersecretary. Hospital directors should formally approach the ministry through their regional directors, but may apparently go directly to the Director of Curative Medicine. This confused situation reduces the influence that regional directors exert within their area and gives technical directors little direct influence over program development.

There appears to be a strong tendency to refer decisions upward, to the point where the decision maker may be far removed from the situation. To a certain extent, the law requires centralization, especially in budgetary and personnel matters, but even beyond this, subordinates appear reluctant to make recommendations or to exercise the authority that they do have. The result is a heavy administrative load on central ministry personnel, delayed decision making, and loss of valuable planning and supervisory opportunities at the local level.

At present, there seem to be no clear guidelines on the extent of the authority that regional directors do have. Even to the extent that guidelines do exist, they appear to be observed differently in different cases. The regions have small discretionary funds (up to 300 dinars) for emergency repairs and supplies, and they may hire such nonprofessional personnel as cooks and drivers for established positions, subject to subsequent MOH approval. They may transfer most personnel within their districts but lack the authority to open new clinics or transfer medical specialists. They have very little other authority over their subordinates, however, and the latter look to Amman for promotion opportunities.

#### DIRECTORATE OF PREVENTIVE MEDICINE

The Directorate of Preventive Medicine is legally responsible for disease and epidemic prevention, health education and other public health activities, and supervision of preventive health activities carried out by institutions outside the Ministry of Health. There are five active divisions, namely environmental health, malaria eradication, tuberculosis control, school health, and maternal and child health. All are located in separate buildings, although the director himself is based in the central ministry headquarters. The various section directors meet together once or twice a week. Minimal health education activities appear to occur in all five sections but lack any central technical coordination. The 1971 law established additional sections for nutrition, public health nurses, vocational and industrial health, psychiatric health, and old age care,

personnel on a temporary basis, provided that the position has already been sanctioned, and subject to final government approval.

DIRECTORATE OF EDUCATION AND TRAINING, AND  
DIRECTORATE OF PLANNING AND FOREIGN RELATIONS

The directorates were created in 1976 by dividing the older Directorate of Training and Programs. They are currently headed by a single individual, and since no bylaws have been established for the Education and Training Directorate, they may still be considered as a single unit. The 1971 law established the following responsibilities for the Directorate of Training and Programs:

Planning: "preparation of the required studies . . . and (development) of the principles for good medical and health services."

Special studies: in particular, medical research.

Internal and international training, including in-service training.

Program evaluation: supervision of data collection for the ministry.

All international relationships of the ministry.

Technical documentary support: "preserving and coordinating the documents in the ministry, and securing the required reference books to all its centers."

The current director of these two directorates is supported by three assistants and ten statisticians. All English correspondence at the ministry is prepared in his office, and virtually all external relations, including overseas training, are handled in his section. The director has completed several planning studies, but their scope has been limited to internal ministry organization or special projects, such as the Amman Civil Hospital (now Jordan University Hospital) and the new Aqaba hospital.

but these have not been staffed. The director has specifically requested staff for epidemiology, health education, and occupational health, but these are not yet funded. The school health program is funded by the Ministry of Education but supervised by the Ministry of Health. Its annual budget is JD50,000. This program seeks to provide one physician and one dentist for each of 28 educational districts within the country. Eight of these have been staffed to date, and the ministry hopes to add three more each year. The emphasis of this program is on rural areas, and no physicians are provided in Amman. School health physicians are currently doing physical examinations of all students in the first and seventh classes in the regions covered.

#### DIRECTORATE OF ADMINISTRATION

The Directorate of Administration is charged with the following responsibilities:

Personnel supervision, including "Evaluation of employees on the basis of productivity and devotion to the performance of their duties," and "Determining personnel needs for each hospital center and clinic."

Budget preparation and disbursement; preparation of periodic fiscal reports.

Building maintenance and leasing.

Provision of transportation for ministry personnel.

The directorate is headed by a physician assisted by a large number of clerks but with no technical staff. Personnel matters occupy a large part of his time, but these are primarily routine rather than evaluative or developmental. There appears to be no formal process for budget preparation, and analysis of the distribution of incurred expenditures to specific activities, hospitals, or regions would only be possible if individual receipts were analyzed through a special study. Any step with a budget implication that a regional director wishes to take must be approved in advance by the Director for Administration. The regional director may, it appears, hire certain low-level

## DIRECTORATE OF CURATIVE MEDICINE

According to the 1971 law, the Directorate of Curative Medicine is responsible for the following functions:

"Supervision of medical treatment services to the participants and beneficiaries of the medical insurance plan and to the citizens, in accordance with effective regulations and at the best scientific level possible."

"Supervision of medical treatment services in the private sector to ensure their performance at a good level."

Licensing of physicians and medical assistant professions, and establishment of conditions for practising these professions.

Licensing, controlling, and directing medical institutions.

Determination of physical fitness of individuals in various professions and jobs.

Provision of technical medical advice to judicial authorities in the field of forensic medicine.

Although the lines of authority between the Director of Curative Medicine and hospital and regional health directors are quite unclear, the Director of Curative Medicine is responsible for development of virtually all curative medical services in the government sector, as well as some supervision of the private sector. It appears, however, that most of his daily functions are directed to licensing, physical examinations, and supervision and approval for assignment of all physician specialists.

The law of 1971 established standards for the licensing of all private hospitals. License inspections are often conducted before actual development of the hospital, since most private hospitals in Amman have, until recently, been located in apartment houses. The licensing committee, which consists of the Director of Curative Medicine, the President of the Medical Syndicate, and the regional health director where the hospital will be located, inspect the facility prior to selection of equipment and staff members. It appears that rejection of plans at this stage has occurred, at least

on several occasions. Recommendations of the licensing committee are forwarded to the Minister of Health for his final approval. Periodic reinspection of private hospitals does occur, but at no regularly scheduled intervals. The need for new facilities is not considered in licensing of private hospitals.

The Director of Curative Medicine is responsible also for the rural health infrastructure, including remote government clinics. The director appears to lack the necessary data and standards, however, for long-range site planning. If a regional director requests that a new clinic be opened, the Director of Curative Medicine checks first with the Director of Administration regarding availability of personnel, and then with the Director of Pharmacy and Supplies regarding supplies and equipment. The ministry itself may not have to construct physical facilities since these may be leased by the municipality in which the clinic is to be located. If both staff and supplies are available, the new clinic is usually approved. Conversations with regional directors, however, indicate that the ministry sometimes locates clinics at sites that have not been recommended, while denying the requested facilities.

The Director of Curative Medicine also supervises a number of medical committees, most of which are responsible for physical exams of prospective government employees or for referral of ministry patients to non-ministry hospitals (such as The Jordan University Hospital). Each health region has four such committees for pre-employment exams and for review of on-the-job injuries. The government has written physical and medical standards for government employment. The regional committees are supervised by a high committee in Amman, which is responsible for making the final decision on all cases. This committee consists of five Ministry of Health doctors and meets weekly; it may actually examine the patients but, more frequently, relies on reports from the regional committees.

## DIRECTORATE OF PHARMACY AND SUPPLIES

The Directorate of Pharmacy and Supplies has a staff of seven licensed pharmacists (plus the director) and 29 clerks and technicians. Its responsibilities include:

- licensing of private pharmacies and pharmacists
- price control of privately sold drugs
- quality controls
- purchasing of all drugs required by the MOH
- narcotics control and reporting

The directorate currently has two active divisions, one for pharmacies and the other for supplies.

At the present time, 16 percent of all drugs used by the MOH are produced (from imported raw materials) by the Arab Pharmaceutical Company at Salt. About one-third of this firm's production is consumed domestically, and two-thirds is exported to points as distant as Nigeria. Within five years, there will be four additional drug producers, mostly developed with Jordanian capital but with some American and other foreign inputs. The ministry is seeking to coordinate these producers, and estimates that by 1980, 40 percent of drug consumption will be locally produced.

The quality of drugs is currently controlled by relying on the exporting country's own licensing and inspection procedures. This will be less satisfactory in the future as domestic production rises, and development of a control lab is therefore a high priority of this directorate. This project has been approved in the Five Year Plan, but is currently being delayed, at least partly because of some uncertainty as to where it should be administratively located. The director also wants additional local studies of drug side effects, though there are no definite plans for this.

Directorat staff licenses all pharmacies and may inspect them from time to time for price control and other standards. These standards were established by law in 1972. A different set of personnel inspects Health Ministry pharmacies, mainly to ascertain inventory

maintenance.

The ministry orders drugs by their generic description and works from a basic list of 3600 approved items. In case of sudden shortages, the director may borrow supplies from the Royal Medical Service; this is an informal noninstitutionalized arrangement. Local purchases valued at up to JD1000 may be completed without tenders, but larger ones must be referred to the Purchasing Department of the Ministry of Finance. The latter arrangement is not satisfactory, because the Ministry of Finance lacks both the technical and clerical staff required. MOH personnel simply go to the Ministry of Finance and do their work there. Antibiotics and antituberculins are imported duty free, but all others carry 4 percent tariffs.

Equipment supply is more difficult than drugs because of inadequate maintenance facilities and lack of standardization. Physicians trained in different countries are familiar with different instruments and call them by different names; the ministry is attempting to develop a standard list, complete with photographs and operational equivalents. The actual instruments supplied may vary from year to year as prices change; the ministry need not purchase from the lowest bidder, but they will change suppliers if price differentials are great. Maintenance is a problem because suppliers offer only short-term contracts and because the ministry cannot afford the salaries of adequately trained repairmen. The ministry, in effect, must and does order substantial extra equipment so that an adequate stock will be operational.

The pharmaceutical budget of the MOH rises by 15 to 20 percent per year, and orders increase by about the same magnitude across the board, without change in the mix supplied.

APPENDIX D

HEALTH MANPOWER

## INTRODUCTION

Health manpower--physicians, nurses of all types, midwives, technicians, paramedical workers, and auxiliaries--constitute the major resource for the delivery of health services. Their numbers, distribution, utilization, and training have a significant impact on the nature, types, and quality of services that are and can be offered to improve the health status of the population.

The purpose of this section of the Phase II Health Team report is to provide a general overview of issues pertaining to health manpower in Jordan. Such an overview is intended as a guide, not a substitute for a more detailed and specific health manpower planning effort, which must be based on more accurate data than is presently available, and upon fundamental policy decisions concerning the direction of the health care system in Jordan.

In this report, specific issues are addressed as follows:

The General Educational System describes patterns and trends in education and enrollment in Jordan which affect the basic supply of candidates for health manpower training and employment.

General Labor Force and Employment examines characteristics of Jordan's labor force and their implications for health manpower.

Health Manpower Resources details existing evidence on the numbers and types of health manpower available in Jordan today, together with factors which influence past and future trends in supply. Issues concerning data and alternative health manpower planning methodologies are discussed, as well as such issues as occupational status, salaries and benefits, and emigration.

Distribution of Health Manpower focuses on geographical and institutional (hospital- versus clinic-based) issues in the distribution of health manpower and highlights the ways in which distribution affects the

ability of the health care system to meet the principal health needs of the population.

In Utilization of Health Manpower, selected issues in the utilization of physicians, practical nurses at the community clinic level, and midwives in Maternal and Child Health Clinic (MCH) work are discussed, together with potentials for improved utilization.

Finally, Key Issues in the Education and Training of Health Manpower in Jordan discusses salient characteristics of training programs and identifies problems to be addressed.

#### THE GENERAL SYSTEM

Subsidized compulsory education for all children through 14 years of age is a priority government policy in Jordan which has been supported over the past eight years by a steady increase in expenditures, numbers of schools and class units, number of teachers, and, correspondingly, in enrollments.

Table D-1 shows school enrollments for 1974-75 as presented in the Statistical Educational Yearbook 1974-75, prepared by the Ministry of Education. Percentages of enrollments for 1970-71, obtained from the Statistical Educational Yearbook 1970-71 are also shown for comparison. The relative increase in proportionate enrollment at each level over this time period is presented.

The most striking feature of enrollments is the dramatic increase (adjusted for population growth) in the relative proportions of students pursuing the upper levels of education, most notably post-secondary education. Development of post-secondary educational opportunities at the University of Jordan, together with increasing absolute numbers of secondary school graduates<sup>1</sup> partly account for this phenomenon. Expansion of specialized post-secondary training opportunities, such as

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<sup>1</sup> In order to be eligible for most post-secondary education and training opportunities, students must sit for and pass the Government's Tawjihi examination; 10,835 students passed the Tawjihi in 1974-75, an increase of 61 percent over the number passing in 1970-71.

teaching, engineering, and commerce, also helps to explain the leap in proportionate post-secondary enrollments. In addition, a considerable number of Jordanians pursue education and training abroad.

TABLE D-1  
 SCHOOL ENROLLMENT<sup>a,b</sup>  
 (Number and Percent of School Age Populations at  
 Each Educational Level by Sex for 1974-75 and Relative Increase in  
 Total Enrollments Between 1970-71 and 1974-75)

Level	Primary (Grades 1-6)	Preparatory (Grades 7,8,9)	Secondary (Grades 10,11,12)	Post Secondary
<u>Males</u>				
Number enrolled	183,053	63,151	33,524	13,404
Percent <sup>c</sup>	100	88	54	14
<u>Females</u>				
Number enrolled	153,813	48,223	22,665	6,850
Percent <sup>c</sup>	92	72	38	7
<u>Total Male &amp; Female</u>				
Number enrolled	336,866	111,374	56,189	20,254
Percent <sup>c</sup> in 1974-75	96	80	46	11
Percent <sup>c</sup> in 1970-71	90	65	35	3 (est.)
<u>Relative Increase In Proportionate Enrollment (Percent)</u> <sup>d</sup>	7	23	31	267

## Sources:

<sup>a</sup>Statistical Educational Yearbook 1970-71.<sup>b</sup>Includes enrollments at government (68 percent) and private institutions.<sup>c</sup>Number of children enrolled expressed as percentage of all children (by sex) in the appropriate age groups.<sup>d</sup>Proportionate Relative increase  $\frac{a-b}{c}$  takes into account and adjusts for population growth.

Also notable in Table D-1 are the differences in proportionate enrollment at each level by sex, particularly at the upper levels. Despite growth in both the proportions of school age females enrolled and in Tawjihi attainment (females numbered about one-quarter of the Tawjihi recipients in 1970-71 and a third of all recipients in 1974-75), the absolute number of female Tawjihi recipients was still only 3,535 in 1974-75. This, together with patterns of early marriage and other sociocultural factors that discourage higher education for women, helps to account for the fact that only half as many females as males are enrolled in post-secondary education and training.

The relatively limited supply of women eligible for post-secondary opportunities, combined with the expansion of education and training opportunities that prepare students for other occupations, must be taken into consideration when strategies for developing the manpower to support Jordan's national health plan are determined.

The number of male graduates with Tawjihi, while not large (approximately 7,300 in 1974-75) should be sufficient to supply an adequate number of candidates for programs that prepare for health occupations. Evidence that supply alone is not at the root of declining enrollment in selected health occupation training programs is offered by the fact that other post-secondary education and training programs in Jordan have more applicants than they can absorb.

#### GENERAL LABOR FORCE AND EMPLOYMENT

The 1976 Jordan Development Conference study of the labor force in Jordan estimated that only 382,000 persons or 19.6 percent of Jordan's (East Bank) population are participants in the labor force. Of these, 89,000 work in agriculture, 128,000 in non-agricultural establishments, and 76 percent are wage earners. Females account for 13.6 percent of the nonagricultural labor force, with 3.8 percent of the female population in the labor force overall. The low participation rates of women and students, together with the youthfulness of the population (51 percent under 15 years of age), the high enrollment rates in school, and finally,

the large numbers of professional and skilled Jordanians working abroad, combine and contribute to the fact that a low proportion of the total population participates in the labor force.

While nearly 71 percent of the labor force is employed in Amman Governorate, this figure represents a 15 percent decrease from 1970, when fully 85 percent of the labor force was in Amman. This reduction of labor force concentration in Amman stands in contrast to the increased concentration of the general population in Amman and may reflect a trend toward labor spillover into Jordan's other regions, resulting from development efforts elsewhere in the country, as well as considerable migration to opportunities abroad.

Estimates of labor outflow to other countries are crude, but overall are estimated to be in the range of 30 percent of the labor supply, particularly in the occupational categories requiring university training and in the technical and sub-professional occupations requiring two years of post-secondary training.

Those with university training are, in most countries, more internationally mobile than those with less training because their qualifications are more recognizable and they more often possess the financial resources to migrate. In Jordan, this mobility may be even further exacerbated by the fact that, according to the April 1976 Jordan Development Conference report on the Labor Force, Jordanian institutions supply only 20 percent of all university-trained members of the labor force. Fully 80 percent are trained outside. In contrast, Jordanian institutions are the major sources of supply for those with less than university training: they prepare 85 percent of the total labor force. Thus, not unexpectedly, a somewhat lower net outflow of labor is found among those in the skilled and semiskilled occupations which employ primarily those persons trained in Jordan. However, as will be discussed elsewhere in this report, those trained in certain health occupations possess a set of skills that makes them particularly vulnerable to migration.

The Jordan Development Conference document mentioned above has attempted to match projections of labor supply against demand in 1980 and gives evidence that there will be a net surplus of university-trained persons and a net labor shortage of 1,339 in the technical and subprofessional occupations and of 18,822 in the skilled manual occupations. It is expected that most of this shortage will be met by expanded training opportunities, together with a flow of the more highly trained into occupations which require less training but which (because of shortages) are paying higher wage rates. It is difficult to anticipate how various trends in education and employment will interact to affect the production of health manpower, but it is possible that recruitment of workers to health occupations will face stiff competition--not so much from other training as from alternative employment opportunities, including many outside Jordan.

#### HEALTH MANPOWER RESOURCES

##### Data Sources

Data providing estimates of the supply and distribution of health manpower is available from a number of sources, including the Ministry of Health's Statistics Section, the Jordan Medical Association (which provides the MOH with much of the data on physicians), the Manpower section of the National Planning Council, the Statistical Yearbooks published by the National Department of Statistics, and within the past month, from the progress report prepared by Heery International and its affiliates for the Royal Medical Services. Unfortunately, there are wide variations in estimates (both among and within these sources) for many categories of health workers; for other categories, such as practical nurses and medical technicians, data exists for one subsector of health provider but not for others, not over time and not broken down by special skill. Finally, published sources are extremely limited in details from which to determine regional, urban-rural and institutional distribution patterns, especially by subsector.

## Methodology

It has been common in Jordan (and elsewhere) to determine adequacy of manpower supply by comparing the numbers of manpower available with the numbers which would be required if a set "standard ratio" (for example, MD's per population, nurses per bed) were to be met. The arithmetic difference between the numbers implied by the standard and the numbers currently available is then assumed to be the net number "needed."

There are a number of shortcomings inherent in this approach to determining the adequacy of health manpower supply. First, the use of standard ratios seldom includes, and in fact may yield entirely different results from, a methodological approach which examines: 1) the type of health system and the mix of services required by the health conditions of the country; 2) the specific functions and tasks required to carry out the appropriate mix of services, and 3) the potential, or existing, distribution of functions and tasks among different types of health workers. By contrast, standard ratios are often derived from international standards and bear little relation to the health needs or human resources constraints of the individual countries in which they are applied.

Secondly, standard ratios mask the problems of maldistribution of health manpower, which, in Jordan and elsewhere, exist among geographical areas, among subsectors, and among different types of facilities.

Realistic and comprehensive health manpower planning for Jordan must proceed in light of policy decisions about the direction of the health care system, the mix of services to be offered, and the distribution of those services, and should be based on a functional analysis of the types of tasks which need to be performed and the allocation of those tasks among the various existing and potential kinds of workers. Most of these steps in the manpower planning process have yet to be taken in Jordan. Consequently, the discussions below of health manpower supply, distribution, and, to some extent, education and training, focus on description of the situation as it exists in Jordan today and on identification of current or potential issue areas.

Supply

Table D-2 presents the estimated numbers of workers in major health occupations by sector of employment, as of 1976, together with national ratios to population.

TABLE D-2  
DISTRIBUTION OF HEALTH MANPOWER BY SECTOR, 1976<sup>a</sup>

Health Occupation	Gov't <sup>b</sup>	Private <sup>c</sup>	Military	Total	Ratio to Total Population
MDs	402	394	313	1,109	1:1803
DDS	40	108	48	196	1:10,204
Staff nurses (RN's)	346	114 <sup>d</sup>	159	619	1:3231
Practical or assistant nurses	1,263	34	349	1,646	1:1215
Midwives	137	42 <sup>d</sup>	16	195	1:420 (live births) 1:4117 (Reprod. o + + child under 5 years

<sup>a</sup>Sources: Ministry of Health, Medical Association, and Royal Medical Services data.

<sup>b</sup>Includes MOH and University

<sup>c</sup>Includes UNRWA

<sup>d</sup>1975 Med. Assoc. estimate

<sup>e</sup>With the exception of the Military sector (which has a defined population for which it is responsible), it is difficult to define the sizes of the populations covered by the subsectors; hence ratios to total population are presented here.

## Physicians

As of mid-1976, there were 1,109 physicians in Jordan: one MD for each 1,803 population (or 5.5 MDs per 10,000). Of all physicians, 36 percent are employed in the Ministry of Health and University of Jordan, 36 percent in the private sector, including UNRWA, and 28 percent in the military (Royal Medical Services). The number of physicians in the government sector increased approximately 55 percent between 1970 and 1976. Figures on growth in number of physicians in the military are not currently available. According to Medical Association and official government figures, the number employed in the private sector reportedly has increased by less than 1 percent, although observation would suggest that this figure is probably a sizeable underestimate.

There is some evidence that physicians use government employment as a means by which to gain experience, confidence, and reputation before joining the private sector. If this is so, there may be more rapid growth of the private sector over the next five to ten years, as those who have recently joined the government reach professional maturity. Heery International data on the youthfulness of RMS physicians suggests a similar phenomenon may take place among military physicians. Such a transfer to the private sector, if it is not happening already, would seem particularly likely to occur given the significantly higher earnings obtainable in the private sector. Reports indicate that a specialist (with FRCP) in private practice in Amman can earn up to JD 1,000 per month, while his or her counterpart in government service will earn about JD 350, including all allowances and benefits.

Over all sectors, approximately 64 percent of physicians are in medicine (including general medicine and medicine subspecialties), 17 percent are in surgery (general surgery and surgical subspecialties), and 19 percent in other speciality fields.

General practitioners, including physicians in general medicine and general surgery, account for 58 percent of all physicians. By contrast, it appears that between 70 and 80 percent of all hospital

and outpatient visits are for primary care. Thus, it is likely that many specialists are engaged in rendering primary care services (spot checks of specialist physician outpatient records support this conclusion) and therefore are underutilized relative to their skills.

The nature and frequency of health problems in Jordan, together with evidence that highly trained specialists are being inappropriately used to address these problems, all point to the need for more general practice physicians, especially those with community health orientation. Even so, it is suggested that to achieve effective extension of both the kinds and distribution of basic health services, Jordan will require development of auxiliary levels of manpower.

Despite the shortcomings noted earlier about the use of "standard ratios" as a basis for determining health manpower requirements, it is significant to note what the application of this largely inappropriate methodology suggests about the adequacy of the supply of physicians in Jordan. Calculations for specialists in twelve selected fields have been made and the results presented in Table D-3. Current specialist-to-population ratios are compared with the standard ratios selected as "desirable" by the 1972 Conference on Manpower in Jordan (sponsored by the National Planning Council); the absolute number of specialists implied by the NPC standard is then shown, and the difference between this number and the number currently available is presented as the net number "needed."

TABLE D-3

SELECTED PHYSICIAN SPECIALISTS IN JORDAN, RATIO TO  
POPULATION AND ESTIMATES OF NUMBERS NEEDED, 1976<sup>a</sup>

Current No.	Speciality	Current Ratio to Population <sup>b</sup>	NPC Desirable Standard Ratio to Population	No. Specialists Implied by Standard	Net Number Needed
69	Pediatrics	1:28,985	1:15,000	133	64
25	Public Health	1:80,000	1:25,000	80	55
81	Internal Med.	1:24,691	1:15,000	133	52
84	Ob-Gyn	1:23,809	1:15,000	133	49
14	Psychiatry	1:142,857	1:50,000	40	26
15	Chest	1:33,333	1:50,000	40	25
28	Anesthesiology	1:71,428	1:50,000	40	12
34	ENT	1:58,823	1:50,000	40	6
24	Radiology	1:83,333	1:100,000	20	4
37	Ophthalmology	1:54,054	1:50,000	40	3
23	Dermatology	1:86,956	1:100,000	20	3
13	Orthopedics	1:153,846	1:250,000	8	surplus
Total Additional Needed					299

<sup>a</sup>Source: Medical Association and Royal Medical Service figures, National Planning Council standards; calculated by S. Russell.

<sup>b</sup>Base population estimate rounded to 2 million.

Even the use of the standard ratio approach yields findings which, it is anticipated, might be consistent with the approach that determines the adequacy of physician supply on the basis of the functional analysis. Orthopedic surgeons are presently in excess of the number implied by the standard. General surgeons have been categorized in this discussion as general practitioners and therefore have not been included in this table. However, it is interesting to note that they too are in slightly greater supply than the National Planning Council standard calls for (86 available versus 80 required). ENT, Ophthalmology, Dermatology, and Radiology are close to meeting the standard. The greatest gaps exist in the fields of internal medicine, pediatrics, and public health or community medicine. These are, notably, the fields that, along with general practice, are most critical to support of a delivery system which could meet Jordan's most pressing health needs.

It may be argued that the supply of physicians in Jordan (including not only those presently available but also some who may return from abroad and the influx of 50 graduates per year from the University of Jordan Medical School) may be sufficient to enable delivery of basic-level and preventive-curative services by using primarily physician manpower. There are, certainly, a number of Jordanian physicians abroad who might be expected to return. Estimates vary, from 166 (1975 Multi-purpose Household Survey - Jordanians abroad) to 253 (Statistical Educational Yearbook 1974). However, a number of factors make it unlikely that these physicians can or will become the basic manpower resource for a primary-level system. First, while a breakdown of those abroad according to area of study within medicine is not available, there is little reason to anticipate a change in present trends, which are toward specialization and even then, not specialization in those fields most required to support a primary level system. Certainly, few physicians, with the exception of those trained in public health, are prepared to deliver the necessary preventive services required by a basic level system of care. Secondly, while one might hope that an inflow of returning or graduating physicians could lead, through market forces, to a labor overflow into the

regions, this also seems unlikely for some time to come, given the tendency (illustrated in the section on distribution later in this report) for physicians to concentrate in Amman, and given that market's absorptive capacity. Thirdly, there is little guarantee that those returning will increase the net number of physicians whose geographical or institutional location is under any form of control. Even if returning physicians were all conscripted and were to divide their period of service between military and governmental service in the regions, this would provide only a temporary cadre of health manpower. Those returning may join government service in relatively large numbers, but, as has already been discussed, they may only replace the numbers of maturing physicians now in MOH service who have more palatable opportunities in the private sector. Of course a growth in the private sector does not necessarily mean that primary-level services will not be offered; it does mean, however, (1) that such services will be limited to those in need who are self-referring and who can afford to pay and (2) that because there is little possible control over the location of private practice physicians, populations in the poor quarters of the cities and in the governorates (especially remote areas) will remain underserved or unserved. Finally, whatever net growth in the number of physicians may result after interaction of all the factors noted above, Jordan must anticipate attrition from out-migration as well. A conservative estimate of the rate of physician out-migration would be 30 percent. If the concentration of physicians in Amman did in fact become greater than the market would bear, it is likely that, for a certain portion at least, the potential of earning JD 600 to JD 1,000 per month in the Gulf would appear preferable to movement into Jordan's regions.

For all of these reasons, it appears that extension of basic level preventive and curative services by means of a physician-based system is both a difficult and uncertain task, involving a long waiting period and major changes in both the types and distribution of physicians. In the experience of a wide range of countries, from the richest to the

poorest, expanding the physician pool has not proven to be an effective means to remedy these problems. A more direct and effective means of providing the basic manpower resources to deliver basic services is through development of cadres of auxiliary health workers who in numerous settings in other countries, has proven to be a nonmigratory type of health worker and who under the supervision of a physician, can extend the health care system to those most in need.

#### Qualified Nurses (RNs)

Estimates of the number of qualified nurses (RNs) in Jordan vary considerably but the official MOH figure for 1976 is 619, with 56 percent in government, 26 percent in RMS and 18 percent in the private sector. Most qualified nurses are trained for and working in hospital-based settings. The figure of 619 means there is one nurse for each 3,231 population, or 3.1 per 10,000 population. There is one nurse for every 1.7 physicians (and although it would be desirable for this ratio to be reversed, that would entail the task of adding 1,266 more qualified nurses in Jordan).

As has been the practice in deriving estimates of physician supply "adequacy," estimates of nursing supply adequacy in Jordan are customarily based on "standard ratios" -- frequently derived from international "standards" without regard for the availability of this health manpower resource or for the functions which qualified nurses, in coordinating other types of manpower, are to perform. Some of the shortcomings and pitfalls inherent in using the standard ratio approach can be demonstrated by applying this methodology illustratively. For example, using the standard nurse-to-population ratio of 3.7 set by the 1972 NPC Health Manpower Seminar, it would appear that (with a current ratio of 3.1) Jordan is in need of only 120 more qualified nurses. Using the qualified nurse-to-bed standard ratio set by the seminar (1:8), it would appear that Jordan has more than enough nurses, since the present (1976) nurse-to-bed ratio stands at 1:5.4 -- a notable improvement over 1:11 in 1971. Furthermore, it has been the practice in Jordan (as elsewhere) to use national aggregate ratios to calculate demand. Yet these aggregate

figures can mask differentials among subsectors: using the 1976 data, the nurse-to-bed ratio in the military subsector is 1:6.6; in the private subsector, 1:5.7; and in the governmental subsector is 1:4.7. But even this three-way subdivision, because it includes the university in the governmental subsector, disguises the fact that, with 69 percent of all government nurses employed at University Hospital, the ratio there is 1:1.6; in other government hospitals the ratio of nurses to beds in 1976 actually stands at 1:11.6, or 313 qualified nurses short of standard.

Meaningful projections of the number of qualified nurses actually needed in Jordan cannot be arrived at using the standard ratio approach. First, as illustrated, slightly different modes of calculation yield quite different estimates. Secondly, it is now more widely accepted that, if any standard ratio is to be applied, nursing hours per bed is more meaningful than nurse-to-bed ratios. However, even this ratio assumes the qualified nurse is working in a hospital-based setting and tells nothing about needs or demand in other kinds of settings. Finally, this methodology totally ignores any definition of the appropriate role of the qualified nurse and divisions of labor among the qualified nurse and other types of nurses or, potentially, auxiliaries. If the functions of the qualified nurse are defined as supervisory and administrative, far fewer will be needed than if these nurses are expected to perform routine bedside nursing tasks.

There are a number of factors pertaining to the availability of the supply of qualified nurses which argue for a major and comprehensive rethinking of policies and practices regarding all types of nurses. While output from Jordan's professional nursing programs is approximately 100 per year in 1976 and 1977, enrollment at professional schools below university level has dropped such that total expected output in 1977 will be 93; in 1978 only 59; in 1979 it should be about 75. Barring attrition, the BSc. nursing program will graduate another 30 in 1977, 36 in 1978 and 26 in 1979.

Furthermore, not all qualified nursing graduates remain in Jordan or in the labor force. Jordanian professional nursing schools (excluding the BSc. program) produced 376 qualified nurses between 1971 and 1975. Projections from the sample survey conducted as part of NPC's Tracer Study of 1971-75 Graduates of Health Training Institutions suggest that only 74 percent of these (roughly 278) are still employed in Jordan; 19 percent have taken employment outside Jordan and another 6 percent are reportedly unemployed. Tracer Study estimates of those enemployed may, in fact, be somewhat low; calculations from Statistical Yearbooks suggest that only about 170 nurses were added to the public and private sectors between 1970 and 1975. (Data is not available on growth in the number of nurses employed by the RMS, and it is possible that the military has absorbed the 100-or-so nurses not accounted for by public and private sector employment or out-migration.) It may be the case that a considerable number of trained nurses have dropped out of the labor force. In any event, wastage between training and employment can be estimated at between 26 and 33 percent and Jordan's health system can expect to retain only between 66 and 74 of every 100 nursing school graduates.

A number of generally well-known reasons contribute to the difficulties in recruiting and retaining qualified nurses. Qualified nursing programs draw upon a pool of candidates with a particular set of educational characteristics, aspirations, and possibly, socioeconomic class characteristics. Nursing is still considered by many in this pool as a low-status occupation involving "dirty work." Indeed, objectively, it is hard work, frequently involving long hours at relatively low pay. With the same qualifications, one of the limited supply of female Tawjiihi graduates can enter teacher or other training opportunities, to prepare for a more attractive occupation, generally at higher pay. The fringe benefits now offered both to military and government nurses (housing, food, transport, and, in government, uniforms as well) have not proven to be adequate incentives, particularly for females (80 percent of all nurses) who may be under social and familial pressure to marry and "retire."

There are very evident differentials among sectors and subsectors of health with regard to compensation. A recent graduate starting work with the Ministry of Health will earn JD 68.8, as compared with JD 82 in the RMS and JD 115 in the university, which may help to explain the concentration of staff nurses at the university. Wage rates affect not only the attractiveness of the nursing profession in relation to other professions and the distribution of nurses among subsectors of health in Jordan, they affect out-migration as well. It is estimated that the same new graduate described above can earn between two and three times more in the Gulf.

If a comprehensive, functionally based health manpower plan determines that, in fact, it is desirable to increase the supply of qualified nurses, the issues affecting enrollment, out-migration, and wastage to "unemployment" will have to be addressed at their roots: low occupational status, limited pool of trainee candidates, and salaries that are both absolutely and relatively low.

#### Trained Midwives and Traditional Birth Attendants (Dayahs)

As is the case with other health manpower supply data, estimates as to the number of qualified midwives in Jordan vary, but official MOH statistics place their number at 195 in 1976, with 70 percent in government, 22 percent in the private sector and 8 percent in the military. The number in the private sector may well be underestimated. Given the variations in estimates, it is difficult to ascertain growth trends. However, comparison of Statistical Yearbook data suggests only 16 midwives joined the government and private sectors between 1970 and 1976, although there were 69 graduates of the MOH midwifery school alone between 1971 and 1976.

Based on the current MOH estimate of a total of 195 midwives in all sectors in Jordan, the ratio of midwives to live births is 1:420 and the ratio of midwives to the population comprised of fertile-age women and children under five is 1:4117. If midwives' responsibilities were only to perform deliveries, it would be feasible for them, at the present

time, to handle 420 births per year (35 per month). However, midwives are both trained and responsible for services which include prenatal care and postnatal follow-up, identification of cases for referral to the physician, home visits, examination and vaccination of children, health and nutrition education, maintenance of birth records, and supervision of MCH center employees. If midwives are to carry out these tasks in addition to conducting deliveries, it can be argued that an increase in the supply of midwives is needed. An alternative is a delegation of tasks which would free the midwife to carry out those functions for which only she is trained.

In point of fact, it is estimated in other Phase II reports, that, at best, only about 38 percent of all births are attended by trained personnel (including qualified midwives and obstetricians, in hospitals and at home). The majority of the remaining 62 percent of births are assumed to be attended by the traditional birth attendant or dayah. The NPC Health Manpower Report of 1972 estimated their numbers at 600, but this figure included both the East and West Banks. While dayahs are a major resource for birth attendance and are located in those areas most underserved by trained midwives, they are with few exceptions not part of the organized health care system. The ramifications of this fact and potentials for change in the system are discussed in greater detail in the utilization section of this report. At this point, to limit the discussion to supply issues, it will suffice to say that while additional midwives may always be desirable, any calculation of actual need should take into account (1) the existence of the dayah and (2) the effects that a redistribution of functions among midwives and other existing and potential health workers could accomplish.

#### Practical or Assistant Nurses

There are approximately 1,650 assistant or practical nurses in Jordan roughly half of whom have received about 18 months of hospital-based training following completion of the first or second year of the preparatory cycle (9th- or 10th-grade education). The remainder have

received their training through on-the-job apprenticeship. About 77 percent of practical nurses are employed in the government sector, with 2 percent in the private sector and 21 percent in the military. At their present number, there is one practical nurse for every 2.02 beds--close to the NPC standard, although as was discussed at length earlier, estimates of demand based on such standards are arbitrary. There is a relatively steady stream of graduates (approximately 130 per year) from practical nurse training programs in Jordan. The NPC Tracer Study (noted earlier) reports that 91 percent of assistant nurses who graduated between 1971 and 1975 are employed within Jordan; another 6 percent are unemployed and 3 percent are outside Jordan. While these findings suggest wastage of about 10 percent between training and employment, anecdotal evidence suggests that this may be an underestimate, possibly because of economic events within the year between the end of the Tracer Study and the present time. For example, it has been reported that 23 practical nurses left Ashrafieh Hospital alone within the last three months for positions overseas. This represents a loss of 9 percent of Ashrafieh's practical nurses within a three-month period alone. This attrition is undoubtedly tied to the fact that a practical nurse, who at mid-career may earn JD 85 to JD 117 per month in Jordan, can earn JD 250 per month in the Gulf. There are also anecdotal reports that practical nurses are leaving the occupation within Jordan, to take construction and other more lucrative jobs.

Thus, to date, the supply of practical nurses has been forthcoming. However, as has been noted, any evaluation of the adequacy of this supply must be based on a careful analysis of the types of tasks practical nurses are to perform and the locations in which they are to be performed. If tasks were redistributed, more practical nurses and different types of training (for example, more task-based training or training other than the current hospital-oriented training) would be required.

#### Nurses Under Training (Aid Nurses)

There is an indeterminate number of nurses, estimated at close to two thousand, in the classification which translates from the Arabic

("momareda taht el tadrib") as "nurses under training." These are persons with some preparatory education and between 6 and 18 months of hospital-based on-the-job training. Attrition to other jobs within Jordan may be an increasing problem although their lack of standardized qualifications make international migration (within the occupation) less likely. There is little evidence at present upon which to judge. It is anticipated that, if a significant reallocation of tasks among all health workers is desired, additional hiring and/or functionally based on-the-job training of nurse aids may be required.

#### Dentists

Of approximately 196 dentists in Jordan, over half are employed in the private sector, with the public and military sectors accounting for roughly 25 percent each. Estimates suggest that about 54 dentists have been added to the government and private sectors since 1970, with about twice as many joining the private as compared with the public sector. Thus there is one dentist for every 10,204 population or a DDS-to-population ratio of .98 per 10,000. This means that Jordan has 36 more dentists than the 1972 NPC-desired standard of .8 per 10,000 would imply.

There is no published data on the number of dentists currently in training (possibly because all dental training occurs outside Jordan). However there is little reason to expect any absolute shortage in the supply of dentists in the future. The difficulties in this field pertain to the distribution of dentists; as will be discussed below, most are concentrated in Amman.

#### Other Categories of Health Manpower

It is estimated that there are very few medical social workers in Jordan--perhaps 3 to 5, and that there are between 12 and 16 persons trained in dietetics or nutrition, although new programs at the University of Jordan may be expected to increase the numbers trained in nutrition. There are, at present, no persons trained in nutrition planning.

Pharmacists number somewhere in excess of 350 in Jordan with nearly two-thirds employed in the private sector.

There are approximately 800 medical technicians, of whom a little more than half are employed in the governmental sector and the remainder in the military. Since health workers in this category are distributed over a wide variety of specialities, including lab technicians, x-ray technicians, anesthesia technicians, sanitary inspectors, health statistics technicians, physiotherapists, and pharmacy assistants, the absolute numbers in any one category are relatively small and there is generally perceived to be a shortage of medical technicians, particularly lab technicians and physiotherapists.

Technician training programs in Jordan produced about 176 graduates in 1976 (including 16 from the university's 2 year program), although it is estimated that all these schools combined could be graduating up to 285 students per year. Underenrollments in the MOH Paramedical Institute class of 1978 will make that school's output in 1978 less than half of what it was last year; suspension of the university's program may be temporary, but with no intake as yet for the class of 1976, and without the operation of the Ministry of Education's technical training institute, output of technicians could drop as low as 100 for 1978.

Added to these difficulties at the source of supply are migrational factors. Both the 1975 Multipurpose Household Survey of Jordanians Abroad and the NPC Tracer Study document that pharmacists' assistants (the only category of medical technician surveyed) are highly likely to migrate. Fully 35 percent of those pharmacists' assistants surveyed were employed outside Jordan, where they can earn between 3 and 6 times more than at home. Such a high rate of outflow could mean that, as of the class of 1978, fewer than 50 medical technicians per year would be available to Jordan. As in the case of other types of health manpower discussed in this report, a careful analysis of the actual tasks to be performed by medical technicians is needed. The potential for shifting some tasks to auxiliary levels of manpower should be explored.

## GEOGRAPHICAL DISTRIBUTION OF HEALTH MANPOWER

The distribution of health manpower by sector has been discussed in the previous section on supply. To a certain extent the geographical distribution of health manpower has also been touched upon in the previous section, as it pertains to the adequacy of existing and projected supply. However the geographical distribution of Jordan's health manpower is both such a salient feature of its health care system and such a critical issue (whether that system is to be redirected toward delivery of primary level curative and preventive services, or is to continue in its present course), that it bears further expansion and discussion here.

### Physicians

Table D-4 illustrates that fully 91 percent of all physicians are in the Amman-Zerqa-Irbid region. Over two-thirds of public and private physicians are concentrated in Amman alone, while only 43 percent of the Kingdom's population is located within the same area. This maldistribution of physicians leaves Amman with a physician-to-population ratio of 1:1516 while ratios in other regions of the country range from 1:2003 in Ma'an to 1:5117 in Karak. It should be emphasized that, while complete data on the distribution of private physicians is lacking, their concentration in Amman is even greater than that of government and private physicians taken together. To illustrate, only 38 of 119 physicians in Irbid are private; only 3 of the 25 in Ma'an are in the private sector. The significance of the maldistribution is even more striking when one considers that physicians in all regions tend to be located in urban areas (over 5,000 in population), while outside Amman governorate, anywhere from 40 percent to 72 percent of the regional populations are scattered in rural communities of fewer than 5,000 people. Time and distance factors thus make it even more difficult for the existing physicians in the regions outside Amman to cover the populations adequately.

A similar distribution pattern prevails in the military sector, with over half of all RMS physicians being located in Amman and three-fourths in the Amman-Zerqa-Irbid regions. While this pattern of

TABLE D-4

DISTRIBUTION OF PUBLIC AND PRIVATE PHYSICIANS  
BY REGIONS, MID-1976<sup>a</sup>

District and Population	No. MD's Public & Private	Ratio to Population	% Distri- bution of MD's	% Distri- bution of Population
Amman 808,455	533	1:1516	67%	43%
Zerqa 282,900	71	1:3984	9	15
Irbid 531,305	119	1:4465	15	28
Balqa 124,260	28	1:4438	3.5	6.5
Karak 102,354	20	1:5117	2.5	5.3
Ma'an 50,081	25	1:2003	3.1	2.6
<b>Total:</b> 1,899,355	<b>796</b>			

<sup>a</sup>Source: MOH Vital & Health Statistics Section. Population estimates from Agricultural Quick Count 1975 have been used in order to be consistent with other Phase II reports. If 1976 population estimates were used, the MD-to-population ratios would be even less favorable in all regions and Zerqa.

distribution of RMS physicians is consistent with the distribution of RMS physicians is consistent with the distribution of uniformed service personnel (the RMS primary population), distribution of eligible dependents, now under study by the RMS, may point to disparities in the distribution of dependents in relation to available RMS physicians.

A number of factors contribute to these patterns of physician distribution. First, the very nature of their training orients physicians toward settings in which they have access to the equipment and professional environment to which they were accustomed during their training period. This, then, means preference for hospital-based or well outfitted clinic-based practices--conditions largely available only in urban areas. Secondly, the opportunities for continuing education, professional growth, and advancement are generally most accessible in urban areas, and particularly in Amman. Thirdly, (not necessarily in order of importance) and related to the second point above, there are financial incentives to seeking professional advancement, and corresponding disincentives to service in rural areas. The general practitioner serving in an MOH health center in a rural area may begin with the same basic salary, technical allowance, and allowance for afternoon work as the resident physician in a hospital (JD 165 total); but at the end of five years, the resident is eligible to receive a specialty allowance which raises his total salary to JD 207, while the rural GP earns 170--and accrues no specialty allowance. If either of these physicians were to take two years of specialty training abroad, followed by three years of MOH service, at the end of the five years he or she could be earning JD 290, and have greater opportunities not only for advancement within government service but for earnings in the private sector or abroad--unless the physician has specialized in public health. For this choice, he receives no specialty allowance under the present civil service salary structure.

Fourthly, relatively few physicians are natives of the regions or rural areas of Jordan. Medical schools take those students with the highest grades, and the regional school systems produce few of these.

Thus the majority of physicians lack the familial or other ties which might make regional location attractive. Indeed, they may find the environment alien. This leads to the final point, which is the unavailability of appropriate schooling for rural children and lack of social environment commensurate with what is to be obtained in Amman.

#### Other Types of Health Manpower

As are physicians, staff nurses are geographically maldistributed: approximately 70 percent of staff nurses are concentrated in the most urbanized regions, particularly Amman and, like physicians, principally in hospitals. Only 95 qualified nurses are posted at tababas and health centers outside Amman. Midwives are somewhat more equitably distributed, with 58 percent being located in health districts outside Amman. Dentists and medical technicians, however, are also strongly urban based, with the great majority in Amman.

Thus, the concentration of almost every category of health manpower in urban areas, particularly Amman, leaves the nearly 57 percent of Jordan's population that lives outside Amman city with comparatively fewer health workers to serve its health needs.

#### SUMMARY

Several issues emerge from this review of health manpower resources data, methodology, and supply in Jordan. At the present time, Jordan has no comprehensive health manpower plan. Estimates of health manpower needs or demand have tended to rely on the establishment of arbitrary standards and the subsequent calculation of aggregate numbers implied by these standards. A more meaningful health manpower plan requires an alternative approach which is based on:

- 1) policies defined in terms of the types and mix of health services to be provided,
- 2) a functional analysis of the tasks to be carried out in the delivery of desired services,
- 3) a realistic assessment of resource constraints, including not only monetary constraints but also availability of trainee candidates, capacity of training institutions, output, and retention,

- 4) specification of "who is to do what." In many cases, major redivisions of labor and the development of both existing and new types of auxiliary level manpower will be found more appropriate to the tasks and cost-effective,
- 5) coordinated health manpower development in which "demands" or "needs" for the various types of health manpower are calculated in relation to one another, and their production carried out accordingly.

The development of such a comprehensive health manpower plan will necessitate establishment of a health manpower planning capacity -- one or two individuals who can act upon the approach outlined above. At present, a number of observations can be made about health manpower supply in Jordan.

1. While realistic determination of the adequacy of physician supply depends upon the type of health system desired, even the application of a "standard ratio" approach suggests there is a shortage of general practitioners, pediatricians, public health or community medicine physicians, and obstetrician-gynecologists. A task- or function-based analysis of health manpower needs is likely to point to the desirability of even more of these types of physicians relative to other types. The geographical maldistribution of physicians is a key issue to be addressed.
2. The supply of qualified nurses (R.N.s) in Jordan is influenced not so much by institutional capacity as by difficulties in recruitment, enrollment, and wastage through out-migration and premature exit from the labor force. It is estimated that a number of these difficulties could be redressed by increasing the opportunities for poorer women to enter this profession and by redistributing tasks to other types and levels of health workers.
3. The principal issue with regard to the supply of midwives at the present time is the delineation of their functions in

relation to other health workers, particularly dayahs.

4. The current supply of practical nurses does not appear to be critically affected by those factors that influence the supply of qualified nurses, although there is some evidence of out-migration and attrition. It is anticipated that the supply of practical nurses could be expanded with less difficulty than that of qualified nurses, if this were the desired direction of a comprehensive health manpower plan.
5. The principal supply issue with regard to dentists is their geographical distribution.
6. The supply of medical technicians has been critically affected by problems of recruitment, enrollment, and wastage, largely through out-migration.

## ISSUES IN UTILIZATION OF SELECTED TYPES OF HEALTH MANPOWER

### INTRODUCTION

This report has by no means undertaken the kind of detailed functional or task analysis which must constitute one basis of a comprehensive health manpower plan. However, several salient features in the current utilization of selected types of MOH manpower were observed as meriting further inquiry and are discussed below.

#### Physicians in Government Service

As was noted in the discussion on supply of physicians, there is considerable evidence that, with a relative shortage of general practitioners and an availability of specialists, a substantial proportion of the specialists' time is spent in delivery of basic curative services.

In an attempt to discourage such inappropriate utilization of physician resources through triage, hospital outpatient clinics often impose a differential fee system: for example, in one government hospital visited, it cost 150-200 fils to see a general practitioner and 500 fils to see a specialist. While such differential fees undoubtedly serve as some financial disincentive, there is also evidence that this fee structure not only does not have its intended effect, but also creates inequitable access to physician services and implies a differential value to the services of the providers, which in turn creates patient demand for a high-cost oriented system.

If costly specialist time is to be efficiently and effectively utilized, a redistribution of tasks among health workers is likely to be required and a better functioning referral system must be developed to supplement, if not replace, the existing disincentives to self-referral to physician specialists. Such changes will require: 1) more available general practitioners among physician personnel, 2) more reliable and available access to the health care system through health workers at the periphery, and 3) effective referral to specialist resources among or across sectoral boundaries.

To the extent that improved utilization of all physicians is based on the availability of general practitioners (and, it should be stressed, this is only one consideration), the disincentives to general practice detailed in the discussion of physician distribution must be addressed. Differentials in salaries, working conditions, and advancement opportunities serve as much to discourage general practice as they do to discourage rural service.

#### Nurses in government community clinics

In the governmental sector, the 82 urban clinics and 250 rural clinics constitute the nearest and potentially the first point of contact between the health care system and the populations they serve. These clinics are staffed predominantly by male nurses, and are visited once or twice weekly by a physician from the government health centers who examines patients and provides primary curative services. It has been observed that the education and training of the clinic nurses varies considerably. They may have between 9 and 12 years of schooling and anywhere from one month of hospital-based training to a full 18 months of practical nursing training. Whether they have full practical nursing qualifications or less, however, the tasks entrusted to and performed by these nurses are consistently limited: they provide simple first aid, gather patients together when the physician comes to visit, give injections and other medication in individual cases when the physician prescribes, and keep the the clinic premises clean. In short, the practical nurse, in most locations, is a combination porter, janitor, clerk, and nurse aid. In one or two locales the nurse may keep a limited supply of simple drugs which he is allowed to dispense for 24 hours until a physician arrives, but this latitude is the exception rather than the rule. The nurse does no health education or health promotion work, although he is in continual residence at the clinic. He has no contact with the sanitary inspector who, like the physician, visits weekly or biweekly from the health center. Whether because he is male, because he provides little or no curative service, because he has variable qualifications, or because he is very evidently not a trusted

member of the health team, the clinic nurse is unable to provide the kinds of ongoing services most needed at the local community level: simple, routine curative services (which maximize use of the supervisory physician's time and ensure ready patient access into the health care system), health education, especially in nutrition and hygiene, simple case-finding including MCH outreach, ongoing sanitation and other environmental health activities, and monitoring of vital statistics.

In the few instances where the nurse has adequate training, he is presently underutilized. In the majority of cases, where the qualifications of the nurses can be questioned, it is the potential function of the nurse which is underutilized. The rural village or urban community clinic is, or should be, the first point of contact between the population to be served and the health care system. It should be staffed so as to ensure ready access into that system for curative services and to ensure ongoing delivery of those preventive services that can strike health problems at their root causes.

It is questionable whether the existing cadre of practical nurses can fill this need. The variations in qualifications among these nurses are extreme; in any case, their training, if any, has been hospital-based. They are not prepared to carry out more than very limited preventive activities, although they might, because of greater familiarity, be able to assume some simple curative tasks. But most problematic is the fact that, in general, they lack the trust not only of the population, but also of the physicians who must be responsible for supervising them. It is for these reasons that development of cadres of auxiliary health workers is recommended. Such workers would, through carefully designed, task-based training, be prepared to extend a wide range of preventive services, under the supervision of or in coordination with the existing sanitary inspector, the midwife, and the infectious disease personnel. He or she would become a vital link in the development of accurate health and vital statistics. To ensure the trust of the population necessary to gain acceptance of the abovementioned activities, and to enable the physician (most appropriately a general practitioner from the health

center) to have time for supervision as well as for treatment of referred cases, the auxiliary must be able to extend simple, clearly specified curative services. In other countries, the introduction of similar cadres of health workers has reduced the number of patient visits to health center level physicians by up to 65 percent. It is, of course, critical that physicians and auxiliaries work closely in a well structured supervision and referral system that ensures both full appropriate utilization of the auxiliary worker and ready access to physician services when needed. Regular physician visits, together with required referral by the auxiliary could accomplish this.

It would be at least three to five years before cadres of auxiliaries would be ready to take their places in the clinics. In the meantime, the tasks of the existing clinic nurses can be expanded to include (1) coordination with dayahs to ensure more rapid and complete identification of pregnant women and newborns for MCH and immunization services, (2) extension of the work of sanitary inspectors through regular monitoring of village environmental conditions, (3) regular followup of nonimmunized children, and (4) with some training, the provision of health and nutrition education. In some instances, practical nurses may wish to take further training to become auxiliaries; in others, when the auxiliaries are ready, the nurses may prefer to return to hospital settings. But until such time as it becomes necessary to make this choice, the clinic nurses can, with all their limitations, do more than at present to extend the health care system.

#### MCH workers

As has been documented in other Phase II reports, MCH activities are reaching, at best, only about 20 percent of the population to be served. If MCH coverage is to be extended, it is evident that a more efficient utilization of midwives is needed. At present, observations indicate that government midwives carry out MCH activities only during regular center operating hours. Many have private practices after hours and the births attended in private practice are not counted among MCH activities,

nor are the mothers and children served after hours necessarily brought into the regular scope of MCH services during duty hours. With the exception of a few locales, midwives confine their activities to the MCH center location and are not actively engaged in outreach activities.

Considerable improvement in utilizing the midwife's special skills can be effected by carefully reviewing their functions, which have in fact been well delineated at the central MCH training center in Amman, and by delegating some tasks to other workers. Nurses and auxiliary personnel in community clinics represent two cadres to whom some functions, such as identification and vaccination of nonimmunized children, actual maintenance of birth records, and health and nutrition education can be delegated. The dayah, who, it is estimated, attends more than 60 percent of births in Jordan, is another worker to whom tasks might be delegated and who, by virtue of her activities on the periphery of the organized health care system, could be engaged in bringing women and their children into that system. There are a number of difficulties inherent in involving the dayahs in the organized health care system. Dayahs are, essentially, private practitioners and, while they are supposed to be licensed by the Regional Directors of Health, it is estimated that fewer than 10 percent are licensed. Thus, there is little, if any, means of control over their qualifications or practices. Further, little is known about the present or future supply of dayahs, their fees, their workloads, or the tasks which they actually perform or are capable of performing. There is also little evidence that dayahs are very interested in becoming involved in the organized health system, particularly in the absence of incentives. Further, the attitudes and practices of MCH physicians and midwives do not encourage involvement of dayahs -- in cases where MCH midwives have private practice after duty hours, they may well view the dayahs as competitors.

Despite these difficulties, however, cooperative interrelationships between dayahs and MCH workers can be explored, possibly drawing upon the UNRWA experience. Registered dayahs (who are actually employed by UNRWA after submitting formal proof of number of deliveries attended and/or

short training courses in maternity hospitals) participate as full members of the health center team, transmitting birth records, referring special maternity cases, identifying mothers and children for followup, and partaking of regular in-service training, as well as carrying out their own practices.

Critical choices must be made and policies developed concerning the types and mix of maternal and child health services to be provided and where those services --including deliveries-- are to be provided. Based on these decisions, the tasks and functions necessary to carry out provision of services must be determined and allocated among the range of workers --midwives, nurses at all levels, auxiliaries, dayahs-- who could perform them.

## HEALTH MANPOWER EDUCATION AND TRAINING IN JORDAN - KEY ISSUES

### Introduction

Determinations of the general emphasis and direction of a national health plan and, more specifically, the numbers, types, and levels of manpower required to staff health services, will have a profound impact on Jordan's health manpower education and training institutions. Admissions policies, intake and output capacities, curriculum content, teaching methods, length of training, and allocation of resources among institutions must be linked to the nature of health services to be provided.

The following discussion of health manpower education and training in Jordan details current conditions which can be expected to affect the ability of existing institutions to respond to the requirements of the national health plan and the manpower strategy to implement it.

### Physicians

The University of Jordan began undergraduate education of physicians in 1972, with an explicit commitment to prepare community-oriented general practitioners who can begin to create a balance with the existing preponderance of subspecialists. Currently, the university medical school has a capacity of 55 and an average intake of 54 students. Proposed development of a second medical school at Yarmouk must be considered in light of the total service and manpower needs of Jordan's health policy and with consideration of fundamental resource constraints.

Policy makers should raise questions concerning 1) the numbers, types, roles and distribution of physicians required by coordinated health services and manpower policies and plans; 2) the comparative and alternative costs of expanding the presently low intake at the University of Jordan Medical School, versus developing a new school; 3) the alternative costs of developing hospital- and other facility-based teaching situations in Amman versus the development of these sites to support a new medical school; and 4) the alternative costs of developing more

physicians, versus investing in and utilizing less costly types and levels of health manpower.

At the present time, negotiations are taking place between the University of Jordan Medical and Science Faculties and the Royal Medical Service to enable the university, through staff loans, to strengthen the basic science programs of the RMS technician and nursing programs in exchange for access to training facilities at the King Hussein Medical Center. Not only physician education and training, but also nursing and technician education in both the university and the RMS will thus be enhanced. Plans are currently under negotiation to extend this cooperative use of resources to the MOH's Ashrafieh Hospital.

In contrast with these enriched opportunities for training in Amman, physicians in the regional hospitals experience a severe lack of professional growth. There are few grand rounds or regular conferences; occasionally physicians in the regions are released to go to Amman to attend continuing education programs or professional seminars, but by and large, limited opportunities for professional renewal only compound the other working conditions which make rural service unattractive, especially to the young and ambitious.

#### BSc. Nursing

Concurrently with the opening of the medical school, the University of Jordan enrolled its first class of 50 BSc. nursing students in 1973, 28 of whom withdrew between 1973 and 1976, most to pursue other studies. Of 22 students graduated in 1976 (12 men and 10 women), 2 females are not employed, 1 male is going overseas for further training in hospital administration, and the remainder are employed at the university hospital, although there is no work commitment required, despite a subsidized tuition of only JD 27.50 per semester.

The nursing program at the university, like nursing and medical technician training programs below the BSc. level, has suffered under enrollment relative to its capacity of 50: the school expects to

graduate 30 students in 1977, 36 in 1978 (all female) and 26 in 1979, barring further attrition. (The multiple causes of difficulties in recruitment to qualified nursing (R.N.) programs have been discussed extensively in the section of this report on Health Manpower Supply.) In an effort to expand enrollment, the BSc. Nursing Program has begun to accept students having only a grade of 60 in the Tawjihi science examination, without substantial evident impact. Alternatively, a mass media public relations program is planned, aimed at improving the image of nursing in the eyes of students' parents. This will supplement existing recruitment activities which consist of press campaigns, direct contact with students in the first-year Faculty of Science and personal recruitment through university staff members' contacts.

#### Professional (Staff) Nursing Programs Below the BSc. Level

Three professional nursing programs (the Nursing College of the Ministry of Health, the Princess Muna Nursing College of the Royal Medical Services and the Baptist Nursing School at Ajlun), are major sources for staff nurses in Jordan. In addition, the Augusta Victoria professional nursing program in Jerusalem (sponsored by the Lutheran Federation) graduates approximately 15 nurses per year, some of whom reportedly seek work in the East Bank. Table D-5 compares characteristics of these training programs, including graduates for the past five years and current enrollment.

Again, as in the case of BSc. nursing, several schools have experienced a recent drop in enrollment. In the case of the MOH Nursing College, some expansion of enrollment was achieved this year (in the class of 1979) only by temporary suspension of the Tawjihi pass requirement. At Princess Muna, the Tawjihi pass requirement was not dropped for the class of 1979. Thirty-five students were initially accepted; 15 of these concurrently applied and were accepted for teacher training; 20 enrolled at Princess Muna and 5 have dropped out already. Of the remaining 15, it will be noted, 10 are from Bahrain and cannot be expected to stay permanently in Jordan.

TABLE D-5

PROFESSIONAL NURSING TRAINING BELOW UNIVERSITY LEVEL<sup>a</sup>

Institution	Number of Graduates						Current Class Enrollments by Class Year			Maximum Capacity
	1971	1972	1973	1974	1975	1976	1977	1978	1979	
1. <u>Nursing College</u> Auspices: Health Ministry Entry: Tawjihi Pass <sup>b</sup> Length of Training: 39 months Credentials: MOH diploma; Govt ex.	32	16	18	23	67	52 <sup>c</sup>	44	23	44	67
2. <u>Princess Muna Nursing College</u> Auspices: Royal Medical Service Entry: Tawjihi Pass Length of Training: 36 months Credentials: RMS diploma; Govt ex.	19	11	31	43	41	27 <sup>d</sup>	42	20	15 <sup>e</sup>	40
3. <u>Baptist Nursing School at Ajlun</u> Auspices: Baptist Entry: Tawjihi Pass Length of Training: 36 months Credentials: Diploma; Govt exam	3	7	1	7	2	3 <sup>f</sup>	Est. 5-7 yearly			10
4. <u>Augusta Victoria</u> Auspices: Entry: Tawjihi Pass Length of Training: 36 months Credentials: Diploma; Govt exam	16	9	-	15	15	9	Not known			15
<u>Midwifery School</u> Auspices: Health Ministry Entry: Tawjihi Pass Length of Training: 27 months Credentials: Certificate & license	5	12	9	12	23	8	4	15		26

<sup>a</sup>Source:<sup>b</sup>Tawjihi requirement temporarily suspended in 1976 because of underenrollment.<sup>c</sup>Four additional failed and will retake exam; expect graduation in early 1977.<sup>d</sup>An additional 15 failed in 1976, will retake exam after additional training, and are expected to graduate in early 1977.<sup>e</sup>Ten of these students are from abroad and are not expected to stay in Jordan.<sup>f</sup>Four additional failed.

Conditions of training are generally comparable for female nursing students at the MOH Nursing College and Princess Muna: All must be unmarried, all receive housing, food, and transportation, and all are paid a monthly stipend ranging from 15 JD (MOH) or 20 JD (RMS) in the first year to 20 JD (MOH) or 27 JD (RMS) in the final year of training. Conditions for male students are somewhat less favorable: They do not receive housing, food, or transportation and their stipend is only 10 JD per month in the MOH school. This differential between benefits for male and female students is compensated by differential commitment requirements. Female MOH graduates must remain in government service three years, males one year. In the RMS, the commitment is two years for each year of training, regardless of sex. However, female graduates of both the MOH and RMS schools can buy out of the remainder of their commitment period if they marry.

Despite what appears to be less favorable circumstances for male nursing students, there is reportedly a greater supply of male candidates to nursing programs (including, in fact, the BSc. program at the university) than their proportionate enrollment in recent classes reflects. One justification for policies to discriminate against males is the considerable evidence that male graduates are more highly migratory than females. In the Tracer Study sample, 82 percent of those health workers outside Jordan were male. Reportedly, males often use nursing as a means of support while preparing for other, more prestigious professions. On the other hand, alternative means of expanding enrollment (such as by lowering entry requirements for females) seriously compromise efforts to improve the image of the nursing profession.

In 1976, some measure of coordination among curricula at the three major East Bank schools was achieved. All now have comparable basic curricula. Subsequently, however, an additional three months of training was added to the MOH Nursing College program, raising the training period from 36 to 39 months, in order to enable graduating nurses to enter civil service at a higher starting salary.

### Midwife Training

Midwives for all sectors are trained in the Ministry of Health midwifery program. Like the professional nursing programs, the midwifery program has suffered a drop in enrollment and, as of 1976, students who completed the secondary cycle but failed the Tawjihi have been accepted in an effort to expand enrollment. In another effort to enhance both the training and the standing of midwives, students in the first year of midwifery school have, since 1975, been combined with first-year MOH nursing college students. Following completion of another 15 months of specialized midwifery training, these students now have the option of returning to the nursing college and completing the nursing degree in order to become nurse-midwives. However, those midwives trained before 1975, who do not have the basic first year of nursing, are not eligible to complete the nursing program.

Another program, sponsored by WHO and UNFPA and currently planned to begin in 1977, will provide post-basic midwifery training for an as yet undetermined number of graduate nurses.

### Assistant or Practical Nurse Training

Practical nurses are trained under the auspices of the MOH, in hospital-based programs at Ashrafieh, Salt, Irbid, Karak, Mafraq, and, as of 1976, Zerqa; under the RMS at Princess Muna (females) and the Medical Services Training Center (males); and most recently, under the Ministry of Education, in the Tawjihi Nursing Program. Program characteristics are shown in Table D-6.

There has been less evidence of underenrollment in these programs than in the BSc. and professional nursing school programs, possibly because entry requirements are lower in the practical nursing programs and the work upon graduation is believed to be less demanding. The exception is the RMS Medical Services Training Program for male nurses. Not only is enrollment down in each intake cycle, but this pool must also provide students for technician training, so the number of practical nurses graduated will be even lower than present enrollment would suggest.

TABLE D-6  
PRACTICAL NURSING TRAINING PROGRAMS

Institution (Auspices)	Number of Graduates										Current Class Enrollment of 1977	Maximum Capacity			
	1971		1972		1973		1974		1975				1976		
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)			
1. <u>School of Practical Nurses (MOH)</u>															
a. Ashrafieh			9		37		16		14				13	15	
b. Salt	--	--	--	--	--	--	11	--	14	--			--	15	
c. Irbid											Still		17	20	
d. Karak	--	--	--	--	--	--	--	--	--	--	18		15	20	
e. Mafraq	--	--	--	--	--	--	--	--	--	--	--		16	15	
f. Zerqa	--	--	--	--	--	--	--	--	--	--	--		9		
Entry: completed preparatory cycle or above															
Length of Training: 18 months															
Credentials: Certificate and MOH qualifying exam															
2. <u>Princess Munn Practical Nurses Program (RMS)</u>	5	4	--	8	--	17	28	42	11	22	17	9	11 <sup>a</sup>	15 (one cycle only)	35 each class
(female only)															
<u>Medical Services Training Center Practical Nurse Program (Male Medical Orderlies)</u>	68		63		32		195		190		49			July 26	Dec. 12
Entry: Second or Third year of preparatory cycle															50 each class
Length of Training: 18 months															
Credentials: RMS Certificate															
3. <u>Tawjithi Nursing Program (MOEd)</u>	--	--	--	--	--	--	--	--	--	--	--	--		15-20/yr	
Amman														18/yr (est.)	
Irbid														18/yr (est.)	
Zerqa														18/yr (est.)	
Entry: Completed preparatory cycle															
Length of Training: 36 months															
Credentials: Tawjithi in Nursing															

<sup>a</sup>Source:

<sup>b</sup>Second group of 1976 practical nursing trainees will graduate in January or February 1977.

By contrast, the MOH program at Ashrafieh is enrolled to the maximum feasible, given a limited number of patients and space available for practicum. Presumably, if Ashrafieh joins with KHMC and the university in the sharing of training resources, this situation will be eased.

There is considerable variation among practical nurse training programs in entry requirements, training content, and qualifications at graduation.

#### Entry Requirements

Generally, practical nursing students in the MOH programs have completed the preparatory cycle; students in the Ministry of Education (MOEd) program must have completed the preparatory; students in the RMS schools are admitted after the second or third year of the three-year preparatory.

#### Training Content

MOH students spend one month in classroom-based training and then shift into a curriculum of two days classroom and four days (24 hours per week) of practicum in the hospital. The MOEd Tawjihi nursing students spend the first year of their program in the classroom and then combine classroom training with 12-18 hours per week of practicum during the second and third years of their program. RMS students spend the first two months in classroom studies and then begin 32 hours per week of practicum for the remainder of their 18-month program. Thus, there is considerable difference among the programs in the total hours of practical preparation, with the RMS being the most practicum oriented, followed by the MOH, and finally the Tawjihi programs.

#### Qualifications at Graduation

Neither MOH nor RMS practical nurses have Tawjihi unless they entered the training program with that degree, while graduates of the MOEd program will receive the Tawjihi degree in nursing. These differences are reflected in the certification of practical nurses. MOH

practical nurse graduates receive a school certificate and must pass a government qualifying licensure examination. RMS graduates receive a school certificate but do not take the government examination, although there have been efforts (now suspended) to require them to do so. There is currently controversy surrounding the question of whether MOEd Tawjihi nursing graduates will be required to take the government exam, with the debate centering on whether the products of the MOEd and MOH programs are in fact comparable.

The variations in practical nurse training and certification which have been detailed above make clear delineation of this occupational classification difficult, hinder efforts to equalize compensation and, in the final analysis, must affect both recruitment and professional standing on the job.

#### Medical Technicians

Medical Technicians (including laboratory, dental, x-ray, pharmacy, public health/sanitary inspectors, vital statistics, operating room, and physiotherapy assistants) are currently trained in four programs in Jordan. Program characteristics are detailed in Table D-7.

The MOH Paramedical Institute trains the full range of technicians mentioned above; the Council of Pharmacists' School of Pharmacists' Assistants trains pharmacists' assistants only; the RMS Medical Services Training Center also trains the full range of technicians; and the University of Jordan's Medical Services Training Institute has trained primarily laboratory technicians in a certificate (not a BSc.) program. The Medical Technician Training Program (due to commence at the MOEd's Polyclinical Training Center) is not yet operational.

#### Enrollment

As has been shown to be the case in other health manpower training institutions, the medical technician programs have experienced a drop in enrollment. At the Paramedical Institute (MOH), 216 students applied in 1976. Seventy-five were refused entry because they had been conscripted

TABLE D-7

## MEDICAL TECHNICAN TRAINING PROGRAM

Institutions (Auspices)	1971	1972	1973	1974	1975	1976	Current Enrollment		Maximum Capacity	Credentials
							Class of 1977	Class of 1978		
<b>1. Paramedical Institute (MOH)</b>										
a. Public health/sanitary inspectors	--	--	(1975 grade first enrolled)	--	13	13	12	Still in basic program-	20	MOH Diploma
b. Assist. lab. tech.	--	--	"	--	16	12	18	specialty not yet selected	20	
c. Asst. x-ray tech.	--	--	"	--	15	17	15		20	
d. Asst. dental tech.	--	--	"	--	5	0	9		20	
e. Asst. pharmacist	--	--	"	--	12	10	11		20	Licensure by Council of Pharmacy
f. Vital/Health Statistics	--	--	"	--	7	9	6		20	
g. Anesthesia asst.	--	--	"	--	15	15	8		20	
h. Physiotherapy	--	--	"	--	--	14	11		20	
Total Grads as of 1976	173				83	90	90	43	160	
Entry: Tawjthi Science										
Length of Training: 24 months										
<b>2. Polyclinical Training Center (MOEd)</b>							Not operational		30	
<b>3. School of Pharmacist Assistants (Pharmacy Council)</b>	36	20	33	36	41	34	Not Known		60	Licensure by Council of Pharmacy
Entry: Tawjthi										
Length of Training: 12 months										
<b>4. Training Center (RMS)</b>										
a. Dental Assist.	4	2	19	20	3	8	Still in Basic		10	RMS Certificate
b. Operating Room tech.	8	1	11	10	15	4	6 mos. nursing		10	
c. Lab. tech.	8	6	6	22	13	5	(See table )		10	
d. X-ray	8	4	12	6	11	4			10	
e. Pharmacy asst.	7	0	6	18	10	6			10	
f. Sanitary Inspec.	--	--	5	9	4	3			10	
Entry: 2nd or 3rd prep or above										
Length of Training: 18 months										
<b>5. University of Jordan Medical Services Training Institute</b>										
Lab tech.					15	16	25 Program suspended no intake 1976			
Entry: Tawjthi										
Length of Training: 24 months										

\*Source:

to the Army, 141 were invited to enroll and only 43 actually did so (compared with 90 the previous year). While conscription absorbed nearly half the potential enrollees, another nearly 100 potential students obviously chose other training or work options, including, it is estimated, the new BSc. opportunities made available with the limited opening of Yarmouk University in October 1976. While it is not possible to estimate the number of medical technicians that will result from the RMS program's 1976 enrollment (since these students are still combined with male nursing students in the first six months of core curriculum) it is clear that the total number of MSTC enrollees this year is less than last year's output from practical nursing training alone--and as has been noted, both RMS male nursing and technician programs must draw their students from this year's reduced pool. Similarly, at the university program, it is reported that up to 25 percent of the most recently enrolled class withdrew shortly after entry to pursue BSc.-level medical technician studies abroad. The entry requirement of 720 Tawjihi means that potential enrollees are eligible and qualified not only for degree studies abroad but also for many other University of Jordan programs which offer the attractive BSc.

While it is difficult to pinpoint reasons for underenrollment, it is unlikely that recruitment is enhanced by variations among the programs mentioned or the special difficulties which prevail within several of them.

#### Entry Requirements

These range from second- or third-level preparatory for the RMS to Tawjihi Science for Paramedical Institute students. The RMS/MSTC program is 18 months.

#### Length of Training

The Council of Pharmacists' program is 12 months, the Paramedical Institute and university programs are 24 months.

#### Training Content

The RMS program, after the first six months of basic nursing core curriculum, is on-the-job training in the generally well-equipped settings

where students will eventually work. The Paramedical Institute training, after six months of core curriculum, is one-third theory and two-thirds practicum for the remaining 18 months of the program -- an emphasis on theory which graduates in the field have reported is not utilized or required on the job. New facilities for practicum should be ready shortly in Ashrafieh Hospital to replace currently inadequate facilities for Paramedical Institute students.

Intake to the technician training program at the university was suspended for October 1976, pending resolution of a decision which has been before the Council of Deans of the University since August 1976. This decision involves approving or disapproving a proposal to allow the Faculty of Medicine to continue the technician training program without the University's Faculty of Science, which withdrew its cooperative support of the program earlier this year, in part over the issue of whether a less-than-BSc. program should be conducted under university auspices.<sup>1</sup> If and when this decision is made, a second proposal will go before the Council of Deans to allow development of an "advanced level" part-time (one day per week) non-degree program for employed technicians.

There has been virtually no coordination of collaboration with regard to curriculum, staff, faculties, or equipment among any of the technician training programs mentioned, although, reportedly, efforts to effect such coordination have been initiated at various times since 1973. This lack of coordination, in the face of underenrollment, and extreme diversity of program content, quality, resources, and products, is a condition which Jordan can ill afford, given the Kingdom's severe shortage of qualified technicians.

#### SUMMARY

Jordan's health training institutions can, potentially, provide a small but steady stream of health manpower. However, those institutions-- and the production of health manpower in Jordan generally--must address

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<sup>1</sup>A proposal to develop a BSc. technician training program was rejected on the grounds that products of such a program would be too highly migratory.

**a number of issues:**

1. Lack of planned coordination among health manpower education and training institutions for the production of health personnel is reflected in differentials in entry requirements, curriculum content, practical versus theoretical emphasis, length of training, certification, and the quality and quantity of material resources.
2. The cost of the lack of planned coordination is an inefficient and less-than-optimally effective use of scarce resources: money, facilities, equipment, and staff required to conduct education and training.
3. The differentials among programs noted above (particularly in the case of assistant or practical nurses and medical technicians) also make it difficult to effect clear occupational delineations and, in turn, may inhibit attempts to develop
  - a) official systems of task differentiation and delegation,
  - b) structures for wages and appropriate rewards and incentives,
  - c) career ladders and d) status as professional health workers.
4. Difficulties in recruitment (especially for qualified nurse training), declining enrollments (among these nurses and medical technicians in particular), as well as the basic nature of many tasks to be addressed by Jordan's health system, point to the need for a central look at policies which reflect the view that "highest is best" in the definition of admission standards and required credentials of health workers.
5. Policies and plans for the education and training of physicians currently proceed without careful regard for the total service and manpower needs of the Kingdom's health system or for fundamental resource constraints. Proposed development of a second medical school at Yarmouk must be examined in light of these

factors. Policy makers should raise questions concerning a) the numbers, types, roles, and distribution of physicians required by coordinated health services and manpower policies and plans; b) the comparative and alternative costs of expanding the presently low intake at University of Jordan Medical School, versus developing a new school; c) the alternative costs of developing hospital- and other facility-based teaching situations in Amman versus the development of these sites to support a new medical school; and d) the alternative costs of developing more physicians, versus investing in and utilizing less costly types and levels of health manpower.

### Implications

The issues detailed in the Health Manpower Resources Appendix of this report and highlighted above point to a number of implications.

1. Jordan requires both a comprehensive health manpower policy and a detailed manpower plan to link development and utilization of human resources to overall health policy and its objectives. Projected health manpower needs, the roles and allocation of tasks among various workers, and education and training must be defined concurrently and comprehensively. This must be done not only in relation to the health needs of the population and the services organized to meet them, but also to available resources.

2. Planned and balanced attention to the development of basic health services, as well as realistic resource constraints, point to the desirability of developing the lower levels of health manpower, including new auxiliary types of workers.

3. The extension and integration of basic services imply more effective utilization of existing workers through expansion and integration of current tasks and functions.

4. Improved geographical distribution of services and their continued effective delivery require opportunities for continuing education

and the growth of skills and knowledge. These requirements pertain for all kinds and levels of health workers, in all types of facilities.

5. Policies concerning development of high-cost physician skills must be formulated and carried out in the context of 1) overall health system needs, 2) comprehensive manpower policies which include all types and functions of health workers, 3) and efficient utilization of resources.

APPENDIX E

ECONOMIC PLANNING AND THE HEALTH SECTOR

This brief review will encompass the Seven Year Program For Economic Development, 1964-1970; the Three Year Development Plan, 1973-1975; and the Five Year Plan, 1976-1980.

#### SEVEN YEAR PROGRAM, 1964-1970

At the time this plan was being drawn up the West Bank had not yet come under Israeli occupation.

The plan objectives are set out as:

1. Increasing the number of civilian hospital beds from 19.5 per 10,000 persons in 1962 to 25 beds per 10,000 persons in 1970.
2. Improving the standard of existing curative health services.
3. Improving the standard of preventive health services by establishing 17 district multipurpose health centers including tuberculosis and maternity services.
4. Improving the standard of health services through more and better trained personnel. This involves expanding the existing Professional Nursing School to accommodate:
  - a) a new Practical Nursing School for females,
  - b) a new Health Workers School for males,
  - c) an expanded Professional Nursing School for females,
  - d) an expanded Midwifery School, and
  - e) an expanded Sanitary Sub-Inspectors School.
5. Increasing the number of beds at the present tubercular hospital.
6. Providing quarantine facilities at Jordan entry points to prevent the influx of contagious diseases.
7. Increasing personnel of the Ministry of Health.
8. Completion of the malaria eradication program.

The listed objectives are all reflections of the specific projects included in the plan, except for a short-term study of the organization and management of the Ministry of Health. The total health sector expenditure shown in the plan document amounts to JD 4.7 million. Of this total, JD 2.2 million was allocated for capital and equipment, and JD 2.5 million for recurrent costs during the plan period (new programs JD 1.3 million, recruitment of additional staff JD .6 million, and continuing malaria programs JD .7 million). External assistance for the health section of the plan was limited to JD 517,000, of which all but JD 70,000 was for support of the malaria campaigns. Table E-1 shows the capital budget for health for the plan period. Planned new developments were limited almost entirely to the hospital sector.

#### THREE YEAR PLAN, 1973-1975

The plan objectives are set out as:

1. Providing the highest possible quality of health and medical services to the public, with the least cost and the best methods.
2. Utilizing government hospitals to render the maximum possible services, through the provision of a capable and modern administration and the needed specialists and technical personnel.
3. Coordinating the work of different health bodies (Ministry of Health, Directorate of Health Services of the Armed Forces, UNRWA and private practice) through the Higher Health Council, in order to prevent duplication, ensure comprehensive planning and provision of services, improve and upgrade the quality of health services, and make them available in urban, rural, and desert areas.
4. Establishing a Curative Medicine Institute, having as its nucleus the Department of Curative Medicine in the Ministry of Health. This institute should be capable of accommodating within its framework any other sectors. The institute should plan to provide medical services of a good standard at the lowest cost. It should also look into the possibility of making use of the services of private physicians.

TABLE E-1

JORDAN DEVELOPMENT EXPENDITURES<sup>a</sup>

	SEVEN YEAR PROGRAM 1964-1970	THREE YEAR PLAN 1973-1975	FIVE YEAR PLAN 1976-1980
Hospital Development			
JD (000's)	1,801	690 <sup>b</sup>	4,650 <sup>c</sup>
Percent of Total	85	78	58
Health Centers			
JD (000's)	189	90	2,464 <sup>d</sup>
Percent of Total	9	10	30
Training			
JD (000's)	62	100	530
Percent of Total	3	11	7
Preventive			
JD (000's)	68	0	260
Percent of Total	3	0	3
Other			
JD (000's)	-	-	138
Percent of Total	-	-	2
TOTAL			
JD (000's)	2,120 <sup>e</sup>	880	8,042
Percent of Total	100	99 <sup>f</sup>	100

<sup>a</sup>Source: Jordan Economic Plans for Periods 1964-1970, 1973-1975, and 1976-1980

<sup>b</sup>Includes JD 340,000 for nurses quarters at four urban hospitals

<sup>c</sup>Includes JD 150,000 for nurses quarters at urban hospitals

<sup>d</sup>Also included are polyclinics

<sup>e</sup>Plus an unspecified sum of JD 70,000 from foreign assistance.

<sup>f</sup>Does not total 100 because of rounding.

5. Developing further the presently applied Health Insurance Scheme in order to improve the quality of curative services. It should also charge fees proportional to the standard of services rendered and to the income of the beneficiaries. Non-participants in this scheme should pay fully for the services rendered to them.
6. Providing incentives and benefits that would encourage Jordanians working in the medical field to remain in Jordan, thus putting an end to the medical brain drain.
7. Improving the technical, administrative, and professional standards of those working in the medical field, through providing training facilities in the different fields of specialization both within Jordan and abroad.
8. Supporting the efforts aimed at encouraging applicants to join the professions of nursing and midwifery, and also offering material and moral incentives to such groups.
9. Intensifying controls over drugs with regard to both quality and cost, through continuous efforts aimed at quality control and price reduction, with the incidental aim of saving hard currency for the country.
10. Modernizing health legislation in order to define the duties of the Ministry of Health, its objectives, and its relationship with other official bodies, in order to make the ministry responsible for all aspects of preventive medicine.

Only four specific health sector projects are included in the plan, at a total cost of JD 880,000. In addition, it was estimated that the private sector would invest JD 600,000 in clinic and hospital development. Also, the Ministry of Education was to spend JD 556,000 and JD 117,000 respectively on the Faculties of Medicine and Nursing. Unspecified amounts of foreign assistance are indicated for the medical and nursing faculty projects, and two of the four Ministry of Health projects (the training institute and the mental hospital). It is worth noting that the planned expenditure of JD 673,000 at the University Faculties of Medicine and Nursing amounted to over three-fourths the total of Ministry capital development over the entire plan period. Table E-1 shows that almost 80 percent of Ministry of Health spending was

to be for hospital development.

In practice, during the three years 1973-1975, the Ministry of Health spent close to JD 2 million for development projects, considerably more than double the planned sum. Although the paucity and lack of comparability of the available data make analysis difficult, it appears that around 10 percent of the total went into training, 20 percent into preventive activities, and most of the balance into hospital development.

#### FIVE YEAR PLAN, 1976-1980

The plan objectives are set out as:

1. Expanding and improving preventive services, with special attention to student health care and mother and child care.
2. Developing and expanding curative medical services in hospitals, health centers, and clinics.
3. Organizing the manufacture, distribution and export of pharmaceutical drugs.
4. Placing emergency and first-aid services within the reach of all citizens.
5. Upgrading the level of rural medical services as a requisite for community development: also, integrate these services with health services in the urban centres.

The cost of the 13 planned ministry projects amounts to JD 8.0 million. Another JD 1.0 million is estimated as private health sector capital expenditure over the plan period. Of the JD 8 million public sector expenditure, foreign loans and other assistance were to cover JD 1.3 million (16 percent). These external resources were allocated entirely for health centers and polyclinics (health centers with some inpatient beds and an operating theatre). Table E-1 shows a decline in hospital development as a proportion of all Ministry of Health development expenditure, to 60 percent of the total. These figures, as those

previously cited, are partial in that they exclude the military, university, and private sectors, in which hospital expenditures would be an even higher proportion of the whole.

#### PLANS AND PLANNING

The 1964-1970 Seven Year Program set its goals as:

1. Effecting a major reduction in the external balance of trade deficit and such reduction in dependency upon budget support as Jordan may be able to sustain.
2. Increasing per capita income (growth) at as rapid a rate as possible, consistent with 1, above.
3. Reducing the level of unemployment.

These goals represented a change in the order of the ones laid down in the earlier Five Year Program, that is, income, employment, and balance of trade, in that order. The Seven Year Program document argued that raising in importance the goal of reduced dependence upon budget support would "reduce the vulnerability of the Jordanian economy to external changes of policy."

The 1973-1975 Three Year Plan set its objectives, in the following order, as:

1. Employment
2. Growth
3. Better distribution
4. Balance of trade
5. Increasing budgetary independence.

This plan raised the employment objective to first priority, at the expense of trade and budgetary considerations, and for the first time explicitly mentioned improved distribution as a major objective.

The present 1976-1980 Five Year Plan orders its objectives as follows:

1. Structural change in the economy through an increased share in GDP of the commodity-producing sectors
2. Growth/income
3. Better distribution
4. Employment
5. Balance of trade
6. Increasing budgetary independence.

Points 2 through 6 above (point 1 is of a different order) cover the same five areas as the previous Three Year Plan and, except for raising growth and distribution at the expense of employment, follow the same ordering.

The same general objectives are stated in all the plan documents, except that better distribution does not appear explicitly until the 1973-1975 plan. And yet there appears to be little relationship between the stated overall objectives of the plans and their health sections. In fact, the extremely high priority given in terms of spending to hospital development clearly runs counter to such objectives as better income distribution, employment creation, improved trade balances, and increasing budgetary independence. With regard to the growth objective, it is certainly not enhanced by hospital development and is more likely to be hindered. Smaller health facilities will be better distributed and thus accessible to more people than are hospitals, will employ a greater volume of lower- and middle-level personnel, depend less upon imported materials, and cost less to produce comparable units of output than do hospitals. All of this would be in keeping with overall plan objectives.

Perhaps most important with regard to health plan development is the gap between stated objectives and spending priorities. Thus the current plan lists its top health goal as "expanding and improving

preventive services, with special attention to student health care and mother and child care." And yet only a small fraction of proposed plan spending is actually directed toward the accomplishment of that goal. Not only is there a gap between stated objectives and proposed expenditures, but there is also little correlation between proposed and actual expenditures, as evidenced by the health sector results of the 1973-1975 Three Year Plan. The lack of sufficiently clear expenditure data in the health sector makes it difficult to monitor plan performance against plan projections.

One other glaring issue is the lack of integrated planning by the various "pillars" making up Jordan's health delivery system. The multi-annual plans do not include the private sector (although some estimates are included), UNRWA, and the military. This lack of integrated planning is one major factor allowing for the continued duplication and inefficient use of resources.

Most of the problems pointed to above stem from a failure of planning, although not necessarily planning in any technical sense. In any event, an improved health planning capacity within the country is a matter of some urgency if some of the problems discussed above are to be avoided in the future.



APPENDIX F

ENVIRONMENTAL HEALTH

"Whoever wishes to investigate medicine properly should consider the seasons of the year, the winds and the waters in relation to health and diseases", Hippocrates (460-354 B.C.)

## INTRODUCTION

Environmental health activities are the efforts of man directed at breaking the links between disease infecting agents, the environment, and man. The environmental links between man and diseases (amebiasis, bacillary dysentery, cholera, echinococcosis, infectious hepatitis, leptospirosis, para-typhoid fever, tularemia, typhoid fever and poliomyelitis) include water, milk, food, soiled hands, insects and rodents.

The importance of environmental health in Jordan can readily be seen by reviewing the observations and conclusions presented in the section of this report dealing with health status in Jordan. The data on outpatient visits, hospitalization and mortality in the various age groups from infants to adults are significant. This is especially the case if one considers the interrelationship between nutrition and environmental health in infants and the 1 to 4 year age groups.

Due to time constraints and special conditions existing within Jordan, water is singled out for special review as the most important environmental link between disease and the Jordanian people. Bacillary dysentery (shigellosis) is highlighted for this introductory discussion since it is on the minds of many Jordanians as a result of the January 1976 water borne-epidemic affecting over 4300 people in the city of Salt.

Bacillary dysentery occurs world-wide and has afflicted man since the beginning of history. It is a "filth" disease that can be curtailed only through good environmental health measures. Man is the host of

the infection; source of spread of the Shigallae organisms is feces. Contaminated water, ice, foods, milk and flies have all been incriminated in the transmission of this disease. On a community basis, preventive measures which can prevent the spread of this disease include:

- Provide safe drinking water, free of the causative organisms,
- Provide safe water in a quantity adequate to permit the cleansing of hands, food, eating utensils, clothing, and living quarters.
- Provide sanitary disposal of human feces.
- Reduce fly breeding.

These four measures can break the link between the disease infecting agent Shigellae and the environment and man.

#### DOMESTIC WATER SUPPLY

##### Water Quantity and Availability

From epidimiological investigations man has learned much about the relationship between man's health and the quality of water. Since most developed countries have abundant quantities of water fewer studies conducted on this aspect of water have shown that in addition to the quality of water, the quantity or availability of water plays an important part in the transmission of disease. Cleanliness of a person is intimately related to the lack of transmission of dysenteric and other interic diseases is strongly implied by the results of careful work done by a number of investigators. Some of the data derived from Hollister's study is shown in Table F-1. From this and other studies the conclusion has been drawn by health officials world over that the control of many environmentally related diseases is significantly improved by making water easily and readily accessible for personal hygiene.

TABLE F-1

NUMBER OF SHIGELLA CULTURES \*  
BY AVAILABILITY OF WATER

Availability of water	Number of Cultures	% of Cultures Positive	% of Families Positive
Home with kitchen & bath	985	1.6	2.5
Home with kitchen only	688	3.0	6.2
Public fountain only	4438	5.8	11.0

In order to convert this accessibility into quantity of water consumed, experience has shown (based on small Indian villages in the remote arid regions of the United States) the following average consumption rates in liters per person per day:

- Home with kitchen and bath - 200
- Home with kitchen sink only - 40
- Public fountain or yard hydrant - 10

General (Jordan)

Water is the least available and most prized natural resource in Jordan. The country is arid, depending largely on rainfall to meet its requirements for domestic as well as agricultural and industrial uses. Average annual rainfall ranges from 600 mm in the highland regions to 50 mm in the desert areas.

In 1975, water consumption in Jordan was estimated at 421 million cubic meters (MCM) with estimates of increasing to approximately 555 million cubic meters by 1980. The distribution (MCM) will be:

\*Water and Man's Health, AID Technical Series - No. 5.

	<u>1975</u>	<u>1980</u>
Domestic	40	60
Industrial	6	30
Agriculture	375	465

Statistical data indicate that the volume of water available for utilization in 1975 was approximately 470 MCM and is expected to reach 580 MCM by 1980. In 1975 the overall supply exceeded demand. There were, however, severe water shortages in 1975 for domestic supplies in the rapidly growing metropolitan areas like Amman. The shortage occurred because the available water sources and the areas of water demand were not geographically congruent. Using the above domestic consumption figures of 40 and 60 MCM and the estimated total population of Jordan in 1975 and 1980 of 1.9 and 2.3 million, respectively, the average consumption rate is about 60 and 70 liters per capita per day. This is a very low gross consumption rate because water used by businesses, institutions, and other establishments and water lost through leaks etc. must be deducted to determine the average net consumption rate.

Jordan (Excluding Jordan Valley and Municipality of Amman)

Existing conditions. In traveling across Jordan one is amazed at the activity, energy, and resources of the people being expended in transporting water for domestic and agricultural uses. Water is obtained from springs, shallow dug wells, bored artesian wells and waste discharges. If the water can be found, it will be used by carrying, hauling, pumping, or diverting into irrigation channels. Water quantity and availability are the criteria, not quality.

Information on water supply distribution to towns and villages in Jordan is available from a 1973 survey conducted by the Ministry of Interior. The distribution of water in all areas of the country

except Amman, is presented in Table F-2. These data show that approximately half of the towns and villages (391 out of 794) do not have piped water supply systems.

TABLE F-2  
DISTRIBUTION OF DOMESTIC WATER SUPPLY\*  
IN TOWNS AND VILLAGES ACCORDING TO GOVERNORATE

	Amman**	Irbid	Balqa	Karak	Ma'an	Total
Villages with Dist. to houses	87	178	9	78	20	372
Villages without dist. to houses	10	6	7	-	8	31
Villages with no piped water supply	131	134	49	32	45	391
Total Villages and Towns	228	318	65	110	73	794
Total Populations	388,000	580,000	139,000	114,000	55,000	1,276,000

\* Jordan-Three Year Plan 1973-1976, National Planning Council

\*\* Excluding Municipality of Amman

The 372 communities that have water distributed to homes, industries and other establishments, have insufficient water to keep the distribution system pressurized or full of water at all times. The systems are operated similarly to irrigation systems in that valves are opened and closed which distribute water to different parts of the city during different times of the day or week. Each residence or business establishment that has water service also has its own individual water storage reservoir. When these reservoirs are empty and there is no water in the distribution system, water is purchased from either public or private tanker trucks by those who can afford the cost. Those tankers purchase and haul water from various water sources located in and around the city. Water hauling is a major business in Jordan. The average daily consumption rate in these 372 communities is approximately 40 liters per capita per day.

The 31 towns and villages that are served with water from reservoirs and public fountains are supplied by large government-owned bulk distribution systems. These bulk distribution systems also supply or supplement the community systems described in the previous paragraph. People living in towns and villages with public fountains haul water for domestic purposes either on their heads or on the backs of donkeys. Few people can afford indoor plumbing or the cost to haul water for them.

The 333 towns and villages that use nearby artesian wells and springs as public water sources are protected from contamination because the water is checked for bacteriological quality. People living in these villages carry their own water for domestic uses.

The remaining 58 villages have no protected sanitary water source and must carry water from nearby contaminated springs and wells.

The people living in the 422 towns and villages mentioned above, plus those living in cities with distribution systems that are not provided with water service represent approximately one-third of the population. The people that carry their own water supply have an average daily consumption of less than 10 liters per capita per day.

Planned Improvements. The supply, distribution, and quantity of water supply in Jordan is less than satisfactory. The Jordanian Government and the people are well aware of this problem. In the Three Year Plan, 1973-1975, developed by the National Planning Council and other government agencies, the water supply was given high priority. The budget allocated was in excess of JD 8 million. To expedite this water supply construction mandate, the Water Supply Corporation was established in 1973 and given responsibility for planning, design, implementation, management, operation and maintenance of water supply projects in the Kingdom (the City of Amman and the Jordan Valley were excluded).

During the Three Year Plan, the Water Supply Corporation completed a number of projects, as well as the implementation of another six major projects to be completed within the current Five Year Plan.

Table F-3 shows a summary of the projects budgeted in the Five Year Plan 1976-1980, excluding the Jordan Valley and Amman proper.

When these projects are completed in 1980, approximately 90% of the population inside the Kingdom and outside the Jordan Valley and Amman municipality will have improved water supply sources.

TABLE F-3  
SUMMARY OF WATER SUPPLY PROJECTS - 5 YEAR PLAN\*

(JD 000)

<u>Location/Year</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>TOTAL</u>
a. Irbid Governorate 7 Projects	2291	2323	1375	1200	200	7389
b. Amman/Balqa Gov. 6 Projects	647	348	216	250	600	2061
c. Karak/Ma'an Gov. 6 Projects	5380	6381	1330	320	380	13791
TOTAL	8318	9052	2921	1770	1180	23241

\* Jordan - Five Year Plan 1976-1980, National Planning Council

Table F-4 shows the quantity of domestic water pumped in 1973, 1975 and 1980 (projected), as well as the number of beneficiary municipalities, villages and other population centers (excluding Amman and the Jordan Valley).

TABLE F-4  
 QUANTITY OF DOMESTIC WATER PUMPED IN 1973, 1975 AND 1980 (PROJECTED)

<u>Governorate/Year</u>	<u>1973</u>	<u>1975</u>	<u>1980</u>	<u>No. of Villages</u>
	MCM	MCM	MCM	
Irbid	4.10	4.65	10.10	322
Amman/Balqa	1.56	2.10	4.90	250
Karak/Ma'an	1.03	1.50	3.70	201

The estimated population of these 773 population centers in 1980 will be approximately 1.4 million. Using this population figure and the estimated water supply of 18.7 MCM indicates that average daily consumption will be less than 40 liters per capita per day. In discussing this low consumption figure with Jordanian officials and the water supply picture for 1980, they stated their belief that even by then there will be few if any community distribution systems pressurized 24 hours per day.

#### Jordan Valley

Existing conditions. The military events of 1967 and the subsequent events up to 1970 badly disrupted the economic growth of the Jordan Valley. The war caused substantial loss of life, destroyed most of the settlements, made irrigation works its target and brought all development activity to a standstill. Most of the inhabitants in the Valley sought refuge in the Eastern Highlands. The present population of the Valley is estimated to be around 70,000 and distributed over 60 diverse settlement areas. Growth of these settlements has been haphazard and nearly all of them lack basic public utilities including domestic water supply. The 1973 Socio-Economic Survey showed that 70 percent of the families lived in a one bedroom house, 58 percent had no separate kitchen and 91 percent had no bathroom.

Planned Improvements. In 1971, as the period of disruption and dislocation ended, a program for the rehabilitation and development of the East Jordan Valley was prepared and included in the Three-Year Plan. To meet the requirements of planning for the East Jordan Valley on a permanent basis, the Jordan Valley Commission was created in early 1973. It was entrusted with the sole responsibility of planning and implementing the socio-economic development of the Valley. To discharge this responsibility the Commission was given broad administrative and executive powers. The Commission spent the first two years studying and planning, and in 1974 prepared a Seven Year Plan covering the

period from 1975-1982. The ultimate aim of the Seven-Year Plan is to achieve full development of the Valley by the optimal utilization of its resources. This will yield a decent level of income, health and living conditions for its inhabitants. The Jordan Valley Commission Seven Year Plan will reduce the existing scattered settlements to 36 by using 31 of the existing ones and establishing 5 new ones.

For the purpose of supplying sufficient and safe drinking water to all 36 populations centers, the Valley has been divided into three regions, each to be supplied with separate water supply networks:

- The North East Ghor Project will serve 10 settlements in the northern part of the valley. The system will consist of developed spring sources, sand filtration, chlorination, storage and distribution. Construction is scheduled to start in mid-1977 and be completed by mid-1978.
- The Middle East Ghor Project will serve 18 settlements in the middle part of the valley and will obtain its water from the Wadi Rajeb well field. The wells have been drilled and the main supply lines to 15 of the 18 settlements have been completed. Work on the main lines to the remaining settlements, plus the storage and distribution system started in October 1976, is scheduled for completion in late 1977.
- The South East Ghor project will supply water to 8 settlements in the southern part of the Valley from the Wadi Jaria wells. The construction of this project was divided into two phases. The first phase started recently and is scheduled for completion in late 1977; the second phase will start in 1979 and be completed in 1981.

All of these water supply systems are designed for a 2-fold increase in the population from 1976 to 1984 and an increase in the average water consumption rate from 80 liters per capita per day to 100 by 1986. These will be the first fully pressurized systems in Jordan and therefore the most safe from a health standpoint. Funding for these three domestic water supply projects have been provided within the Seven Year Plan (See Table F-5).

TABLE F-5

## FUNDING LEVELS FOR THE JORDAN VALLEY WATER SUPPLY PROJECTS\*

(JD 000)

	1976	1977	1978	1979	1980	1981	1982	Total
North	-	400	300	-	-	-	-	700
Middle	-	200	400	-	-	-	-	600
South	<u>200</u>	<u>800</u>	<u>-</u>	<u>300</u>	<u>400</u>	<u>300</u>	<u>-</u>	<u>2000</u>
Total	200	1400	700	300	400	300	-	3300

\*Summary-Jordan Valley Development Plan, 1975-1982, Jordan Valley Commission, May 1976.

## Amman Municipality

Existing Conditions. The Municipality of Amman has witnessed a rapid population growth and resultant problems that set it apart from other cities in Jordan. The population increased suddenly as a result of the military events of 1948 and 1967, and of migration from rural areas. The total number of inhabitants rose from around 45,000 in 1948 to 450,000 in 1967. In 1975 the population was approximately 750,000. During this period the city area grew from 16 square kilometers to 84 all with no prior planning. Amman still suffers from the lack of integrated land useage planning. During these rapid expansion years in Amman, water supply revenues went into the municipalities' general budget. They were not available for planning, developing and expanding the distribution system. As a result, undersized waterlines were installed in the new areas, water supply and storage was not increased, and the old existing system was not repaired.

Of all the cities in Jordan with water distribution systems, Amman has experienced the most acute water shortages. Areas of the city have gone weeks without piped water, and one area reportedly, received water only on three occasions in a 12-month period. There are more water tanker trucks (private and municipal) in Amman per capita than in

any other city in the world.

The water supply in Amman experienced few improvements until the establishment of the Amman Water and Sewerage Authority in 1972 and the development of the Three Year Plan in 1973. The following is a list of recent improvements:

- Replacement of old distribution pipes,
- Completion of 12 new wells which now yield approximately 2500 cubic meters per hour,
- Constructing of two main pumping stations,
- Constructing 4000 cubic meters of new storage facilities for water,
- Laying approximately 200 kilometers of main and distribution pipes.

Even with these improvements the average consumption rate in 1975 was estimated at only 40 liters per capita per day and of the 18.8 MCM of water pumped, 54 percent was unaccounted for through leaks and other losses. The following water use projections were prepared in 1974 by the Amman Water and Sewerage Authority (AWSA).

PROJECTED WATER DEMAND

AMMAN MUNICIPALITY

<u>Year</u>	<u>Population</u>	<u>Consumption liters/cap/day</u>	<u>% Lost</u>	<u>Total Water Demand MCM/yr.</u>
1975	600,000	40	54	18.8
1977	644,000	47	48	21.1
1982	765,000	58	45	29.0
1992	1,081,000	85	33	49.4
2002	1,525,000	100	30	78.4

By reviewing this table and noting that they are attempting to increase the consumption rate from 40-100 liters per capita per day at the same period that the population is more than doubling, one can visualize the enormous task ahead for AWSA.

Amman presently obtains 98% of its domestic water from wells penetrating two main aquifers; the deep artesian aquifer known as Hummer, and the shallow wadi aquifer system. The deep aquifer receives its recharge mainly from outside Amman and is estimated to be in the range of 6-9 MCM per year. The shallow aquifer receives its water recharge directly from rain fall and waste water within the district and is estimated to be approximately 60 MCM per year. As the Municipality has improved its sewage collection and storm water drainage systems, the rate of recharge has significantly dropped. Of the total available water in these two aquifers only 28-32 MCM per year can be extracted and utilized within the boundaries of Amman. Therefore, with a minimum projected demand of 78.4 million cubic meters per year in 2002, approximately 50 million cubic meters per year will have to be purchased from outside the Amman area.

Planned Improvements. At the present time the two most promising bulk water sources outside Amman are in the Qastal Area, and the King Talal Dam. The Natural Resources Authority has been conducting a ground water exploration project in the Qastal area with very encouraging results. Preliminary estimates are that approximately 15 million cubic meters per year could be extracted from this area. The King Talal Dam was constructed for irrigation purposes as part of the overall development scheme of the Jordan Valley. For this reason, the Jordan Valley Commission and other high government officials have been reluctant to allow any of this water to be pumped to Amman. However, AWSA reportedly obtained water rights of approximately 15 million cubic meters per year from the King Talal Dam and is presently negotiating with engineering firms for the study and design of this system. This system could be supplying water to Amman by 1980 at a cost of approximately JD 20 million, an expenditure which would be in addition to the projects

contained in the Five Year Plan. This Plan provided only for improvements in the local sources, pumping, distribution and storage. The budget was as follows:

(JD 000)\*

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>Total</u>
AWSA Funds	150	250	1000	1000	-	2400
Loans	-	250	1000	1000	-	2250
Total	150	500	2000	2000	-	4650

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\*Jordan - Five Year Plan 1976-1980, National Planning Council

#### Summary

Table F-6 presents a summary of the information presented in the previous paragraphs on the existing conditions and the planned improvements in the quantity of water supplied to the people of Jordan. It shows that with the population increasing from 1.9 to 2.3 million the water consumption should increase from approximately 30 to 45 liters per capita per day by making capital expenditures of JD 31.2 million. These figures are rough approximations, at best and are presented only to show the gradual improvement taking place during the Five Year Plan.

Since the Jordanian Government has established the necessary machinery (Water Supply Corporation, Amman Water and Sewerage Authority, and the Jordan Valley Commission) to make water easily and readily accessible to its people, it also has the financial capability to expand rapidly, the remaining question is: What will prevent the water consumption rate from reaching an acceptable level of 100 or even 200 liters per capita per day? Using the 1985 population projection of 2,734,000 people with 90 percent coverage at 200 liter per capita per day, it would require delivering 175 million cubic meters per year or 17.5 percent of Jordan's total estimated water resources. If the goal of making water accessible to 90 percent of the population is achievable

TABLE F-6

## EXISTING AND PLANNED WATER DISTRIBUTION IMPROVEMENTS FOR JORDAN

Area	1975			5-Yr Plan (JDM)	1980		
	Population	Water Pumped (MCM)	Com. Rate (l/c/d)		Population	Water Pumped (MCM)	Cons. Rate (l/c/d)
Amman	652,000	18.8	40	4.7	765,000	29.1	58
Jordan Valley	70,000	3.3	10	3.3	120,000	3.5	80
Bal. of Jordan	1,178,000	8.3	20	23.2	1,415,000	18.7	40
Total	1,900,000	27.4	30	31.2	2,300,000	51.3	45

in 1985. By 2000 or later, the problem will be to keep the distribution system pressurized and the consumption rate from climbing to 600-800 l/c/d. The following are some considerations on how to keep the distribution systems pressurized and the consumption rates from soaring:

- Structure the water rate system so that the charge for the first 10-15 cubic meters per month per service connection is reasonable. The charge from 15-20 expensive and from 20 and above would be priced so high as to make the cost almost prohibitive.
- Reduce water losses by replacing and repairing leaky distribution pipes.
- Establish a regular program of replacing, repairing, and calibrating water meters.
- Install flow restricting devices (Dole valves) on each meter installation.
- Require the use of spring loaded faucets which must be manually held open.
- Consider alternatives to the water closet or flush toilet.

### Water Quality and Pollution

#### Water Quality

There are several criteria which define maximum limits of acceptability for bacteriological and chemical contaminants in drinking water. These maximum limits reflect current knowledge of the known effects of contamination on human health. In determining the degree and seriousness of such contaminants it is not always possible to isolate the organism in the water which could cause a particular disease. For this reason an indicator organisms, *Escherichia coli*, is used since it is easy to detect and is excreted in large numbers from the intestinal tract of man. These organisms are commonly referred to as fecal coliform. In Jordan, drinking water is considered safe bacteriologically when the number of coliform organisms present in a water sample

is less than 2.2 organisms per 100 milliliter of water. When water samples are taken on a regular basis at an interval proportional to the population of the community, the community system is considered to be safe from human excrement when less than 5 percent of the samples have less than 2.2 fecal coliforms per 100 milliliters.

Table F-7 presents a summary of the samples collected and analyzed by the Ministry of Health from selected population centers in Jordan during the period 1973-1975. Using the 5 percent criteria it is obvious that none of the systems can be considered safe for domestic use. If one compares each area with Salt, it could be said that most of them are epidemics waiting to happen. Since all of these systems have chlorination treatment, it is obvious that the dosage, contact time and/or reliability of chlorination is questionable.

TABLE F-7

PERCENTAGE OF WATER SAMPLES - UNSAFE\*

Jordan 1973 - 1975

<u>Community</u> <u>Year</u>	<u>Amman</u>	<u>Irbid</u>	<u>Karak</u>	<u>Ma'an</u>	<u>Madaba</u>	<u>Salt</u>	<u>Rusaifa</u>	<u>Zarqa</u>
1973	8	39	53	34	27	31	20	24
1974	13	20	62	18	29.5	38	16	32
1975	9	17	35	13	13	40	27	21

\*Bacteriological Pollution in the Drinking-Water of Jordan, by Asem Shehabi, Ph.D., Ministry of Health, Jordan.

In a study conducted in August 1975 by the Ministry of Health in the Amman-Zarqa area on wells before chlorination, fecal bacteria were found in 37 percent of the wells. These samples were taken from both the shallow wadi aquifer and the deep HUMMER aquifer. If the wells in Amman's shallow wadi aquifer had been analyzed separately this figure would have been closer to 100 percent contaminated.

Since the Central Government Laboratory of the Ministry of Health no longer has the capability to perform the necessary chemical analysis of domestic water supplies, there was no information available on these

important water quality parameters.

Another contributor to the number of water samples found contaminated (unsafe) is the intermittent operation of the water systems. When a water pipe is fully pressurized there is no air in the system. If there are leaks in the system--water will be lost. If there are leaks in the system and no pressure and someone opens a faucet to draw water, air or other liquids will enter the pipe. Therefore, when as in Jordan, you have both leaky pipes and the soil saturated with contaminated water from cess pools, the pipes may be contaminated with this waste water.

#### Domestic Sewage (Pollution)

There are only two cities in Jordan, Amman and Salt, that currently have community type sewage collection, treatment and disposal systems. The Amman system is new and being built in stages by the Amman Water and Sewerage Authority and budgeted in the Three and Five Year Plans. The sum of JD 3.25 million is budgeted in the 5-Year Plan for continued expansion of the Amman sewage collection and treatment facilities. The sewage system for Salt is old, inadequate and in need of renovation. Engineering studies were completed by the Ministry of Interiors for Municipal and Rural Affairs during the Three Year Plan for renovating the Salt system and the construction of new community collection and treatment facilities for the cities of Zarqa and Jerash. It is scheduled to construct these systems during the years 1977 and 1978 of the Five-Year Plan within the budget of the Ministry of Interior for Municipal and Rural Affairs.

Jordanian homes, businesses and other institutions, having water carried wastes that are not connected to the Amman or Salt systems, have individual sub-surface seepage pits (cess pools). Since both the soil (sand, gravel or fractured rock formations) and climate are conducive to this type of liquid waste disposal there is little problem on the surface. When and if the pits need emptying, there are available

both municipal and private waste pumper trucks. The problem with this type of liquid waste disposal, from a health standpoint, is that in most cases the waste percolates through the sand and the gravel into the communities water supply aquifer.

Most of the population centers of Jordan are similar to Amman in that they are situated, wholly within a single drainage basin (watershed) with the populace and their liquid waste located in the upper portion and the water and some food sources located in the lower portion. The liquid human waste receives some biological treatment and filtration in the substrata before being diluted with rainwater contained in the water bearing aquifer and later emerges, clear, odorless and contaminated in village springs and shallow wells. Here it is used for irrigation and/or chlorinated and used for drinking water. Amman and Salt have speeded up this recycling process by collecting, transporting, partially treating, and discharging their sewage at a point much closer to their water and food sources.

In surveying the existing sewage system of Amman and Salt and reviewing the engineering reports on similarly planned facilities for Jerash and Zarqa, it is apparent that little consideration was given to unusual Jordanian conditions. These are cookbook type designs developed in countries where partially treated sewage is diluted in large receiving rivers and not reused again without complete treatment at a point days and kilometers down stream. Such engineering designs definitely were not developed for application in the Jordan environment where the sewage is reused with little or no treatment within a few minutes and meters of the discharge point. The recycling of most waste waters in Jordan is not up for debate or a matter of government policy; it is a fact of life. The only point for discussion or government action is the establishment and application of government controls.

#### Industrial Liquid Waste (Pollution)

Industrialization is in the early stages of development in Jordan

and as a result has probably caused only limited water supply pollution problems. However, since the central Government Laboratory does not have the capability to test water for trace or toxic elements and other industrial pollutants, no one really knows if this is a serious health problem or not. The Ministry of Health has initiated an industrial waste discharge permit system but due to lack of leadership and resources it has been haphazardly enforced.

Since these industries are being located within the same drainage basins as the communities and their water supply sources they will, unless adequately controlled, endanger the natural water resources and the health of the inhabitants.

#### Refuse Disposal (Pollution)

Most of the larger communities in Jordan have refuse collection, transportation and disposal systems. In all cases the systems are underequipped, undermanned with disposal by open-burning dumps. All three steps in the process are hazards to the people's health because of rodent and insect infestations and air and water pollution.

The Ministry of Interior for Municipal and Rural Affairs has budgeted within the Five-Year Plan JD 1 million to establish in Amman an integrated scheme for the collection, transport and disposal of garbage through sanitary and mechanical methods.

#### Summary

Domestic water supply systems in Jordan are highly contaminated. This fecal contamination is from both polluted wells and unpressurized leaky distribution pipes. Since Jordan can ill afford more water borne disease epidemics or the loss of scarce water supply resources, decisive government action is needed now.

The Ministry of Health is responsible for the sanitary quality

control of domestic water supplies which include such activities as: research, promulgation of standards, plan review and approval, laboratory analysis - bacteriological and chemical, and sanitary surveys and investigation of water systems. Although the Ministry of Health is responsible for this activity they have not kept pace with the rapidly expanding water supply effort in Jordan. This is rightly so, since those agencies responsible for development, planning, construction, operation and maintenance of water systems should not police their own work. It is urgent that the Environmental Engineering Program within the Ministry of Health be upgraded to adequately meet this responsibility.

#### GENERAL SANITATION

##### Ministry of Health

The Ministry of Health is responsible for most of the environmental health activities outside of the water supply and waste disposal. It is mainly concerned with sanitation within the food, milk and beverage industries. The Ministry of Health, Environmental Health Section, has only two professional sanitarians, one of which is assigned to the municipality of Amman. The one remaining sanitarian spends most of his time checking on complaints. As a result, there is really no General Sanitation Program per se at the National level. The large municipalities such as Amman, Zarqa, and Irbid are the only places within Jordan having sanitation programs. These municipal programs are better organized, administered, financed and staffed.

##### Amman Municipality

Both the Director and Assistant Director of Amman's Public Health Department are physicians with training and experience in public health administration. The major public health activities of the

Department are: 1. collection, transportation and disposal of refuse; 2. licensing, testing and inspection of businesses engaged in the production, distribution and sale of milk, food, and beverages; 3. insect and rodent control; and 4. health education school for sanitation inspectors. These various activities are administered from the central office through nine separate district offices within the municipality. East district is responsible for all activities except the education program.

The refuse collection, transportation and disposal system, as discussed in the previous section of this report, is inadequate but scheduled for improvements of JD 1 million within the Five-Year Plan. This present inadequate system combined with several kilometers of new but hardly used sewage collection pipes have dramatically increased the rat infestation problem in Amman. Even though the Health Department has established an extensive rat control program, they expect to make little progress until after the refuse situation improves and the new sewers are flowing.

The Municipality has approximately 80 sanitation inspectors working in the milk-food-beverage program. The major problem within this activity is the lack of professionally trained and experienced Sanitarians. The only Professional Sanitarian on their staff is on loan from the Ministry of Health. The ideal ratio of Sanitarian to Sanitation Inspectors would be 1 to 10 rather than the present ratio of 1 to 80. However, this staffing problem is no different than that for any other professional category in Jordan.

### Summary

General sanitation for milk, food and beverages is being administered from the local level and without national leadership. A National Program is needed to standardize regulation, inspection, enforcement, and to coordinate mutual interest with other Ministries such as customs and agriculture.

APPENDIX G

NUTRITION

The impact of malnutrition on mortality and morbidity rates can safely be said to be heavy. Due to the interaction of malnutrition and infection, a malnourished child is more prone to infection, and that infection in turn precipitates malnutrition. Whereas healthy children may suffer only a mild attack of measles or gastro-enteritis, the undernourished may be fatally affected by the same infections. The high mortality rate due to infectious diseases that affects Jordanian children is an indicator, therefore, of a malnutrition problem.

In 1962 a nutritional status survey of Jordanian civilians, military personnel, and refugees was carried out by the United States Interdepartmental Committee on Nutrition for National Defense (ICNND). This survey's findings are obviously dated, but they do indicate a baseline situation.

The civilian sample was comprised of males and females of all age groups and was selected from different regions. The refugees also represented both males and females from all ages. Only the military personnel were all male. Nearly 8,000 individuals were examined among the three groups. A year later a detailed nutrition survey of infants and children 0-6 years of age was undertaken jointly by ICNND and the Inter-departmental Committee of Nutrition in Jordan. In this survey, more than 2,800 infants and children were examined; 23 percent of the children were from refugee families. Signs of frank protein-caloric deficiency were found in 6.5 percent of the boys and 19.7 percent of the girls. There was no difference between refugee and non-refugee children. Signs of thiamine and riboflavin deficiency were found in an appreciable number of children.

A survey of vitamin A deficiency in infants and preschool children was undertaken by Patwardhan and Kamel (1967) under the auspices of WHO. In a randomly selected population principally from Amman and Jerusalem districts the prevalence of vitamin A deficiency was found to be about

8 percent. Among 1,180 children examined, 95 cases of xerophthalmia and its sequelae were found. This is a higher figure than indicated in the previous study by Phardon et al. (1965) which is based on the ICNND pediatric survey. However, serum values from both studies are in agreement: between 43 and 50 percent of the children from the two studies revealed less than 20 mg/ml. serum vitamin A, indicating a deficient to low range.

A 1972 review of this research by Patwardhan and Darby cites the basic nutritional problems as including growth retardation in infants and young children, protein-caloric malnutrition, low blood concentrations of vitamin A at all ages, and low urinary excretion of both thiamine (6.7 percent) and riboflavin (40 percent). The clinical signs of these vitamin deficiencies appeared as well in children 0-5 years of age. Hemoglobin and hematocrit values indicated mild to moderate anemia more common in infants below 2 years. To a lesser extent other nutritional deficiencies such as rickets and low levels of ascorbic acid (vitamin C) were found. Ascorbic acid levels were found to decrease with age, in contrast to other nutrient levels which tend to be at more precarious levels in younger children.

The previous surveys had shown malnutrition to be most prevalent among preschool children, pregnant and lactating mothers. A more recent study by Sa'ad Hijazi (1976) shows the changes in nutritional status which have occurred since the 1960's. This study shows infants in the first few months of life are also among the malnourished or, "at risk" group. Within this broad group, children of six months to one year would appear to be at greatest risk as evidenced by hospital admission records as well as the Hijazi study. Children in the second year of life are also very vulnerable to malnutrition. Among malnourished women, pregnancy wastage is high. And when a child is born to an underweight, malnourished mother who has had many pregnancies closely spaced, the chances are extremely high, that he too will become malnourished, according to the Hijazi study.

The most recent data collected by Hijazi, as well as observations made in late 1976, would indicate that the severity of malnutrition has lessened over the years, although gross malnutrition still exists. Vitamin A deficiency is no longer a severe problem, although surveillance must continue. However, iron-deficiency anemia among very young children remains a problem. Precise figures are not available, as there is no set standard by which malnutrition is classified. School officials may define a child as malnourished if he shows a deficit in height for age even though his weight for height is normal. A child such as this has probably suffered from past chronic malnutrition; little can be done for him, yet he is classified as malnourished. The malnourished among the entire child population (0-15 years of age) has been estimated at between five and 80 percent of the population. The high estimates are for nomadic peoples of the remote areas and are provided by school health teams.

The magnitude of clinically-manifest malnutrition is difficult to determine. Few hospital admissions are generally recorded as malnutrition, presumably because the accompanying conditions such as gastro-enteritis and upper respiratory tract infections are more readily identified. A gradual shift in the type of diagnosed malnutrition has been noted throughout Jordan since the first ICNND surveys were conducted. Earlier surveys indicated a much higher prevalence of kwashiorkor (protein deficiency) than is seen today. Data collected by Hijazi consisting of hospital admission records would indicate that 20 percent of the total children admitted to government hospitals were suffering from malnutrition. Of these, 85 percent were marasmic. Other observations of hospital admission records would place the malnutrition figure at closer to 30 percent, with marasmus affecting 80-90 percent of these children. Of all forms of malnutrition, among all age groups, it would appear that chronic undernutrition of infants and children in the second and third year of life accounts for the greatest proportion of all child malnutrition.

The observed decline in infant mortality rates has frequently been cited as evidence for the improvement in nutritional status. The work of

Hijazi would indicate that reduced rates are primarily due to improved public health measures such as sanitation and vaccination against communicable childhood diseases.

Most of the malnutrition which exists in Jordan today is caused by economic and social factors. There is no real evidence that the malnutrition seen is caused by either a single or combined dietary deficiency; rather it is principally secondary to gastro-enteritis or upper respiratory tract infections. Contributory factors are as follows: early weaning to unhygienic cow's milk, bread and tea, or prolonged breast feeding with little or no supplementation; lack of health or nutrition knowledge on the part of the mother; unsafe water sources and poor sanitation facilities.

Economically, low purchasing power stands in the way of providing many an adequate diet. A cost of living index for Amman for the years 1967-1971 shows food, housing, and clothing rising sharply; however, food costs have shown the sharpest increases. The trend toward improved nutritional status in the last decade, as illustrated by the work of Hijazi, may be in part attributed to rising percapita incomes; however, recent inflationary trends have produced a decrease in purchasing power which some health workers have correlated with a worsening of nutritional status. Health care personnel in the Kerak region concur with this position. Among the special pressures placed on families who migrate from rural to urban areas are fixed costs they may not have formerly had: rent, utilities and food.

With the projected growth of population currently estimated at 3.3 percent per year, children and women of childbearing age will continue to comprise the majority of the population. Presently, one-half of the population is under fifteen (20-25 percent of the population is under five years of age), and women of childbearing age constitute another 20-25 percent of the population. Women and children 0-15 years of age make up approximately 70 percent of the total population. Thus, it is clear that nutritional adequacy for these vulnerable groups should be a priority.

### Nutrition and Feeding Programs in Jordan

The Ministries of Health, Education, Labor and Social Affairs and the U. N. Relief and Works Agency (UNRWA) all have programs which involve feeding or commodity distribution. In addition, numerous voluntary agencies have programs as well. CARE-MEDICO, and UNICEF have programs which may or may not entail feeding and/or nutrition and health education. Similar feeding programs which have been terminated included those of Save the Children Fund and the Lutheran Federation.

The Ministry of Health is responsible for 41 Maternal and Child Health Centers in which each child is eligible for 2 kilograms of corn-soya-milk mixture (CSM) and 1 kilogram of dried skim milk (DSM) each month. Needy children, based on weight for age, are eligible for the same commodities twice a week. Once a week, each MCH center offers a lecture/demonstration in which ways of preparing the commodities are discussed and demonstrated. The foodstuffs are supplied by the United States Food for Peace Program.

The Ministry of Education has school feeding programs in numerous schools, including both boarding and vocational training schools as well as primary, secondary and teacher training schools. Some 3,000 students are covered by these programs. The Ministry has also introduced several nutritional-oriented posters suitable for school use. A request has been made for commodities from the U.N./F.A.O. World Food Program. This will be used to assist with a new school feeding program in various primary, preparatory and secondary schools in three districts. The request was made in February, 1976 with a starting date of September, 1977. The target areas are 293 schools in Mafraq, Tafileh, and Ma'an. These are marginal areas in which large segments of the population are of nomadic origin and extremely poor. A representative of the Ministry of Education states that 60-80 percent of the children in these areas are malnourished according to visiting school health teams. As usual, criteria for malnourishment were not stated. Observations would indicate that the figure given covers children who are short for age, indicative of

past chronic malnutrition. These children would make up the bulk of the 60-80 percent; a school feeding program would not necessarily improve their current nutritional status.

Program assistance would last five years and upon expiration of World Food Program assistance, the Government of Jordan (GOJ) would assume responsibility. Commodities provided would be wheat, flour, canned cheese, canned fish (and/or meat), jam and dried skim milk. If this request to U.N./F.A.O. is granted the new school feeding program will replace the present one.

The Ministry of Labor and Social Affairs directs 102 feeding centers which provide CSM, DSM, oil, bulgar wheat, flour and tomato paste provided through CARE/MEDICO.

The feeding centers are, for the most part, for children four to six years of age. A new program will soon be initiated by CARE and Social Affairs in which hot lunch versus take-home commodities will be examined. A previous study by CARE/MEDICO did not show improved nutritional status in conjunction with a school feeding program.

Save the Children Fund has had a program in the Ghor, an area where malnutrition is reported to be widespread. Teams of health workers go out to the villages and provide demonstrations in both clinics and homes. The program and its equipment is presently being turned over to the Kerak Region Medical Directorate.

UNICEF is also active in the nutrition field and is reported to have undertaken both a current nutrition survey as well as the re-designing of textbooks to incorporate needed nutrition and health education components.

#### Comments on Nutrition Activities in MCH Centers

As mentioned previously, the patient use of these centers is extremely low. S. Hijazi in his Ph.D. dissertation states that only 14 percent of the study's mothers utilized the MCH centers. Other estimates range from 16 to 20 percent. There are numerous possible reasons for

this low utilization rate, some of which are outlined below:

In most centers only one service is provided each day of the week. Therefore, a mother who has, for example, an ongoing gynecological condition, a sick child and yet thinks she might be pregnant, would have to present herself to the clinic on no fewer than three different days of the week.

Perhaps the attitude of the health care personnel towards the clientele is poor. This, of course, is difficult to assess, but prior experience, as well as comments made by several health workers, would indicate low motivation.

From a nutritionist's point of view, the approach used with mothers during well-child check-ups needs improvement. Children are weighed and measured yet no growth chart (a chart on which the child's weight for age or weight for height is plotted) is used. The use of David Morley's "Road to Health" charts (a copy of which may be given to the mother for her to keep), attempts to make the mother a more active participant in the health care of her child. (See Maurice King, et al. 1972.) The introduction of these charts is recommended.

Little attempt is made at the time of examinations to educate mothers. Instead they are encouraged to come on a specific morning to a lecture-demonstration on health and nutrition.

Curriculum design for nutrition education is a specialized field and it should not be left up to the individual MCH center to formulate its own designs. In a country the size of Jordan, there is little need for regional specialization of design. There are ten points which should form the basis of what to teach about good nutrition.

1. Breast feeding is the best for children.
2. Bottle-feeding is dangerous.
3. A child should start eating cereal when he is four to six months old and have added protein by the time he is six months old.
4. Children need some protective foods every day.

5. Children need at least three meals with body building foods every day.
6. Children with diarrhea need a lot to drink, and all sick children should be fed even though they may not want to eat.
7. A good diet is a mixed diet.
8. Pregnant women and breast-feeding mothers need extra food of all sorts, especially protective food and protein.
9. School children need food before going to school and something to eat while they are at school.
10. Water given to children should always be clean.

There are other obvious points which relate to health (immunizations) and hygiene (the need to boil water, keep food clean) which should be taught.

Any cooking demonstrations should be done using the same type of facilities available to the mother at home. If this means moving the demonstration out-of-doors to cook over an open fire, it should be done. This is an example of "appropriate" curriculum design.

Visual aids in nutrition are almost non-existent in Jordan's health care facilities. In the MCH centers often the most visible posters were those donated by Nestles in which (obviously) the basic thesis is to sell a product which for most local mothers is unnecessary, costly and often detrimental to the baby's health. These posters are to be discouraged, even though a part of each poster may be devoted to breast feeding. The Western women pictured bottle-feeding their babies are a stimulus to local mothers to give up breast feeding.

Instead, visual aids such as flannel boards should be used in the teaching sessions. These are inexpensive and allow for mother participation in question and answer sessions. Posters should be numerous and large and should not require the viewer to be literate to obtain full comprehension.

The one nutrition poster presently in use typifies the problem. It is far too complex for the mother to follow in terms of lay-out and its

requirements for literacy exceed the level of most mothers. As well, the recommendations are complex and not always necessary. For example, a recommendation for the first month is water. Recent research conducted in Jamaica suggests that the breast-fed infant does not need an exogenous supply of water, even in hot climates. In view of the difficulty of obtaining clean water in Jordan, the recommendation of supplementary water should be re-examined.

#### Agricultural and Food Policies

The Government of Jordan, through the Ministry of Agriculture, supports the price of bread made from wheat provided by the U.S. Agency for International Development. With local production of wheat at about 50,000 tons in 1975 (this is excluded from GOJ subsidies) approximately 185,000 tons of wheat was sold under subsidies (annual consumption is approximately 310,000 tons). The world price of wheat for 1975 was about \$160/ton, therefore the GOJ subsidized consumption with about \$13 million. There is no other food and/or agricultural policy in effect which directly benefits the nutrition of the Jordanian population. Such a policy concerning legumes would be advisable, particularly since the population of Jordan does not warrant the manufacture of a weaning food inspite of probable funding by such sources as UNICEF. In place of commercial weaning foods, mothers should be encouraged to use locally available foods rich in protein such as lentils, chickpeas, and beans. Although the cost per gram of protein has steadily increased over the last 13 years, data indicate that these legumes are still the cheapest sources of protein available.

#### A Nutrition Strategy for Jordan

Activities carried out in MCH centers and through other health system facilities and services can help to combat malnutrition, but they are not sufficient measures. Nor can nutrition projects such as school feeding and supplementary feeding programs form the basis of a strategy to alleviate malnutrition.

There is little evidence to prove that nutritional status is markedly improved by feeding projects. Studies such as those conducted by CARE/MEDICO repeatedly show that only a minority (10 percent) exhibit a real need for food supplements. As well, those in greatest need may be the least accessible as indicated by the numerous reports from both health and nutrition personnel that the desert Bedouins are still considered to be the population at greatest risk to malnutrition.

None of the above-mentioned activities is a substitute for the creation of a comprehensive nutrition policy and the development of a nutritional planning capacity in Jordan.

There is a basic need for a national food and nutrition policy which can effectively deal with the nutrition problems which exist today in Jordan.

Programs which exist outside the traditional realm of nutrition may have important nutritional effects. The identification of these relevant measures must be undertaken. For example, programs which offer credit to small farmers or irrigation schemes as in the Jordan Valley may have both short and long-term nutritional implications.

Nutrition planning must begin with the identification of the nutrition problem in terms of who is malnourished, in what ways, in what circumstances and why. An ongoing nutritional status survey by UNICEF will answer some of these questions. Further data collection and analysis will contribute to improved decision making and improved design of policy measures and projects. Incomplete survey data should not inhibit the planning process; one must not wait for the perfect and complete survey results before beginning to effect policy.

There are manpower and organizational requirements for planning which are currently lacking in Jordan. First, there are, at present in Jordan, no individuals trained in nutrition planning. Second, a typical desirable administrative structure is one in which various Ministries whose functions concern nutrition (e.g., education, agriculture, health, labor and social affairs), are in dialogue with a central

nutrition planning body which is responsible for overall development strategy. A nutrition planning unit needs a capacity for independent analysis. In addition, it must be able to assist the Ministries to build their own planning capacities and to identify, design and appraise programs. There should be, among other things, a shared view of the nature of the nutrition problem and an understanding of the role that each Ministry is to play in the planning process and in coordination of implementation.

APPENDIX H  
INFORMATION SYSTEMS

APPENDIX H  
INFORMATION SYSTEMS

INTRODUCTION

This appendix on health sector information systems in Jordan deals exclusively with systems pertaining to sector-level planning and management. Information systems pertaining to health services provision, health manpower, nutrition, and sanitation receive some discussion in the sections of the overall report dealing with those divisions of the health sector.

Data Management

The collection of information in the form of a specific data element or data elements starts with the individual client or patient at the (data) point of entry. At some point, preferably at regular time intervals, these data elements are aggregated by category on a local, regional, district, or nationwide basis. The data in aggregated form is transmitted to regional or central statistical units for further aggregation, cross tabulation processing, storage, and distribution. From this data collection, aggregation, and processing phase should result the use of the information as evidenced by the data in form of analysis, presentation of results to policy makers and central managers, and feedback of information to the original data sources, to be used in the decision-making process at the local, regional, or sub-organization level in the center.

The framework for data management in Jordan can be illustrated as follows:

<u>WHAT</u>	<u>WHERE</u>
1. Point of data entry primary data collection	Village Clinic, Health Center, Tababa, MCH, Dental Clinic, Outpatient Clinic, Hospital
2. Initial aggregation and focus of data transmission	Health Directorate of District or Governorate

- |   |   |
|---|---|
| 3. Health data assembly at the national level                   | Ministry of Health  |
| 4. Health data transmittal and processing at the national level | Department of Statistics                                    |
| 5. Data distribution  | Other ministries, international organizations, universities |
| 6. Data analysis, use, presentation of results                  | Lacking in Jordan   |

The original collection of data in the form of vital statistics (births, deaths, stillbirths, infant deaths), morbidity statistics (diagnostic and curative treatment data), and other health related events (vaccinations administered, infectious disease cases reported, environmental health services) is at the local level of the health center, tababa, MCH clinic, rural clinic, outpatient clinic, or hospital. Some of the data are aggregated at this level; some is sent in raw form to the District Directorate and Ministry of Health (MOH).

An intermediate level of collection and aggregation of health data occurs at the district level. From there the data reach the Ministry of Health, in particular the statistics section and the administrative office of that Ministry.

Other information elements, sometimes duplicative of the information flow to the MOH but unrelated to it and in a different form, may go to other government agencies, like the Department of Statistics. A case in point can be found in the MOH Hospital Daily Report and the Hospital Form, sent daily to the Department of Statistics via the MOH.

A third kind of health-related information bypasses the MOH entirely, and goes from the source of primary collection and aggregation directly to the Department of Statistics for processing and inclusion in the Jordan Statistical Yearbook (annual). The accident reports sent by the Department of Traffic to the Department of Statistics for processing, tabulating, and inclusion in the yearbook, are an example of this.

Most of the health-related data which is aggregated on a nationwide basis, thus ends up in the Department of Statistics, where it is further tabulated, or cross-tabulated, with the printouts to be included in the yearbook or in such special reports and like the Annual Household Survey or the Special Dwelling Survey. From there the distribution of data and reports to other governmental and non-governmental agencies in Jordan and at the international level occurs.

#### DATA COLLECTION POINTS

The Rural (village) Clinic is usually a simple operation, with a Practical Nurse (PN) in attendance. These PNs can give simple vaccinations, injections, and administer some "treatment," with the patient to be referred to a doctor after a maximum of 24 hours. Some information (age, sex) for all patients seen by the PN is entered as "attendances" into the "Attendance/Treatment Book" (ATB), together with the type of medication or vaccination administered. As an illustration, in one rural clinic most of these "attendances" were entered as "pen strep," meaning penicillin-streptomycin injections against sore throat, bronchitis, etc. On monthly visits to a village clinic, the mobile team from the health center collects information or "attended" treatment information at this level. Attendance itself is thereby defined as patient contact by the PN (whereas "treatment," noted in a separate ATB, is patient-contact by a doctor).

The Health Center is better equipped and housed in larger facilities than the village clinic. One of its main characteristics is the presence of a doctor during regular working hours of the MOH (usually 8-1:30 for 6 days a week), and the doctor is on call for the remainder of the day. The health center usually is also the base for the doctor(s) who make the regular rounds to the village clinics, and the service center for the subdistrict or sector of the MOH. In the center itself, detailed records are kept on who is seen, by whom (if by PN, attendance; by M. D., treatment - entered into separate ATBs), the diagnosis and type of treatment or medication administered.

A total count of the numbers of persons "attended" or "treated" is reported to the MOH Statistics Section, but no use is made of the other information contained in the ATB. An exception is the infectious disease report, where the tababa (see below), then the district and MOH are informed. After the first report of infectious disease (often by phone or messenger) to the district, a doctor or nurse will inoculate the affected person(s).

The Tababa (Tabib = doctor, physician) is an office, headed by a Senior Medical Officer (SMO) and administering the following functions and records:

Vital records (birth and death)

Vaccinations for inerat certificate (mainly smallpox, cholera, typhoid)

Sanitation reports (water, restaurant inspections)

Medical Committee (to examine prospective government employees; for disability determination for insurance purposes; for age determination of persons without birth certificate).

There may be other functions administered by the tababa which often is located next to or together with a health center, but the common features of a tababa are that:

- 1) it is headed by a doctor (Senior Medical Officer);
- 2) registers births and deaths;
- 3) has a medical committee.

The information component of a tababa, which is its major function, is centered around the registration of births and deaths, and the issuance of birth and death certificates. For some tababas this amounts to a sizeable operation, with numerous clerks registering into, transcribing from or verifying information contained in birth or death registration books. These books are heavily bound hardcover volumes with heavy paper.

Even so, the frequent use of these basic documents necessitate that a second copy be prepared for use when the first one is worn out. The

way this is done, in the Amman tababa, for instance, is the literal re-copying of all the information from the book with the original entry into an identical second book.

From the tababa, the original sources of vital information (notification forms), as well as statistical recap (summary) forms with aggregated data are sent to the MOH Statistics Section. The original notification forms are then forwarded by MOH to the Department of Statistics (DS), where they get processed and stored on computer tapes.

At no point, however, does the tababa have access to individual information or receive feedback from the DS or even the MOH central offices. All the utilization of the recorded vital data in form of the (re-)issuance of birth certificates (upon request only), or similar, is based upon pulling out of and looking it up in "the book."

In the Ministry of Health's central office, the Planning and Foreign Relations/Statistics Section and the Chief Clerk's office (Dewan), are the recipients of most of the information generated in the health centers and tababas, and transmitted via the MOH District Directors.

The MOH Statistics Section is the focal point for the receipt and compilation of data in the Jordanian health sector (excluding the military sub-sector).

Vital statistics information is re-recorded in summary books, with one book for registered live births, another for registered still births, registered infant deaths, registered deaths, etc. Each of these books has one page per year for each district and Jordan.

For infectious diseases, the information is received in weekly or monthly reports. It has to be kept in mind, however, that these forms are sent to the MOH Statistical Section for tabulation purposes only whereas the responsibility for action lies with the MOH Director of Curative Medicine. In addition, all District Directors in Jordan,

the World Health Organization, and the Ministries of Health of other nations are informed of communicable disease outbreaks.

Another important set of data flowing to the MOH Statistics Section is hospital inpatient information. The data source for most of this information is the Hospital Daily Report, a form to a large degree duplicative of a similar form sent to the DS on a daily basis.

Ideally, only one form should be used for both MOH and DS, in codeable format. Currently, the two forms are prepared and sent off independently by the hospitals for the MOH and the DS, respectively, and at no point is there any coordination or cross-checking of the information content.

The second focus for information gathering and storage in the MOH is the Dewan, or the Chief Clerk's office. Reports and records in various areas get to this office, where they are collected in folders, put into cubbyholes (shelves) along the entire four walls of a separate large office, and, when these are full, get transferred to the archives in another room. After five years, most of these records are destroyed, and rarely do they get used or looked at after their initial filing. A clerk of the Statistics Section inventories and summarizes the content of each major letter, document or report on large index cards with the Dewan.

The Department of Statistics (DS) is currently final step for much of the health data gathered by the MOH, and also the focal point of other health-related information, which it gets from other Jordan government agencies.

Hospital inpatient data is collected on a DS form, sent from all hospitals on a daily basis via the MOH (only a transmittal point) to the DS Hospital Statistics Section. At no point is it checked against the MOH Hospital Daily Report.

These forms get keypunched, then put on tape in the DS, after having been coded on the original form, which is designed for such a

purpose. An annual Hospital Morbidity Report contains the tabulated information and source analysis of data derived from the Hospital Patient Survey. The annual reports are distributed to about 150 other Jordanian and foreign government agencies and universities, and to the World Health Organization (WHO). No feedback loop to the hospitals providing the information is present or envisaged for the near future.

The Vital Statistics Section of DS is the final depository for the Birth and Death Notification forms. This section also keeps records on construction permits, departures and arrivals in Jordan, visitors to movies, and traffic accidents.

The Accident Reports, which DS receives monthly from the Department of Traffic, could provide important health planning data, since they are filled out in great detail for any and all injuries or deaths resulting from traffic accidents. No such use of this data source is made.

## DATA COLLECTION INSTRUMENTS AND PROCEDURES

### Vital Records

#### Birth

For those infants entering the system in the MCH clinics, coverage is good and reporting is complete. There is, however, large regional variation in the proportion of infants covered by MCH centers, and little or no active outreach activities are performed.

The notification of birth is done on an MOH form which the doctor, dayah, midwife, clinic worker, or Mukhtar fill out and send to the tababa. This notification is supposed to occur within thirty days after birth. It has been estimated that about four-fifths of the registered births in Amman take place within the thirty days. The rest are evenly split between the remainder of the first year of life and after the first birthday. Outside Amman the proportion of births registered within the legal time is assumed to be much lower than in Amman.

At the tababa the birth information is recorded in the "Birth Registration" book. Upon request, birth certificates are issued to a child's parents. (A heavy preschool issuance has been observed.) The tababa books, because of extensive reference and verification usage, tend to become soiled and must be manually duplicated.

The tababa forwards the individual birth notification forms along with a monthly summary to the Ministry of Health. A more aggregate monthly summary is prepared by the Ministry, and it and the individual birth forms are transmitted to the Department of Statistics for coding, keypunching, and processing. The individual records have been stored on tapes since 1970, and in manual form prior to that.

A special case exists for the issuance of west Bank birth certificates by the Amman tababa. The original certificate as issued in the West Bank along with the letter of request for registration, are transformed into a reregistration through a manual, possibly highly error-prone process.

#### Death

Under-reporting of deaths in Jordan is a well-known and openly admitted problem. Only one-fourth to one-third of all deaths are reported to the authorities (in the tababa) nationwide.

There is more complete reporting of deaths for government employees and army personnel, in order to claim life insurance proceeds on the deceased, and also, in Amman City, due to the need to secure a permission for burial at the tababa.

For a large portion of the Jordanian population, however, the incentive works against the reporting of deaths, especially infant and child deaths. In this case the same factors which, in part, act as an incentive to report births due to the potential loss of the additional "rations" received in the case of refugees or displaced persons, or child and family allocations for government employees, act as a disincentive to report the death, especially of the recently born.

The overall under-reporting can be conjectured from the 1976 registration numbers for Amman City, where until mid-November about 25,000 births were registered (an annual rate of about 30,000) versus 2,817 deaths (an annual rate of 3,220, or barely 11 percent of the number of births registered). On the estimated 1975 Amman City population, this results in a  $(30,000/652,000) = 46.1$  percent crude birth rate, which is very close to the 46.8 per 1,000 population estimated for Jordan, but the death rate, based upon reporting, is 4.96 percent, or about one-third of the officially estimated 14.5 percent. As mentioned above, the Amman rate of death reporting is probably higher than that of other parts of Jordan.

A simple example will demonstrate the share of one single subgroup: infants (birth to 1 year of age) in the total under-reporting. With a 1976 estimated Jordan population of 2,014,000 and a crude birth rate of 46.8/1,000, the annual number of births would be 94,225. With an estimated infant mortality rate of 91/1,000, there would be 8,577 infant deaths per year. The reported infant mortality calculated from the MOH data for January through August, 1976:

reported birth (live)	57,691	
reported infant deaths	1,194	
official infant mortality rate	20.7% = (1,194/57,691)	
<u>estimated infant mortality rate</u>	<u>91.0% therefore</u>	
under-reported infant mortality rate	70.0%	
Total number of infant deaths estimated:	94,255	(.091) = 8,577
" " " " " reported:	94,225	(.021) = <u>1,950</u>
" " " " " under-reported:	94,225	(.070) = <u>6,627</u>

For all deaths, the under-reported number calculates as:

Total number of deaths reported:	2,014,000	(.0045) = 9,063
" " " " estimated:	2,014,000	(0.145) = <u>29,203</u>
" " " " under-reported:	2,014,000	(.0100) = <u>20,140</u>

Of the total under-reported deaths, 32.9 percent (6,627/20,140), or roughly one-third, are infant deaths not reported. Adding to this the under-reported deaths in the age groups between one and five years of age (about 1 percent of these age-cohorts is estimated to die annually), we arrive at the surprising estimate that over one-half of the unreported

deaths is for children under five years of age.

A detailed monthly report on deaths by age, sex and cause is prepared by each tababa. Fifty causes of death are indicated on this matrix, with age groupings in one-year intervals up to five years of age, and in five year intervals thereafter (up to "85 and over"). The cause is following an abridged international list. For neonatal and infant deaths, a separate report is required, which gives the age in days up to 28 days, and in months thereafter up to one year. This is done for each village ("Place") served by the tababa.

The presentation of these forms, and of the reporting system, which goes from the tababa via the MOH Statistical Section to the DS for automated processing of the data on the DS computer, shows the adequacy of the system itself and the potential of the information for health planning and other evaluative or policy purposes. The potential for improved statistical analyses is there. With the current degree of under-reporting of deaths, especially for infants and young children (see above) and the apparent lack of quality and reliability of the causes of death indicated, when reported, it is in those two areas that improvement is most needed.

#### Morbidity Records

##### Village Clinics and Health Centers

An attendance and treatment book (ATB) is kept at each facility, but much of the information required by the book is not entered, and, even if it were, no use would be made of it.

The problem is not with the recording format or system itself--it is with the lack of transmittal of information. The persons directly working with the patients and entering the information into the ATB are familiar with the conditions found and treatment given, be it the "penstrep" inoculations given by the village nurse near Ma'an, the frequent snake bites and scorpion stings on the feet of barefoot fieldworkers, or damaging or deadly bee stings on the faces of children in the summer in the Jordan Valley.

Information, however, on the treatment of patients in village clinics or health centers, by cause and type, never gets to the directorate, let alone the MOH, to be used for policy making or health planning purposes. Not only does this leave a gap in useful data and information, it is also detrimental to the morale of those working in the front-line of health services provision, and further reduces their incentive and interest to keep accurate records. There is no feedback mechanism, which, after aggregation, analysis, and use of the information provided from the field, returns some of that information to the field. In the appropriate form such information could assist with local implementation of key health programs. This holds true not only for village clinics and health centers, but is true throughout the MOH system in Jordan.

A second feature is the lack of cooperation between agencies, which often is linked to the former problem (if the two agencies are within the same structure or system, but at different hierarchical levels). In our case this is demonstrated by patients who are transferred from one level of the health care system to another, such as from the health center to the hospital, or from one of the seven Amman general Medical Centers to the Ashrafieh Outpatient Clinic, and from there to a hospital. If the patient comes back to the original referring unit for follow-up, no records comes with him, so the general practitioner often does not know what has happened to his patient at the speciality of institutional level. This lack of communication causes problem not only in the morale of those working at the more general level of the Jordanian health care system, but also could endanger the patient's health.

#### Hospital Inpatient Records

At the time of admission, a clerk of the hospital administration enters the following information into the hospital registration book: the registration number, name of patient, age, sex, complete address, occupation, grade of room (usually grade 3), date of admission, diagnosis. When the patient leaves the hospital the same line of the book is

continued by entering the date of discharge, the length of stay in days, dead or alive discharge, fees (per day and total), the number of the receipt, and special remarks (like type of ward patient was in).

All hospitals are required to submit one daily report each to DS and MOH. That this report is not sent in on a daily basis, but in batches every week or so, is understandable. That not all private hospitals submit their Daily Hospital Reports, a fact which leaves data gaps in the MOH Statistics Sections' data on private hospitals, is less understandable.

Let us compare the common information elements of the MOH Daily Hospital Report and the DS "Survey of Patients Treated in Hospitals."

<u>Information Element on:</u>	<u>"Daily Report" (MOH)</u>	<u>"Survey" (DS)</u>
1. Serial Number	by MOH	by DS
2. Name of Hospital and location		
3. Name of Patient		
4. Demographic info on patient		
5. No. of occupied beds by category: Government officials, military, private (paying), poor, prisoners		
6. Disease by "normal" - infectious		
7. Date of Admission		
8. First & second diagnosis		
9. Operation - major- moderate - minor		
10. Date of Discharge	Total by alive and dead	Detailed
11. Cause of Death	Info to be written on back of form	

It can be seen from the above comparison that most of the information is collected by both MOH and DS - on a total daily basis by the MOH form, and on a per-patient basis by KD in a more detailed form. Tighter

coordination of the development of hospitalization data is clearly required.

As in Amman, the number one cause of death requiring the involvement of forensic medicine for Balqa was blamed on traffic accidents, with children as the victims for about one-half of these cases. The number two cause, however, for this area, which includes large portions of the Jordan Valley, was seen in phosphorous compound poisoning. Thus, if these subjective evaluations by the man in charge in the Balqa forensic medicine area are correct, over nine-tenths of the second unnatural cause of deaths in this governorate is due to the careless spraying of phosphorous compounds, leading to the death of children and adults.

Again, even though the number may be small, we have here a useful and already existing source of health planning and public health intervention data, which is waiting to be aggregated and analyzed. This has been done for Amman, with the remaining areas' reports ending up in the District Directorates and MOH Dewan's file cabinets, without being of any use to the health planner or decision-maker.

#### Maternal and Child Health Centers (MCH)

The actual coverage of births by hospitals or trained MCH midwives of MOH is not known, but is believed to vary widely between different MCH centers. The non-covered deliveries are assisted primarily by traditional private dayahs, who sometimes cooperate with the MCH staff, register the newborns, and also do home-visits after births for many of the women not registered with the MCH for ante-natal care. For those women receiving ante-natal care during pregnancy from the MCH, postnatal care is, of course, provided by the MCH. There is, however, very little "outreach" activity to cover a larger portion of pregnancies within the MCH and through trained midwives, and the portion of pregnancies and births actually covered has been found to be overestimated by MCH staff in several instances.

Detailed and extensive records are kept on mother and child covered

by the MCH. A (green) Family Folder is opened or kept for the newborn's family with detailed socio-demographic-economic information on all family members. A (blue) infant record is ready to receive detailed physiological and medical information on the newborn, with another (brown) record for "special care" entries. In the infant stage, the child is seen 2-3 times during the first 40 days after birth, and receives the necessary vaccinations. Ante-natal and postnatal clinic forms (pink) are available for detailed entries.

MCH covers children up to 5 years of age. After the first year, a preschool record (green) is opened on the child, again with detailed data, history and treatment records of the child. After five years, the child is discharged from MCH. For statistical purposes, an MCH Monthly Progress Report is sent to MOH.

In this writer's opinion (as a medical layman), the records kept at the MCH to substantiate health status and service coverage of mother and child are excellent.

#### Drug Records

Prescription Form (R<sub>x</sub>) is filled out by the doctor and given to the patient, who must use it at the MOH health center pharmacy. At the end of the month, the copies of the R<sub>x</sub>, kept by the pharmacist, are collected, aggregated, and reported to MOH. One important feature is lacking at the Central or district level of MOH with regard to the use of prescription forms: they are not utilized in any way for stock of inventory control, so that reordering becomes the order of business only when the supply physically runs down to a level where it is visually noticeable. The reordering and furnishing of drugs follows the hierarchical order from Village Clinic through Health Center and Directorate to the Ministry. There are, reportedly, long delays in the supply of pharmaceuticals, which often are ordered at the last moment due to reasons mentioned above, and the MOH routinely runs out of some drugs at year end. The large stocks of some drugs in some of the remoter Health Centers are therefore not surprising - they serve as a cushion. It is encouraging,

however, that drugs are shipped from "surplus" to "shortage" areas, so that an informal secondary network of drug supply and demand within MOH seems to exist.

## PUBLIC HEALTH RECORDS

### Vaccination Programs

Detailed records are kept at the Health Center level on vaccinations, with some unofficial forms and reports supplementing the official reports, which get to the MOH Statistics Section. Regular reports of communicable disease incidence and vaccinations against such are also reported to the WHO and other countries' Ministries of Health.

### Sanitation

A monthly report on sanitation activities is sent by the Health Centers via Directorate to MOH Statistics Section, which reports on the number of visits and samples taken, deficiencies found, and similar data. The sanitation law of 1971 requires, among other, an annual certificate for restaurants, and the sanitary inspector of MOH also takes food and water samples, all of which is reported on the form mentioned and aggregated in the MOH Statistics Section.

## ISSUES

The following section of this appendix deals with some issues important for improving the information systems now servicing health sector planning and management functions in Jordan. Fourteen such issues are discussed - eight in the planning area and six in the management area.

Following is a chart providing the reader with a framework within which this discussion may be viewed. For purposes of this discussion, the issues are classified in terms of key functions generally performed by information systems (see Table H-1):

- data collection and transmission
- data storage and retrieval
- data comparison and analysis
- data utilization.

TABLE H-1

FRAMEWORK OF ISSUES FOR IMPROVEMENT OF  
JORDAN HEALTH SECTOR INFORMATION SYSTEMS

Information System Functions Health Sector Divisions	Collection and Transmission	Data Storage and Retrieval	Comparison and Analysis	Data Utilization
Planning	Planning Issues 1,2			
	Planning Issues 3,4	Planning Issues 5,6,7,8		
Service Provision & Regulation	<p>Conclusions about information systems serving these division of the health sector require additional detailed study.</p>			
Manpower Provision & Regulation				
Nutrition Provision & Regulation				
Sanitation Provision & Regulation				
Management	Management Issues 1, 2, 3			
	Management Issue 4			
	Management Issues 5, 6			

The overall divisions of the health sector used throughout this whole report are the basis of this analysis. The chart re-affirms the point made earlier, to the effect that only planning and management information systems are dealt with in this appendix. Investigations of information systems servicing other subsectors should follow implementation of the recommendations made concerning those subsectors.

As a preliminary organizational step to better health sector data management, effective linkages between agencies responsible for health data management should be provided. These linkages should be horizontally established - informally or formally - as a "Health Data Management Committee," with representatives from the Ministry of Health, Department of Statistics, Department of Civil Registration (Ministry of Interior), the University of Jordan, the Royal Medical Service, and private health care providers (Jordan Medical and Hospital Association).

The linkages should also be vertically established within the Ministry of Health to open and maintain an informal but regular line of communication between the central Ministry of Health level (especially Planning - Statistics Section) and the directorates, and extending to the tababas and clinics via the directorates. This could be done by an informal regular newsletter.

Development of such a health data community would facilitate discussion of such matters as the use of improved data handling equipment, the centralization of vital event registration, and the use of a single identification number as a key for linking the vital events of the Jordanian citizenry.

No implementation should proceed in the information systems area prior to a thorough cost/effectiveness analysis of any measures contemplated. Each of the key functions used in the chart above is analyzable along cost/effectiveness lines.

## Planning Issues

### Planning Issue #1:

- Availability of data on the stock and flow of both medical manpower and facilities to the health planner and analyst, as well as the policy-maker.

It is suggested that the Ministry of Health statistical unit be the focal point for such information. To that end it is recommended that the Royal Medical Service, as well as the private sector, cooperate in the provision of nonsensitive medical resources data. If this cannot be done on a voluntary basis or worked out within the Data Management Committee mentioned above, stronger statutory authority should be given to the MH or existing legislation requiring these reports should be enforced.

This is an essential suggestion, which goes beyond health resources into health services and recipients, and should be acted upon immediately or in the near future, after establishment of the Data Management Committee.

### Planning Issue #2:

- Coverage by the health information system of the activities of the dayah.

Since a large portion of deliveries, and the attendant reporting of births (and often infant death) are still performed by the traditional dayah, the cooperation of this key figure in the traditional Jordanian health system should be elicited with regard to accurate and honest reporting. Some training and education may be necessary, which should also emphasize the necessary reporting aspects of services provided.

### Planning Issue #3:

- Inclusion of some health-related questions in ongoing survey efforts, such as the Household Survey and the Tourism Survey.

The potential for analytical and planning use of some well-designed and pointed questions is high and would not overly burden the interviewers, the interviewees, or the system. Such questions should be

designed by a small, competent team consisting of one representative each from the Department of Statistics (Household Survey Section), the Ministry of Health (Statistics Section, or preferably, from the newly established analytical unit) and the University of Jordan's Department of Community Medicine.

Planning Issue #4:

- Streamlining of vital records collection.
  - Issue a birth or death certificate concurrently with the registration of births or deaths upon receipt of the birth or death notification.

Initially, this will be done manually and will eliminate the highly seasonal load of issuing birth certificates, which entails inefficient use of staff time. At a later date, this task can be handled by a computer.

- Improve the error-prone and time-consuming re-registration of West Bank births and deaths, and, if possible, transfer this function back to the Ministry of Health central office from the Amman tababa, where it is currently handled.

There is no need to copy manually all the information from the old certificate, which eventually gets filed anyway, onto the letter of request. The process should at most consist of a registration and issuance of the new certificate, by the same clerk or, at most, two clerks working side by side. Then the old West Bank certificate can be filed, together with the letter of request and a copy of the new certificate. Microfilm would help, but is not essential.

- Consider the introduction of small incentives for the registration of deaths. If not feasible, make intensive efforts to educate both the population at large, and those persons in the community who are involved in the reporting of deaths, such as the mukhtar and the dayah, in the importance of accurate and timely reporting of deaths.
- Consider gradually reducing to one month the current one-year grace period after death, during which the death has to be reported.

Such a measure would be contingent upon overall improvement in the reporting of death, through greater general understanding and cooperation. Otherwise, it would do more harm than good by further reducing the proportion of deaths actually reported.

Planning Issue #5:

- Streamlining of vital records storage.
  - Initially, replace the birth and death registration book with microfilm records of the birth/death notification itself, and/or the pages of the book in which the entries are made.

This will eliminate the necessity for hand-copying the registration book for large tababas, where they deteriorate rapidly with heavy use. Large urban tababas like Amman should be the initial beneficiaries of the introduction of microfilm.

- At a later stage, obtain the information needed for issuance of birth or death certificates directly from the computer via terminal.
- Duplicates of birth or death certificates should be marked as such to prevent the possible use of a birth certificate to establish a new identity.

Persons requesting the birth certificate of another, probably deceased, person can generate other official documents. Centralization of vital registration, introduction of a single identifying number as mentioned above, and linking the individual's death to his or her birth record (whether computerized or not) will eliminate the need for such a procedure.

- Tababas should send to the major hospitals in their areas a monthly list of the deceased.

After introduction of the single identifying number, the institution should easily locate the file on the deceased for entry of this fact. Files of deceased former patients may be discarded after some specified time period.

#### Planning Issue #6:

- Improvement of analytical capabilities for the health sector.
  - Establish analytical capability within the Ministry of Health.

Analysis of data is a prerequisite for sensible planning. This proposed unit of qualified people should cooperate closely with the Health Data Management Committee recommended above, as well as have a direct connection with the Department of Community Medicine, the Royal Scientific Society, and the Department of Statistics.

A staff of four or five social scientists, trained in health data analysis and evaluation, should suffice. Part of this staff may be recruited from current MOH employees, with others drawn from the University of Jordan. Some additional resources will be required to establish this capability, and external technical assistance may be helpful in the beginning.

- Develop a health data analytical capability in the Royal Scientific Society, especially in their project analysis unit.

One highly trained person would suffice for perhaps the next five years. In conjunction with the recommended analytical unit of the MOH and other agencies such as the University of Jordan Department of Community Medicine, this analyst could assist in feasibility studies, project review, and needs determination for newly proposed health services.

#### Planning Issue #7:

- Analysis of the Household Survey and the Special Dwelling Survey with regard to health implications of their findings.

The potential for analysis of these two surveys especially, which link the interviewees by a common "family" number of the Department of Statistics, is great, if done by a skilled social scientist.

#### Planning Issue #8:

- Forensic medicine data should be analyzed in conjunction with other health data elements to a greater degree than is now the case.

Introduction of a sensible filing and classification system, and aggregation of this data into annual reports, such as has been done in Amman for the years 1971-74 (with 1975 in preparation) is the prerequisite to use of this data source for health planning and evaluation.

#### Management Issues

##### Management Issue #1:

- Establishment of cost accounting within the Ministry of Health.

There is a near-complete absence of cost accounting and a resultant ignorance of departmental or unit-of-service cost, in the MOH sector. Knowledge of actual costs is the prerequisite for a realistic fee structure and schedule. Cost accounting is also important for realistic budgeting.

##### Management Issue #2:

- The current use of subjective eligibility determination for free receipt of costly medical services should be reviewed and revised with the goal of establishing more rational eligibility criteria.

In this context, it seems preferable that the MOH charge the full cost, while a separate agency, within or outside of MOH, would determine for indigent clients their eligibility for welfare and initiate inter-governmental transfers of funds to cover the medical bills incurred at MOH.

This process is bound to increase the share of paying patients and the share of total medical costs in the MOH covered by patients' fees;

it requires, however, careful preparation prior to implementation. Some governmental redefinition of functions, such as concentration of MOH on health issues, but close cooperation with the social welfare agency which takes care of payment for the services provided, as well as some re-organization will be necessary; therefore, this is a medium- to long-term proposition.

Management Issue #3:

- Streamlining of hospitalization reporting.
  - Eliminate the hospital daily reports over the next year, and modify the department of statistics survey form to incorporate the one or two additional items currently on the Ministry of Health report.

Reprogram the Department of Statistics computer to accommodate the changed survey form and provide the MOH with a weekly printout containing crosstabulations and some simple analyses such as occupancy rates and average length of stay by hospital and area.

- In the interim, convert the MOH daily report form immediately to a matrix format.

No additional funds or staff are required for this recommendation's implementation; some technical programming assistance may be required for the above. The specific format and content for the printout should be worked out between the Ministry of Health and the Department of Statistics

- Provide all reporting hospitals with a periodic printout containing cross tabulations of useful management information derived from the survey form.

The programming effort and monetary cost for that feedback loop should be minimal.

Management Issue #4:

- Streamlining of morbidity reporting.
  - The Ministry of Health could perform periodic aggregation or at least sampling of the clinical information contained in the Attendance Treatment Books (ATBs) of the village clinics, hospital outpatient clinics, and health centers.

It is also suggested that the aggregate information be returned in the appropriate form to the service (and data) providers at all levels. The specific format and level of detail for this feedback loop can be negotiated within the MOH vertical line of communication mentioned above.

- The two categories of "attendance" and "treatment," which variably denote the difference between seen or not seen by a doctor, or initial and follow-up visits, should be replaced by a single category: "patient contact."

A single-digit code could indicate the type of professional treating the patient, for purposes of health planning. However, the type of diagnosis and other clinical information on outpatient services are of more importance than the dubious differentiation between "attendance" and "treatment" which is now entered and counted.

- After treatment of a patient in a specialty clinic or hospital, subsequent to referral, a copy of the treatment record should be returned to the patient's primary doctor or health center where the referral originated.

Clinical information on that treatment would become available at the time of follow-up at the next visit of the patient to his or her general practitioner.

Management Issue #5:

- Better use should be made of the excellent records kept at the MCH centers on families, mothers, and children for statistical and analytical purposes.

Initially, this should be done by scientific sampling of these data sources, resulting in analytical reports. This could be done on a periodic basis by students of the University of Jordan's Department of Community Medicine, for instance, as part of their training program. At a later stage, the more important and useful MCH records could be redesigned for easy coding and automated data processing and analysis.

**Management Issue #6:**

- The information derived from drug and prescription records should be used for management purposes especially inventory and stock control.

This will reduce hoarding of drugs on the one hand and shortages of specific drugs because of late reordering and irregular supply, on the other. Some technical consultation from international organizations or companies may be helpful in instituting a working system within the next year or two.

APPENDIX I

NATIONAL HEALTH PLANNING IN JORDAN  
PHASE ONE: PRELIMINARY SURVEY

NATIONAL HEALTH PLANNING IN JORDAN

PHASE ONE: PRELIMINARY SURVEY

16 SEPTEMBER TO 2 OCTOBER 1976

Robert C. Emrey

John Gallivan

Stephen C. Joseph, M.D., Team Leader

FINAL REVISION

18 October 1976

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## I. INTRODUCTION AND BACKGROUND TO THIS VISIT

The Phase I, or Pre-Planning, Team, visiting Jordan between 16 September and 2 October 1976, was composed of Robert Emrey and John Gallivan of the Office of International Health, U.S. Department of Health, Education, and Welfare, and Stephen Joseph, M.D., of the Harvard School of Public Health.

The Phase I Team's assignment was to develop the context within which the subsequent Phase II, or Health Planning, Team would work: by meeting with key individuals in the Government of Jordan and other relevant organizations involved in health activities in Jordan, by organizing in conjunction with Jordanian officials the necessary structure which would be available to work with the subsequent planning team; by compiling a brief overview of the health sector in Jordan which could then be passed on to the Health Planning Team in their briefings prior to departure for Jordan; by arranging for the collection of available information that could be ready before the Health Planning Team's arrival in Jordan; by determining the most appropriate technical composition of the Health Planning Team; and by defining a proposed time schedule for the carrying out of the health planning activity.

The health planning assignment itself involves preparing of a detailed assessment of the health situation and health resources in Jordan and presenting specific alternatives of action (with their associated costs, other requirements, and implementation steps) that could form the basis of a national health strategy for the next five-year and ten-year periods. Thus, the expected outcome of the activity is the presentation to the Government of Jordan of material which, once decisions among alternatives have been made by the responsible authorities, will form the basis for a Jordan National Health Plan for the Period 1977 to 1987.

High Jordanian officials have expressed a sense of urgency in the development of such a National Health Plan for two major reasons: First, there is a desire to make the most appropriate use of constrained resources; second, there is a need to integrate, into a broader national context of needs and resource allocation, a major health facilities planning study being currently undertaken by the military Royal Medical Service.

In an attempt to respond to this sense of urgency, as expressed by H.R.H. Crown Prince Hassan, the U.S. Agency for International Development (AID) is endeavoring to carry out in cooperation with Jordanian officials a health planning activity in an extremely brief period of time; the plan materials should be ready for presentation to a Jordanian Health Policy Reference Group by the end of March 1977. Based on the development of their consultations in Jordan, the Phase I Team has been in communication from Amman with AID in Washington, expediting the selection of specific individuals for the Health Planning Team and the development of a schedule for the activity. It is also proposed that members of the Phase I Team be available to return to Jordan at the end of this first phase. The Pre-Planning Team briefed Jordanian and AID officials regarding the team's preliminary conclusions and recommended plan of work for Phase II; it is expected that the Phase I Team will provide an intensive briefing in Washington to the Health Planning Team prior to their departure for Jordan. That series of consultations, along with this report and the recommended actions appended to it, will insure continuity to the activity, minimize the delays and gaps in the planning process, and hopefully allow the activity to be completed within existing time constraints.

One member of the Phase I Team (John Gallivan) focused on the collection of material and existing sources of information with which to complete a description of the Jordan health sector. An outline of that material is described in Annex H, and many of the primary and secondary sources will be supplied as part of the briefing package to the subsequent planning team.

The Phase I Team wishes to emphasize in this report, as we did in all our discussions in Jordan, that we did not attempt to carry out a "mini-planning" survey in the short two weeks available to us in Jordan. To do so would be an inadequate approach and would distract us from our major tasks, described at the beginning of this section. We tried, however, to set down, in the next sections of this report, an outline of the major parameters of the health status, needs, and resources in Jordan which impress us as most important and relevant to the forthcoming planning task. We hope that this outline will provide some compass-points for the Phase II team in planning and executing their work.

Among the many individuals in Jordan whose cooperation and hospitality made this a most memorable experience for us, we would like to express special thanks to His Highness Crown Prince Hassan, Minister of Health Dr. Mohammed al Bashir, Health Ministry Permanent Undersecretary Dr. K.A. Shami, and General Daoud Hananiyeh of the

Royal Medical Service. Similarly, special thanks are due to Dr. Sami Khoury of the University of Jordan, to Mr. Franz Herder and Mr. Christopher Russell at AID in Amman, and to Ms. Emily Leonard at AID in Washington.

## II. HEALTH PLANNING GOALS AND ASSUMPTIONS

Coming after the recent adoption of the 1976 to 1980 Jordan Plan for Economic and Social Development, a National Health Plan is being proposed by which to establish health sector goals and priorities for the next ten years. Numerous other health-related studies and planning exercises are also currently being completed. These can contribute significantly to a National Health Plan. The intent here is to record the consensus of suggestions received by the Phase I Team as to the nature of health planning effort expected by Jordan officials. In this section the following points are discussed:

- (A) Recent and current studies and planning exercises which can contribute to a National Health Plan;
- (B) Current health planning resources and capabilities in Jordan; and
- (C) Proposed preliminary model for health planning in Jordan

These assumptions and goals will and should be altered by Jordanian officials in the coming months as the work continues.

### A. Other Studies and Planning Exercises

A number of recent previous or current studies and planning exercises are known to exist. These studies are inventoried in Annex H, below, and the findings can be brought to bear on this exercise at appropriate points. Three significant planning activities were found which merit special attention and need to be integrated with the effort discussed in this document:

#### (1) Royal Medical Service Facilities Analysis

This study of medical facility improvements needed for military personnel and their dependents is being conducted jointly by the Royal Medical Service (RMS) and the firms of Heery International and American Health Facilities, Inc. The findings from the field survey are expected in early 1977. The scope of work includes: (a) projection of primary, secondary, and tertiary care facility needs based on projections of RMS service, population sizes and previous workload experience; (b) comparison of RMS health facility structures, equipment, and functional arrangement with international standards; and (c) estimation of needs for facilities and services due to facility deficiencies or projected changes in workloads.

(2) Ministry of Social Affairs Nutrition Plan

This study of nutritional needs in Jordan is being planned to be conducted by the Ministry of Social Affairs and CARE. The study will include surveys of nutritional status in southern Jordan. The scope of work and methodology are yet to be established.

(3) National Planning Council 1976 to 1980 Plan for Economic and Social Development

This official planning document contains priorities and investment levels for many sectors of public and private activity in Jordan. The health-related sections contain proposals and priorities for capital investment in several areas:

Water Supply (pages 142 to 154)

Health and Population (pages 325 to 334)

These sections are a point of reference for health planning in Jordan.

The above mentioned and other studies have focused on somewhat narrow or restricted areas of the health arena. It is expected that the Health Policy Reference Group described below in Section V will integrate these and other studies into its perspective as it considers a broader concept of national health problems, health status, and health goals.

B. Current Health Planning Resources and Capabilities

Three main planning groups are active in health at the national level in Jordan: Ministry of Health Division of Plans and Programs, Royal Medical Service Directorate, and National Planning Council. The current effort to develop a National Health Plan must rely on these and new resources to be developed for continued planning and evaluation activity. The health-related areas of nutrition, population, and environmental health are not now the subject of any specialized planning effort, although a National Committee on Population Policy is operating. Though there are a number of Jordanian physicians with public health training, no one from Jordan is known to be in training currently, either in or out of the country, in the fields of health administration or health planning. A key assumption of the Phase I Team is that the active participation by Jordanian specialists in this health planning activity will act as both a training experience and as a means for identifying people who might be encouraged to pursue further training in health planning and administration.

### C. Proposed Preliminary Model for Health Planning in Jordan

The health planning activity proposed for the coming months must be integrated into the main decision-making and operational activities of Jordanian institutions. In every new effort to plan, resource allocations may be upset and traditional practices may be subjected to change. The sections which follow, therefore, are designed to set the framework for a planning process which has particular characteristics:

- (1) Planning will be based on careful monitoring and evaluation of health status and resources and is intended to serve a decision-making and operating activity that can implement feasible changes.
- (2) Policy and technical guidance for preparation of the National Health Plan will be a collaborative effort of Jordanian officials and AID advisors.
- (3) A goal of the planning effort is to make progress toward the design of a specifically Jordanian system of health services which draws on experience outside Jordan where available but which addresses health needs within the unique context of the country.
- (4) The scope of the planning effort will include, but not be limited to, consideration of:
  - (a) needs for changes in the productivity and distribution of medical services;
  - (b) nutritional needs and services in the population;
  - (c) health needs of specific population groups, including children, refugees, labor force, military and their dependents, and reproductive age females;
  - (d) needs for environmental health, sanitation, and water supply services.

In addition, a rational health planning process must address the need to integrate health planning with other development planning, particularly as regards change in population distribution and community and rural development.

In the section which follows, the major parameters which will require attention during the planning effort are outlined and discussed.

### III. SUMMARY OF IMPORTANT PARAMETERS IN JORDAN'S HEALTH SECTOR

The time available to the Phase I Team allowed for neither a detailed health sector study nor the drawing of detailed conclusions about the shape of an appropriate health system in Jordan. However, we think it useful at this point to set out, in outline form, some of the impressions we gathered about health status, needs, and resources in Jordan which influence in major fashion our recommendations. If substantiated by the detailed work of the Health Planning Team and Jordanian Counterparts, these factors also will influence the feasible alternatives for improved health services for all the country's population.

#### A. Lack of Basic Epidemiologic and Other Health-Related Data

There is a severe lack of required data for rational planning of health services and for monitoring of the results of health programs. This inadequacy of information, which is both qualitative and quantitative and which extends from basic demographic data to categorical morbidity information, will present a major challenge to a planning team working within severe time constraints. To offset this problem partially, we have attempted to gather what key data is available, to suggest specific steps the Government of Jordan and AID might initiate prior to the Health Planning Team's arrival, and to open communication channels with governmental and other organizations whose current and projected efforts might aid the Health Planning Team's epidemiologic approach.

#### B. Resource Constraints in the Health Sector

The Jordan annual Gross National Product is about \$600 per capita and government health expenditure is \$10 per capita. Although without oil reserves Jordan is in a more fortunate position than many other countries. Jordan possesses a relatively large number of physicians (approximately 1 per 4,000 population), many of whom have excellent training at generalist and specialist levels. However, financial revenues allocated to the health section are relatively small (approximately 3% of government budget); the demands of other sections are large and have heretofore received higher priority. Health manpower problems (see Subsection III E) are many and severe. Thus, a National Health Plan in Jordan must face the problem of limited resources and must focus on more efficient and effective allocation of existing resources, including existing insurance schemes, with perhaps moderate growth, rather than on programs calling for massive new investments and recurrent operational costs.

### C. Geographic Distribution of Population and Infrastructure

In addition to being a small country (estimated population 2,000,000 and land area 85,000 square kilometers) the population of Jordan is concentrated in 5 or 6 relatively compact areas. Further, relatively good roads and communications link smaller and more rural settlements with larger urban areas. An important, if numerically small, exception to these statements is the approximately 5% of the population who are nomadic desert herders. A rapidly urbanizing population base presents many difficult health problems, especially those related to water supply and environmental sanitation. Jordan is not faced with the many complex logistic difficulties which plague developing countries having mostly dispersed and poorly-connected rural populations under conditions of extreme resource scarcity.

### D. Fragmentation and Duplication of Health Services

Within the health arena in Jordan many governmental and non-governmental organizations pursue uncoordinated agendas, often competing for scarce resources, conflicting in manpower recruitment, and duplicating services, or alternatively leaving gaps between services. Among the most important of these groups are the Ministry of Health, the Royal Medical Service, the private sector (large and flourishing only in Amman), the University of Jordan Hospital and Medical School, the United Nations Relief and Works Agency for Palestine Refugees in the Near East, and philanthropic and charitable organizations. Further, there was up to the present little or no integration of health activities with related development efforts in agriculture, education, resettlement, new town development, etc. The Phase I Team is convinced that consensus towards coordination of these different efforts will be the most difficult part of a workable health plan for Jordan; we are equally convinced that, without such coordination and collaboration, no serious implementation of a National Health Plan is possible.

### E. Human Resource and Personnel Problems

Problems exist throughout the personnel pyramid in Jordan's health sector. A few of the most important will be mentioned here, for further elaboration by the Health Planning Team. Physicians are geographically maldistributed and probably excessively weighted towards specialists rather than generalists who can fill many of the primary care needs of the population. Recruitment of women into nursing and midwifery is extremely difficult in view of tradition and social custom. Differing pay scales among civilian, military, and private

systems for physicians, nurses and technicians operate to the disadvantage of the civilian subsector. Similarly, financial incentives in the Gulf States lead to an out-migration of all types of professional and technical personnel. Attitudes within the health sector (especially among physicians) and in the general population appear to foster an excessive dependency on the highly-trained specialist physician. The bulk of important primary care functions are not allowed to be delegated to nursing and auxiliary personnel who can be trained to provide these services in large quantity and with high quality. Among physicians and nurses, training and education appear to be unduly weighted towards curative clinical functions, with under-emphasis on community medicine, public health, administrative, and educational perspectives.

F. Excessive Orientation Towards Specialized Hospital Services rather than Preventive, Public Health, and Primary Care Functions

These specialized services are, of course, the most costly, the most technology-dependent, the most specialized-manpower requiring, and the least serving of the majority needs of a population still afflicted with malnutrition-infectious disease interactions and high morbidity and mortality among young children and poor families. Jordan does have greater resources (fiscal, human, and infrastructural) than many other developing countries, and perhaps can afford a slightly greater emphasis than some other countries on specialized and in-hospital care, especially given the small size of the country and the relatively minor logistic problems. But the balance between these and more mass-applicable approaches clearly seems excessive, and the distortion of the great bulk of the country's health resources towards the former category clearly retards progress towards improved health conditions for the large majority of the population.

The Phase I Team has consciously tried to avoid drawing premature conclusions concerning the shape of a rational and effective health services system in Jordan. It seems unequivocal to us that any plan leading toward such a system will inevitably propose actions that may require some changes in the established traditional attitudes, priorities, and services structure within the existing health sector. Jordanian criteria and guidelines for health sector changes, evolved during continuing discussions between the Health Planning Team and Jordanian officials, will aid the Health Planning Team in preparing the widest range of acceptable options. Most important, this interaction will enhance the possibility of ending up with the only kind of plan that is of value--that is, a plan which is implemented.

IV. PROPOSED COMPOSITION AND SCHEDULE  
OF THE HEALTH PLANNING TEAM

A. Proposed Technical Composition of Phase II Team

A carefully selected team of health sector specialists will be assembled for Phase II work. The team should be directed by a doctoral-level person whose selection will depend on the qualifications and experience of the various team members. The epidemiologist should also be a doctoral-level person. A physician must be among the team members. Specific capabilities required for the team members are listed below:

- (1) AID Project Coordinator: Needs to be available throughout active phases of health planning work; should have strong health planning and programming experience in developing countries; needs interpersonal skills.
- (2) Health Services Organization and Management Specialist: This specialist needs interpersonal skills and experience in developing countries, preferably in the Middle East; a broad conceptual approach is preferable to a narrow view; should have experience with health services and health insurance schemes at a national level.
- (3) Epidemiologist: General epidemiologist with field and developing country experience; needs a practical rather than a theoretical approach; should not have categorical disease orientation.
- (4) Health Economist: Ability to investigate resource allocation in the health sector; experience in analysis of health insurance schemes and in preparing cost estimating factors for health programs; needs national level and developing country experience.
- (5) Human Resources and Manpower Planning Analyst: Should have a human resources planning focus rather than a training or curriculum development specialization; developing country experience is highly desirable.
- (6) Information Systems Analyst: Needs a strong statistical capability and an orientation favoring development of low-technology information systems.
- (7) Nutrition Sector Specialist: Needs an ability to assess institutional problems in nutrition as well as levels of nutritional status; developing country experience is essential.

- (8) Demographer: General demographer with field and developing country experience in health sector; needs a practical rather than a theoretical approach.
- (9) Environmental Health Sector Specialist: Needs an ability to assess institutional problems in sanitation, water supply, and related areas as well as environmental problems at household level; developing country experience in programming for environmental health projects is essential.
- (10) AID Health Program and Health Planning Specialists: Will provide continuity of contacts among AID officials in Washington and Jordan, and Jordan Government officials during the health planning process; should be drawn from among pre-planning advisors.

#### B. Schedule of Phase II Adviser Tasks

Five tasks are included in Phase II and the minimum time needed for advisors to accomplish these tasks is estimated in Table 1, below. The tasks may be summarized as follows:

- (1) Diagnosis: Careful review and analysis of the health sector, to include: estimation of disease patterns; determination of human and financial resource availability and useage trends; investigation of interactions among disease, nutritional, and environmental conditions, and existing health services; and examination of productivity and capabilities of public, military, and private health sector agencies.
- (2) Preliminary Selection of Long Range Goals and Criteria
- (3) Identification of Options: Based on preliminary goals and criteria established by the Jordanian Health Policy Reference Group and the health sector diagnosis, practical options will be designed. These options will include estimates of the costs, implementation constraints, and feasibility for each area of study.
- (4) Preliminary Selection of Specific Objectives
- (5) Description of Alternative Program Packages: The total set of options could not be implemented at one time. The options probably will include situations where the pursuit of one alternative would make it impossible to accomplish another of the alternatives. The alternative program packages are sets of options which have a high probability of being implemented

(6) Preliminary Draft of National Health Plan

The combination of goals, criteria, and high priority program packages will form the basis of a National Health Plan for Jordan. The collaboration between advisors and Jordanian officials must be active and extensive. The schedule of Phase II Team work in Jordan must encourage the collaborative arrangements in each of the tasks outlined above.

TABLE 1. PROPOSED TASKS AND MINIMUM TIME ALLOCATION  
FOR PHASE II HEALTH PLANNING TEAM

Proposed Health Planning Tasks	PROPOSED PHASE II HEALTH PLANNING TEAM											
	Project Coordinator	Health Services Org. & Mgt. Spec.	Epidemiologist	Health Economist	Human Res. & Mnpr. Planning Analyst	Information System Analyst	Nutrition Sector Specialist	Demographer	Environmental Health Sector Spec.	AID Hlth. Program & Hlth. Planning Spec.	Jordanian Counterpart Specialists	Health Policy Reference Group
1. Diagnosis	3		2		2	2				2 1/	3	
a. Estimation of Disease Patterns												
b. Human Resource Availability and Usage Trends				1								
c. Financial Resource Availability and Usage Trends		1										
d. Relationship of Health Problems to Health Services Distribution		1		1			2	2	2			
e. Productivity and Capacity of Health Services												
2. Preliminary Selection of Long Range Goals and Criteria 4/												4/
3. Identification of Options 5/	3									2 2/	3	
a. Cost Estimation of Options				1								
b. Health Impact Estimation of Options			2									
c. Preliminary Options for: Productivity and Distribution of Medical Services		1		1	2							
d. Preliminary Options for: Nutritional Needs and Services						1						
e. Preliminary Options for: Population Group Needs and Services							1	1				
f. Preliminary Options for: Environmental Health, Sanitation, and Water Supply Services									1			
g. Preliminary Options for: Health Planning and Management Capacity		1				2						4/
4. Preliminary Selection of specific objectives 4/												
5. Description of Alternative Program Packages 5/	3									4 3/	3	
a. Package: Lack of Data			2			2						
b. Package: Resource Constraints												
c. Package: Population and Infra-structure Distribution							1	1	1			
d. Package: Fragmentation and Duplication of Health Services		1		1								
e. Package: Human Resource and Manpower					2							
f. Package: Preventive and Community Health Services		1										4/
6. Preliminary Draft of National Health Plan 4/												

Notes: 1/ One person from Phase I Team for 2 weeks. 2/ Two people from Phase I Team for 1 week each. 3/ Three people from Phase I Team for 2 weeks each. 4/ Through constant interchange of information among the Jordanian Counterpart Specialists, the Health Planning Team, and the Health Policy Reference Group, a preliminary set of long range goals and criteria, specific objectives, and, ultimately, a National Health Plan will be formulated by the Health Policy Reference Group. No separate time estimate is included for these interactions as they are proposed to be simultaneous with the Health Planning Team tasks. 5/ The Options (Task 3) and Alternative Program Packages (Task 5) shown are tentative and illustrative of those that will be formulated in the planning process. It is expected that these options and program packages would be modified during the process of the planning exercise.

## V. MAJOR RECOMMENDATIONS OF THE PRE-PLANNING TEAM

To mobilize the various resources necessary for carrying out the health planning task, the Phase I Team proposes a specific set of actions to be carried out by the Government of Jordan, AID in Jordan and in Washington and which should begin in advance of the Health Planning Team's arrival in Jordan. These proposed actions are detailed in Annexes A, B, and C at the end of this report.

In addition to these action proposals, the Phase I Team recommends in this section of the report several key steps to be taken by the Government of Jordan and AID. These actions not only will permit the planning process to proceed in an appropriate context but also will provide a framework for future planning decisions, implementations of program actions, and continuing evaluation of results. These recommendations are as follows:

1. The development by the Government of Jordan of an on-going Health Policy Reference Group in Jordan, which will (a) provide guidance to the planning team, (b) weigh the health program options developed by the planning team and formulate national policy regarding choices among these alternatives, (c) ensure implementation of the National Health Plan with emphasis upon coordination among the organizations and institutions involved in implementing the plan, and (d) monitor and continuously re-evaluate the effectiveness and costs of health services provided according to the National Health Plan.

This Health Policy Reference Group needs to include broad and inter-Ministerial representation, at a high level, of the various organizations involved in the health sector in Jordan, and also responsible officials in other development fields related to health. The Jordan Government members of the group should probably be of Ministerial or other policy-level rank and thus be able to take significant decisions concerning resource allocation and program design at a national level. Agencies to be represented should include: Prime Minister's Office, Ministry of Health, Royal Medical Service, National Planning Council, Ministry of Finance, Jordan Medical Society, and University of Jordan. Among the highest priorities of this Health Policy Reference Group should be the development of policy guidelines for the Health Planning Team, developed out of their dialogue with the Phase II Team, including a clear statement of the Government's view of priorities in the health sector.

2. The formation of a staff capability for the Policy Reference Group is essential in order to develop a institutional capability for national health planning and evaluation that will carry on after the work of the current health planning team is accomplished. This staff

group should probably also be inter-ministerial in nature and should include a wide range of technical and professional capabilities; the Jordanian counterparts to the health planning team described in Annex A might well form the nucleus of this staff group.

An important early task for the Health Policy Reference Group is to decide on the most appropriate administrative location for its staff body (i.e. independent unit, or within the National Planning Council, or based in the Ministry of Health, etc.). The Director of the staff unit should serve as the Executive Secretary of the Health Policy Reference Group and should possess the necessary professional qualifications and experience to function at that level.

3. AID should be prepared to support short and long term training opportunities to prepare individuals with the necessary planning and evaluation skills required for this staff unit. The inventory of existing qualified individuals in Jordan and the recommendation of needs for further training is an important task to be undertaken by the Phase II Health Planning Team.

4. In addition to the full-time staff planning group, relationships between this group and other institutions interested in, and capable of, undertaking specific research and evaluation assignments should be established (i.e., units in the Ministries of Health, Statistics, the University of Jordan, international agencies, etc.).