

IRAQ HEALTH SECTOR
BACKGROUND PAPER

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PREFACE

This paper has been prepared at the request of the Office of Health Technical Assistance Bureau, AID, for use by U.S. officials as briefing material. It contains detailed data on health status, resources and programs; as well as information on related development sectors which interact with the health sector.

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CHAPTER ONE

SOCIO-CULTURAL AND PHYSICAL ENVIRONMENT OF HEALTH

Geography

Iraq is surrounded by six countries -- Turkey on the north, Iran on the east, Kuwait on the south, Saudi Arabia and Jordan on the southwest and Syria on the northwest - as well as the Persian Gulf on the southwest. Along the border between Saudi Arabia and Iraq a neutral zone has been established to facilitate the migratory movement of nomads who must range far afield in search of pastures for their herds. Although this is true for a large portion of the frontier, no similar geo-political concessions have been made for nomadic groups in other areas due to the more tenuous political situation vis-a-vis the other countries on Iraq's borders. The consequences of a frontier shut-down in any of these crossing sites has dire implications for nomadism and consequently nomad health.

Physical Conditions

Approximately 90% of the country is broad plains with only a small area of rough highlands to the east. As the old name of Iraq (Mesopotamia) indicates, the main physical features of the country are the two river valleys of the Tigris and Euphrates. North of Baghdad there is a gradual rise of the plains to the mountains interrupted by several hill ranges which becomes more abrupt around the Zagros Mountain area. Heights of over 3,500 meters (12,000 ft.) occur here. To the western side of the Euphrates river valley, a slowly rising gradient culminates in the plateau which continues into the neighboring countries of Saudi Arabia, Syria and Jordan. At its highest

point this plateau is only about 1,000 meters (3,300 ft.) high. No distinct geographical features mark the Iraqi frontier - the boundaries are essentially artificial.

The rivers and lakes, as well as marshes, play an important role in the economy and life styles of the people of Iraq. Paradoxically they are also strongly implicated in the disease patterns of the region.

The Tigris rises in Turkey and travels 1,150 miles (1,850 km.) before joining the Euphrates to form the Shatt al-Arab, a stream that travels 115 miles (185 km.) before emptying into the Persian Gulf. The Tigris is particularly prone to flooding in the spring (April) because its numerous tributaries are fed by the melting snows of the Zagros Mountains. The Euphrates on the other hand, while rising also in Turkey, does not have any tributaries in Iraq, therefore, if flooding takes place it is usually later in the spring (May). It travels through Syria before beginning its 1,460 mile (2,350 km.) journey to the Shatt al-Arab. In the area above Baghdad, both rivers are confined to valley channels. But South of Baghdad the valleys disappear and the rivers meander over the large plain. There is only a slight drop in altitude (1.5 - 2 meter/100 km.) and the rivers are confined only by levees of silt and mud deposited by the rivers themselves due to the slowed progress. The levees and the rivers themselves are several feet above the surrounding plain. Thus, periodically, a river will burst through the levees, inundate the surrounding countryside and eventually form a new levee. Some regular features of the area between the rivers are old river channels, levees, swamps, sandbars, and lakes. To escape seasonal destruction, roads, buildings, towns, etc. must be built on embankments.

The health implications of these riverine characteristics may not be obvious but are indeed significant. Ponds of stagnant water left by seasonal flooding are ideal habitats for mosquito breeding. Contamination of water supplies by flooding is instrumental in the spread of water born diseases such as amoebiasis, shigellasis, and the typhoid and paratyphoid fevers. Marshes in the southeast contribute to the spread of dengue fever and malaria fever. Irrigation systems in use through much of the flatlands are ideal habitats for the snail vectors of schistosomiasis and mosquitoes.

Climate

The climate of Iraq can be characterized as extreme; summers are extremely hot with maximum mean daily temperatures ranging between 100° to 110°F in the summer and from 55° to 75° in the winter. Highs of 120°F and lows of 20°F are not uncommon. Rainfall is scanty throughout the country except for the Northeast area. There, sufficient rain falls for agricultural purposes (40-60 cm.) but the rest of the country depends on irrigation from river water. In this area of irrigation farming between the two rivers, humidity is high as a result of the standing water. Elsewhere it is extremely hot and dry during the summer. Hot dry winds (Shamal) sweep the southern part of the country usually during summer months causing sand and dust storms. These are usually associated with the increased incidence of ophthalmic, respiratory and enteric infections. Dehydration and heat induced injury such as sun stroke, can occur under these climatic conditions as well as cold injuries such as frostbite, particularly for the poor and/or nomad who must rely mainly on their hardiness to survive sudden or drastic changes in temperature.

Cultural Patterns Affecting Health

Iraq is predominantly Muslim (approximately 90%) with a minority of Christians (8%) and others (2%). The majority of Muslims are of the Shi'ite sect, but the wealthiest Muslim are of the Sunni persuasion. Arabic is the official language of Iraq, spoken by 75-80% of the population. Arabs are the major ethnic group, about 70.9% of the population, followed by the largest minority groups such as Armenians and Jews.¹

Adherents of Islam in many Middle Eastern and North African countries have a certain degree of fatalism built into their religion and culture. Outside of the metropolitan areas, illness is regarded as the will of Allah or the work of evil spirits. Thus, morbidity is regarded (if it is regarded at all) as inevitable and indeed, normal, and is endured. Often succor is not sought out as long as a daily work schedule is maintained. When aid is sought, it is usually from a local "holy man" or bone setter who is a member of the community that he serves. Modern medical help in the form of hospital care is distrusted in many instances, and hospitals are regarded as places of last resort.

In urban and peri-urban areas, though, the modern health sector is quite heavily utilized. The use of charms and amulets is widespread to ward off evil spirits and the "evil eye" which are thought to be the primary causes of illness. Mud cakes taken from holy places have special powers ascribed to them and are packed over wounds such as the newborn's umbilical wound. Dust scraped from the cakes is orally ingested for internal ailments. Special verses from the Koran are written on slate-boards then washed into a bowl of water and ingested for various other ailments such as infertility.

It is not readily ascertainable how much these traditional practices contribute to or exacerbate the incidence of tetanus and gastro-intestinal diseases. However, it is reasonable to assume that even if there is no adverse health effect generated by these practices, there is the deleterious effect of 1) maintaining distrust of the modern health sector and 2) delays in utilization of the health sector during the early stages of illnesses when they are more readily treatable.

Other remedies used by traditional practitioners include cauterization to treat pain, tumors, and sprains and to stop hemorrhages. Roast hedgehog meat is believed to cure childrens' diseases and illnesses accompanying pregnancy. Typhoid and malaria are treated with herbal teas and syphilis is treated by smoking special herbs in a water pipe. Snake bite is treated by a mixture of human or snake saliva mixed with sugar and measles is treated by wrapping the patient in a loose red gown.²

While the efficacy of these treatments is dubious at best, it should be noted that some knowledge of beneficial public health practices does exist. Nomads, upon discovering a tribal member with smallpox will immediately evacuate the area, effectively isolating themselves from the disease. A member of the tribe who has had smallpox and survived stays to attend to the patients needs. Another nomadic practice when travelling is to wrap newborn babies in salt-glazed cloth effectively causing water retention and preventing dehydration.

In summary, while some traditional practices are beneficial to health, there are many which are quite detrimental. Because of cultural and religious customs such as religious fatalism, attending to health need is hampered and when help is sought, it is usually from a local practitioner with minimal knowledge of efficacious treatments.

The potential usefulness of the traditional health practitioners should not be ignored, however. Organizations involved in rural health programs have found traditional healers to be valuable adjuncts to modern health delivery systems because of their status in the community and the trust placed in them by the population. Retraining of these practitioners to emphasize beneficial practices and discourage detrimental practices could enhance the image of the modern health sector in the eyes of the population and effectively expand coverage. The GOI has recognized this potentially valuable resource and has established training centers in MCH clinics at the provincial and district administration level for midwives and community health visitors.

References

1. The Middle East and North Africa, 1976-77, Europa Publications, London.
2. Area Medical Intelligence Study (unclassified), Iraq, USA Medical Intelligence and Information Agency, June, 1976.

CHAPTER TWO

DEVELOPMENT SECTORS THAT IMPACT ON HEALTH

Development Policy and Economics

Since 1968, development policy has been socially oriented with major objectives of full employment, equal education opportunities, and an equitable distribution of income. There is also considerable emphasis on Iraqi control of oil and other natural resources, land reform, industrial diversification, and rural development.

The institutional structure of the public sector, which is the principal locus of development activity, is being strengthened as vocational training, secondary and higher education expand.

Economy

Traditionally, Iraq has been a heavily agrarian country. However, skyrocketing revenues from its oil industry now support most of the economic development of Iraq. Oil tonnage produced grew from 76.5 million tons in 1970 to 110.4 million in 1975. In 1973, oil revenues reached ID 547 million.*

The sharp increases in oil prices in recent years have removed the financial constraint to development which was present during the 1960's.

Iraq, with its relatively low population density, has not felt the necessity for rapid industrial expansion. To do so would most certainly outstrip the labor supply. Government policy has reflected this reality and has also prescribed careful selection of industries to be encouraged based upon domestic resources and demand. Since 1970, however, the industrial

* Exchange rate: 1 Iraqdinar (I.D.) = U.S. \$ 3.38.

sector has expanded and diversified. The number of technically qualified staff employed by government and state enterprises has increased concomitantly, partly because of generous incentives offered by the government to expatriate Iraqi technicians.

In 1971 and 1972, industrial production in Iraq increased by 12% per year (up from 7% in 1965-1970). GDP at constant prices is expected to grow at a rate of 7-8% per year. The 1971 GDP per capita was U.S. \$370 at market prices while by 1974, it had tripled to U.S. \$1,110. Despite the high population growth rate of 3.3% per annum, the annual growth of GDP per capita exceeded this. The 1965-1974 growth rate averaged 4.8% per year. The total GDP for 1971 was \$3.560 billion. By 1974, it was \$12.0 billion. Although no data are available on income distribution, incomes in rural areas are estimated to be only 25-30% of those in cities and towns. Economic activity is heavily concentrated in the country's three main urban centers, (Baghdad, Basra, and Mosul).

The large increase in per capita GDP must be efficiently converted into productive capacity in the form of factories, modern farms, and economic and social infrastructure if the population of Iraq is to realize any benefits from the increase.

The absorptive capacity of the country for imports must be increased. The large development programs create new employment opportunities and at the same time inflationary pressures increase. The rise in expenditures, both public and private, must be balanced by an increase in the supply of goods and services. The government has attempted to meet this challenge by increasing salaries and reducing taxes. Personal incomes, and consumption have therefore increased.

Education

In 1974, 1,408,929 students were enrolled in primary school. The Government of Iraq hopes to expand this to two million by 1980. Intermediate education is to be expanded from 388,624 students in 1974 to 578,000 by 1980. There were 48,547 students enrolled in universities, colleges, technical institutes, and vocational schools in 1972.³ By 1974, enrollment reached 74,361 for these categories of students.⁴

Table 1

Educational Institutions by Type and
Enrollment Iraq - 1973-74

	Schools	Pupils
Primary	6,731	1,408,929
Secondary (General)	1,093	388,624
Vocational	65	16,010
Teacher Training	n.a.	n.a.
Universities	5	55,140
Colleges and Technical Institutes	8	3,211

Source: Annual Statistical Abstracts, Iraq, 1974.

Housing

Some observers have reported that living conditions are among the worst in the Middle-East. Rural to urban immigration has outburdened available housing resulting in "slums" and over-extended social services, medical facilities, and personnel. However, as Janet Abu-Lughod states in her article Problems and Policy Implications of Middle Eastern Urbanization, the estimation of housing needs and what constitutes good housing standards are really

valuable questions.⁵ While agreeing that Baghdad does have the most extreme situation in the Middle East she notes that, for the most part, the move (rural to urban) is an improvement in living conditions for the migrant. She asks rhetorically "Are reed structures always substandard, even when they are well suited to climatic conditions and may be gracefully and even elegantly designed. Is a traditional dwelling, functionally arranged around a private courtyard, to be considered obsolete because it lacks the amenities present in a graceless, squat cement apartment building? Is the absence of a private bath always an indicator of a substandard unit?" Further she asks, "To what extent is it financially feasible to enforce standards imported - consciously or unconsciously - from other culture areas?"

Given this perspective one can say that the rural to urban trend represents an improvement in living conditions and while the housing statistics may appear appalling to western eyes, conditions are not nearly as bad as they are among South Asia's poverty level homeless populations.

This is not to minimize the problems that do exist because of a lack of proper hygiene practices or sufficient water supplies and sewerage disposal. These problems must be addressed, but changing the housing situation will not always effect a change in health conditions brought on by cultural practices or habit.

In the rural areas, housing is either tents or mud-and-reed huts. Communal usage of eating and drinking utensils is common and contributes to the exchange of disease between members of the extended family group. Livestock inhabit the same areas as people facilitating the spread of zoonoses and generally lowering the hygienic conditions.

Agriculture

Historically, agriculture in the form of share-cropping and animal husbandry has been the main source of employment and economic activity. The farm worker is usually a subsistence farmer, growing crops and raising animals enough to provide for his family. Cash crops are grown by the larger landholders and peasant proprietors. The main winter crops are barley and wheat along with lentils, vetch, and linseed. Rice, dates, tobacco, and sesame are the chief summer crops. These are grown more extensively where better irrigation is found.

However, since the 1958 expropriation of farm land, agricultural development has lagged behind industrial development. State farms and cooperatives, a major rural electrification program, and resettlement schemes formed the major thrust of rural development activities during the early 1970's. More recent information concerning the implementation of these plans is not available.

Economically, agriculture has now been supplanted by oil as the most important sector of the economy, but it remains the largest employer of the Iraqi population (See Table 2). Iraq is blessed with large amounts of arable land (75,364 km²) and a small population giving them a favorable people/land ratio. Further, arable land can be expanded through irrigation and water control to double the current capacity.

Although industrialization figures most importantly in current development plan (1978-80), agriculture still remains a high priority. An agricultural surplus for export is the stated objective and means to achieve this lies in reducing dependence on the vagaries of weather and solving the salinity problems of irrigated land.

The government of Iraq places much economic importance on river control and irrigation. It is estimated that when the Tigris and Euphrates are fully utilized through dams and reservoirs, arable land will be doubled. To this end, Iraq has signed agreement with the USSR to set up a system of water storage and control systems. The first phase 1975-80 has already begun at Kirkuk and a follow-up phase (or phases) of about seven years duration is envisioned with an eye to ultimately irrigate 1.5 million dunums (375,000 acres). With an increase in irrigated land, an increase in the incidence of schistosomiasis is virtually certain unless measures are adopted to counter the spread of the vector.

For details on relative employment in the agricultural sector, agricultural production figures, commodity import/export figures, and irrigation capacity see Tables 2 through 10.

Table 2
Employment by Sector, Iraq, 1973
(1973 estimates)

		<u>% age</u>
Agriculture	1,540,400	50.46
Mining	18,500	6.06
Manufacturing	170,000	5.57
Electricity, Gas and Water	14,300	.47
Construction	73,000	2.39
Commerce	164,000	5.37
Transport	162,000	5.30
Services	330,000	10.81
Others	380,400	12.46
Unemployed	200,100	6.55
Total Labour Force	3,052,700	100.00

Source: Europa Publication, 1976-77.

Table 3

Iraq Agriculture
Area and Production of Principal Winter Crops

	1973		1974		1975	
	Area ('000 dunums)*	Produc- tion ('000 tons)	Area ('000 dunums)	Produc- tion ('000 tons)	Area ('000 dunums)	Produc- tion ('000 tons)
Wheat	4,624.0	957.0	6,624.0	1,339.0	5,630.6	845.5
Barley	1,856.0	461.8	2,185.0	533.0	2,269.2	437.0
Linseed	4.2	9.0	6.0	0.9	9.2	1.3
Lentils	17.1	2.4	16.0	2.6	20.6	4.8
Vetch (Hurtman)	3.1	0.8	3.0	0.4	1.7	0.4
Broad Beans	59.8	14.9	65.6	17.9	n.a.	n.a.

Table 4

Area and Production of Principal Summer Crops - Iraq

	Area ('000 dunums)*	Produc- tion ('000 tons)	Area ('000 dunums)	Produc- tion ('000 tons)	Area ('000 dunums)	Produc- tion ('000 tons)
Rice	255.8	156.6	130.0	69.0	119.5	60.5
Sesame	52.6	5.7	58.0	6.0	46.7	7.6
Green grams	37.9	7.2	39.8	9.2	52.3	7.0
Millet	9.6	2.1	n.a.	n.a.	n.a.	n.a.
Giant millet	24.3	6.5	n.a.	n.a.	n.a.	n.a.
Maize	42.8	19.1	n.a.	n.a.	37.8	23.5

Livestock (1974): Sheep 8,526,480; Goats 2,583,536; Cattle 2,048,245; Donkeys 606,709; Horses 86,443; Buffaloes 183,806; Camels 78,945; Chickens 11,860,577 (1971).

Table 5

Irrigation

	1970-71	1971-72	1972-73	1973-74
Number of Pumps	14,135	15,484	15,734	18,104
Total Horse Power	350,335	368,885	364,458	379,340

* 1 Dunam = .25 acres

Table 6

Iraq Date Crop
(tons)

1970-71	1971-72	1972-73	1973-74
300,000	450,000	310,000	390,000

Table 7

Area and Production
of Cotton in Iraq

	1972	1973	1974	1975
Area (dunums)	146,800	143,270	113,000	105,100
Production (tons)	50,800	45,310	40,000	38,600

Table 8

EXTERNAL TRADE

TOTAL TRADE
('000 I.D.)

	IMPORTS	EXPORTS*	RE-EXPORTS	TRANSIT
1971.	247,870	22,780	n.a.	33,801
1972.	234,680	28,614	2,394	65,485
1973.	270,317	32,523	272	56,095
1974.	700,088	28,129	8.5	89,724

Table 9

EXPORTS OF CRUDE OIL
(million I.D.)

1970	1971	1972	1973	1974	1975
329.8	446.8	408.5	684.7	2,044.9	2,465.4

* Exports of crude oil are not included.

Table 10

PRINCIPAL COMMODITIES
('000 I.D.)

IMPORTS	1971	1972	1973	EXPORTS*	1971	1972	1973
Tea	6,072	7,600	4,712	Barley	n.a.	515	n.a.
Sugar	12,278	11,000	14,599	Dates	6,905	9,080	10,016
Pharmaceutical products	8,805	8,224	1,270	Straw and fodder	94	103	371
Clothing	422	404	191	Raw wool	1,403	1,549	611
Boilers and engines	35,098	44,446	47,898	Raw cotton	74	467	84
Automobiles and parts	12,115	10,474	10,867	Hides and skins	1,822	2,633	3,657
Lumber	3,182	2,836	2,235	Cement	2,712	2,607	3,402

* Excluding crude oil (see above).

References

1. The Middle East and North Africa, 1976-77, Europa Publications, London.
2. Ibid.
3. Progress Under Planning, Iraq Ministry of Planning, 1973.
4. Annual Statistical Abstracts, Central Statistical Organization, Government of Iraq, 1974.
5. Janet Abu-Lughod, "Problems and Policy Implications of Middle Eastern Urbanization," Studies on Development Problems in Selected Countries of the Middle East, 1972, New York, UNESOB, pp. 45-63.

CHAPTER THREE

POPULATION

Demographic information on Iraq is based primarily on the 1965 census. At the time of the census, there were 8,097,230 Iraqis, which included 49,815 Iraqi citizens who were living abroad. By 1975, the population was estimated to be 11,018,000. The Iraqi government, which calculated an annual growth rate of 3.25 in 1973, has projected a population of 13.2 million by 1980. The growth rate is expected to increase during the next decade, as the death rate falls and the 50% of the population now under age 15 reaches reproductive age.

Demographic pressure is a minor concern to the Iraqi government, and in fact, by international standards, Iraq is well off, with a population density of 25 persons per square kilometer and over one hectare of potentially arable land per capita. Even when the sparsely populated (2-3 persons per km²) desert regions of al-Anbar and al-Muthanna are excluded, population density for the country rises to only 50 persons per square kilometer.

Table 11 provides a detailed profile of the population by governorate, rural/urban and sex. In the most densely populated governorate of Baghdad, population density is 145 persons per square kilometer. Approximately one third of Iraq's population is concentrated in the governorate of Baghdad. There are no other areas which contain a disproportionately large share of the population. So far, population density in Iraq is a health problem only in the overcrowded quarters of urban areas.

Table 11

Estimates of Population by Governorates and Environment: 1974
(In thousands)

Governorate	Urban			Rural			General Total	Density per sq. Km.
	Male	Female	Total	Male	Female	Total		
Nineveh	272	255	527	182	183	365	892	23
Kirkuk*	184	164	348	117	121	238	586	30
Diala	109	105	214	136	136	272	486	31
al-Anbar	97	93	190	94	94	188	378	3
Baghdad	1417	1399	2816	260	266	526	3342	145
Wasit	78	75	153	110	117	227	380	26
Babylon	135	136	271	150	157	307	578	84
Kerbela	227	224	451	54	53	107	558	78
al-Qadisiya	88	89	177	116	121	237	414	44
al-Muthanna	35	34	69	41	41	82	151	2
Maysan	74	70	144	108	109	217	361	20
Thi-Qar	99	94	193	176	175	351	544	39
Basrah	325	327	652	129	134	263	915	51
Autonomous Region:								
D'hok	41	35	76	50	40	90	166	17
Arbil	115	114	229	132	115	247	476	31
al-Sulaimaniya	119	107	226	152	160	312	538	45
Total	3415	3321	6736	2007	2022	4029	10765	25

Source: Estimates of Dr. M.M. Al-Imam.

* Since 1974, Kirkuk has been divided into three provinces: Salah-al-Deen, Al-Ta'meem, and Al-Najaf. Population estimates for these provinces were not available.

There is a slight excess of males over females nationwide as well as in urban areas, while the reverse is true in rural areas (see below).

Table 12

1974 Urban-Rural Population
Estimates in 000's

	<u>Female</u>	<u>Male</u>	<u>Total</u>
Urban	3321	3415	6736
Rural	2022	2007	4029
Total	5343	5422	10765

This has been true since 1966, and population projections through 1980 do not anticipate any change.

The age structure of the Iraqi population is young - in 1975 approximately 48% of the population was under age 15. The age structure is also expected to remain the same through 1980.

Migration to and from Iraq involved over 200,000 Iraqis and 500,000 foreigners in 1974. Over 90% of the Iraqi departures were to neighboring Arab countries (50% went to Kuwait through Basrah). Visitors to Iraq were primarily from other Arab countries. The majority were from Syria and Jordan. Basrah and al-Anbar were the major points of entry to Iraq.

Urbanization is expected to accelerate as more people leave rural areas for the jobs and higher incomes of urban areas. Urban health problems, such as tuberculosis, leishmaniasis, and water-borne diseases such as typhoid fever and other gastro-enteric infections may increase as a result. The migrants from rural to urban areas may bring with them and spread diseases which are more common to rural areas such as malaria and hydatidosis. The young age structure of the population in both urban and rural areas points to a need for more maternal and child health services, particularly health education in nutrition and spacing of pregnancies.

CHAPTER FOUR

HEALTH STATUS

The morbidity and mortality statistics which are collected in Iraq are incomplete and do not accurately reflect the health status of the population. A death rate of 4.6/1000 can be calculated from the registered vital statistics of the government, while sample surveys carried out by the government in 1973 revealed a death rate of 11/1000 and international organizations have estimated a death rate of 14-15/1000. Births are registered at an annual rate of 16/1000 population, while national surveys indicated a birth rate of 43.6/1000. International organizations estimate a still higher birth rate of 48/1000.¹

This range of birth and death rates is comparable to those estimated for the neighboring countries of Jordan and Syria which have marked cultural similarities to Iraq. A comparison of these vital statistics with those of other countries with equivalent financial resources (See Table 3 for Vital Statistics and GNP per Capita) serves to illustrate the recent ascension of Iraq to the level of "middle income" countries. It also suggests the improvements in general health status which may be feasible given the current resource base.

Table 13

Comparative Socio-Economic Indicators

Asia	Births/1000	Deaths/1000	GNP/Per Cap.	(U.S.\$) Per Capita Hlth. Exp.
Iraq	43-48	11-15	\$1100	\$6.20
Iran	45	16	1250	7.74
Syria	45	15	560	6.60
Jordan	48	15	430	10.10
Lebanon	40	10	1070	3.80
Others				
Jamaica	31	7	1190	19.54
Uruguay	21	10	1190	N.A.
Mexico	46	8	1090	2.64
Romania	20	9	1110	18.56
Yugoslavia	18	8	1310	73.75

Source: Birth and death rates taken from "World Population Growth and Response," 1973, Population Reference Bureau. GNP/Per Capita from the IBRD Atlas 1976.

Mortality

In 1973, 40,750 deaths were registered in Iraq. Infant deaths in the same year totaled 4579, however, the definition of "infant deaths" is unclear.

The Population and Manpower Statistics Department of the Central Statistical Organization conducted a 1% sample field survey during 1973-74 in an attempt to obtain more accurate demographic statistics. The rates shown in Table 14 were calculated from the results of this random sample survey which included 61,514 persons in urban areas and 46,117 persons in rural areas.

Table 14
Vital Rates Survey

	<u>Urban</u>	<u>Rural</u>	<u>Total</u>
Crude Birth Rate	41	47.5	43.6
Crude Death Rate	9.4	13.3	11
Natural Increase	3.1	3.4	3.2
Infant Death Rate	77	111	91.8
General Fertility Rate	187.9	221.4	201
Total Fertility Rate	6608	7874	7126

Source: 1974 Annual Abstract of Statistics Government of Iraq.

The rates derived from the survey indicate that the actual number of deaths in 1973 was closer to 110,000 than to the reported 40,000. The

birth rate of 43.6/1000 reveals that approximately 270,000 births were not reported. (Births reported - 166,387. Births estimated 436,000.) Both birth and death rates appear to be decreasing. Estimates for 1960 indicated a birth rate of 48.9/1000 and a death rate of 19.2/1000.

International organizations estimate that life expectancy in Iraq is similar to that in Syria and Jordan - 53 years. There are no statistics available from the Iraqi government which either support or dispute this estimate. Data on causes of death reported to WHO in 1970 appears in Table 15..

Given the limited amount of information available on causes of deaths, two assumptions can be made. First, most deaths in Iraq do not occur in the presence of trained health personnel, and second, this list cannot be considered an accurate reflection of the leading causes of death in Iraq.

Because Iraq appears to have health problems which are similar to those in other countries of the area as well as other countries at a similar stage of social and economic development, the leading causes of death probably include upper respiratory infections, gastrointestinal infections, and perinatal causes, with heart disease, cerebrovascular disease, and cancer all increasing as life expectancy lengthens and industrialization progresses.

Morbidity

Despite the incomplete reporting of health statistics, several major diseases which occur in Iraq have been the subject of centuries of medical studies. Trachoma, schistosomiasis, malaria, leishmaniasis,

Table 15

Causes of Death Reported to the W.H.O. in 1970

Causes	Reported Deaths	% of Reported Deaths	% of All Estimated Deaths ¹
Symptoms and other ill-defined conditions	14,635	50.5	.11
Heart Diseases-all types	5,217	17.9	.04
Accidents (122 from traffic accidents)	2,598	8.9	.02
Tuberculosis-all forms	1,648	5.7	.01
Pneumonia	1,543	5.3	.01
Malignant neoplasms	1,432	4.9	.01
Cerebrovascular diseases	630	2.2	.005
Perinatal causes	279	1.0	.002
Bronchitis, Emphysema, Asthma	278	.9	.002
Cirrhosis of the Liver	264	.9	.002
Dysenteries and other diarrheal diseases	195	.7	.001
Meningitis	169	.6	.001
Anemias	151	.5	.001
Total	29,039	100.0	.214

¹Estimated number of deaths is based on the 1970 population estimate of 9.5 million and the death rate of 14/1000 estimated by the IBRD.

Source: W.H.O. Fifth Annual Report

tuberculosis, measles, and mumps are among the most frequently reported communicable diseases in modern Iraq. (See Table 16) The relatively low level of life expectancy (53 years) suggests a correspondingly low incidence of chronic degenerative diseases, although this has not been confirmed.

Schistosomiasis

Schistosomiasis has been present in Iraq since ancient times. References to the disease and prescriptions for its treatment are found in Babylonian inscriptions. In fact the Trigris - Euphrates valley and the Nile River in Egypt are the world's two major foci of the disease. A country-wide survey in 1949-50 indicated infection rates ranging from 0-18% in northern Iraq, 1-84% in central Iraq, and 1-90% in the south. It has been estimated that 20% of the population is currently suffering from this disease.² A WHO Control Project begun in 1960 revealed a prevalence rate of 90% in the population of the Hor Rajab Area 20 km. south of Baghdad.³ Regular mollusciciding every year since 1961 and medical treatment with Abilhar and Etrenol had reduced the prevalence rate of 5.3% by 1973. The *bulinus truncatus* snail host of the *Schistosoma haematobium* had been eliminated by 1969. As of 1974, the area was still free of snails. The Iraq government control program is implemented through the Institute of Endemic Diseases in the Ministry of Health.

There are no published statistics currently available on the number of cases of schistosomiasis in Iraq. A 20% increase in the number of cases was reported to WHO after the year-round irrigation of one (unnamed) area was completed. Despite the shortage of current data, schistosomiasis

Table 16

Incidence of Infectious Diseases in Iraq Reported By The Health Authorities

Disease	1971	1972	1973	1974	1975
Diphtheria	905	790	860	842	1,281
Measles	37,222	38,272	33,613	65,391	55,889
Whooping Cough	9,267	16,299	2,262	4,246	11,755
Mumps	35,338	36,198	14,832	24,922	54,345
Scarlet Fever	251	264	128	260	193
Typhoid Fever	1,400	1,415	1,926	2,085	2,187
Para Typhoid Fever	41	83	127	39	83
Puerperal Fever	225	244	187	--	--
Tetanus	768	705	723	372	494
Chicken Pox	3,258	4,147	5,309	3,956	4,758
Anthrax	142	102	134	155	224
Erysipelas	--	10	4	2	3
Cerebro-Spinal Fever	984	897	1,005	--	--
Leprosy	38	12	22	22	14
Rabies	16	9	8	1	28
Acute Poliomyelitis	425	255	252	662	1,046
Phthisis (Tuberculosis)	21,888	19,776	17,743	18,735	20,273
Dysentery, all forms	2,582	1,869	1,995	1,845	2,644
Syphilis	128	118	139	106	185
Gonorrhoea	1,430	1,026	1,324	1,451	1,565
Acute Ophthalmia	23,414	43,675	62,419	--	--
T.B. Meningitis	264	--	--	--	--
Viral Pneumonia	280	121	175	--	--
Trachoma	62,538	99,537	181,674	146,480	108,642
Malaria	6,970	1,347	3,792	1,802	13,982
Infectious Hepatitis	522	534	1,114	1,650	1,056
Black Fever (Leishmaniasis)	449	678	1,333	--	--
Small Pox	--	37	--	--	--
Influenza				12,941	611,812

Source: Annual Statistical Abstract, 1974. Government of Iraq.

is considered to be one of Iraq's major health concerns.

Eye Diseases

The lack of statistics on schistosomiasis contrasts sharply with the consistently high reported incidence of eye diseases, particularly trachoma and acute conjunctivitis. These are the most commonly reported diseases in Iraq. In 1973, 181,674 cases of trachoma and 62,419 cases of acute ophthalmia were reported. Up to 500,000 cases of trachoma have been treated in a single year by the Iraqi Ministry of Health. Recent studies indicate that improvements in the general physical environment are as important as medical treatment in lowering the incidence of these eye diseases. While continued medical treatment will be necessary to prevent permanent disabling eye damage to those who have already contracted the disease, improvements in the standard of living will make an equally important contribution to the control of eye diseases in Iraq.

Ankylostomiasis

Ankylostomiasis (hookworm) has been endemic to Iraq for centuries. Prevalence is particularly high in warm humid climates where the disposal of human wastes is inadequate. Iron deficiency anemia is caused by the blood-letting activity of the nematode in the small intestine. Children with long term infections may be retarded in physical and mental development. A survey in Iraq in 1972 revealed prevalence rates of 10% in Babylon, 5% in Baghdad, 1% in Basrah, and 0.1% in Arbil. Although the sample was

small, females had a slightly higher infection rate than males, and large families had a higher rate of infection than small families. The infection rate jumped to 70% in families of ten or more persons.

Malaria

Malaria control in Iraq has been complicated by the variety of vectors present and the constant movement of nomads within Iraq and between Iraq and Saudi Arabia, Jordan and Syria. The major vectors of malaria in Iraq include Anopheles stephensi, and Anopheles Pul-Cherri-mus. Both were tested and found to be susceptible to DDT.

In 1973, the northern governorates of Irbil, Sulaimaniya and Nineva reported the largest number of cases. The political unrest in the area had disrupted the work of the eradication teams. The settlement of the dispute with the Kurds should theoretically have helped to improve the situation, however, there was a sudden upsurge in the number of cases in 1975 which was probably caused by the movement of people from the malaria-endemic regions of the north to the relatively malaria-free areas of the south. By 1976, special attention was being given to surveillance of the returnees, spraying operations, in the areas where they settled, collection of blood smears, and treatment of positive cases.

The 1976 malaria eradication program, budgeted at 1.5 million Iraqi dinars, included spraying operations throughout the country, surveillance, larviciding, and epidemiological evaluation. The number of cases reported dropped from 13,982 in 1975 to 6,527 in 1976. (See Table 17 for regional and seasonal distribution.)

Table 17

Malaria Incidence In Iraq 1976

(Governorate)	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Muhafada									
Arbil	2	4	5	23	85	174	122	191	191
Al-Sulaimaniya	42	114	120	343	875	887	381	143	275
Nineveh	5	19	68	99	248	258	100	418	352
Dihok	2	5	14	59	82	108	76	126	152
Al-Ta-meem	11	2	3	14	34	14	4	22	13
Total North	62	144	210	538	1324	1441	683	900	983
Al-Anbar	-	-	-	-	-	-	-	1	1
Baghdad	1	-	3	2	6	4	5	8	4
Al-Qadisiya	-	-	2	1	-	4	3	2	2
Al-Muthanna	-	-	-	1	1	-	-	2	1
Kerbela	-	-	-	-	2	1	1	1	13
Diala	-	1	-	-	-	-	2	2	3
Babylon	-	-	-	1	-	2	1	1	1
Wasit	-	-	-	-	2	1	1	-	-
Total Center	1	1	5	5	11	12	13	17	25
Basrah	-	1	-	2	4	4	2	7	5
Maysan	-	1	1	1	2	2	1	11	5
Thi-Qar	-	1	-	3	5	3	2	2	1
Total South	-	3	1	6	11	9	5	20	11
Country Total	63	148	216	549	1346	1462	701	937	1019

Source: Government of Iraq Report on Malaria Eradication Program, November, 1976.

Tuberculosis

Tuberculosis is reported throughout Iraq. Over 20,000 cases were registered by health authorities in 1975. The crowded and unsanitary living conditions in cities and towns (urban slums house an average of six persons per room) is an important factor which contributes to the spread of this disease. Because of the social stigma which is attached to the disease, it is not always reported. Incidence may be considerably higher than the reported number of cases.

Measles and mumps

Measles and mumps are also reported in epidemic proportions in every area of the country. Both are generally considered to be relatively benign childhood diseases. Each however, can cause serious permanent damage under certain conditions. The diarrhea and upper respiratory infections which often accompany measles can be fatal to a malnourished child, and mumps may cause up to 25% of cases of viral meningitis in epidemic periods.

Leishmaniasis

Leishmaniasis, or sandfly fever, was one of the major scourges of the Middle East for centuries. As recently as 20 years ago it was not unusual to see scars from the disease on 70% to 100% of the population in some Baghdad neighborhoods. At that time between 20% and 60% of the city's population were infected. Conditions have improved considerably, however, and by 1973, there were only 1333 cases of the disease reported

throughout Iraq. The principal vector, *Phlebotomus sergenti*, is most numerous during the later part of summer from August to October.

Other diseases which are reported with less frequency include all forms of dysentery, venereal diseases, infectious hepatitis, chicken pox, tetanus, cerebrospinal fever, poliomyelitis, diphtheria, whooping cough and typhoid and para-typhoid fever. The large number of reported cases of poliomyelitis, diphtheria, and whooping cough indicate the inadequacy of the current vaccination efforts.

Hydatidosis also occurs frequently and is severe enough to require surgical removal of cysts. The disease is prevalent in rural areas where dogs are used to herd sheep, and human beings are in constant close contact with dogs.

The presence of hepatitis B-surface antigens in a large number of Iraqis who suffer from cirrhosis suggests that this virus is a possible etiological agent.⁴ Positive reactions were seven times higher among Baghdad patients than in a normal hospital control population. The same condition has been found in Syrians with cirrhosis.

Mental Health

There is little information available about mental health problems in Iraq. There are three government hospitals, all in Baghdad, which treat mental and nervous disorders. The availability of outpatient care is unknown. In other countries of the area, a higher percentage of women than men have been found to be suffering from mental disorders, and the inverse relationship between social status and emotional disorders has been proven valid.

Alcoholism and Drug Addiction

Iraq has long served as a transshipment route for drugs from Turkey to Europe. Hashish, heroin, and opium are the drugs most commonly confiscated. Local drug addiction is confined to a very small minority of the population. The government considers this and alcoholism to be minor problems because of the extremely low incidence.

Accidents

According to the Ministry of Health of Iraq, road accidents were the fifth leading cause of death in 1975. There has been a tremendous increase in the number of motor vehicles on the road, from 64,000 in 1960 to 244,000 in 1975. The majority of the accidents reportedly occur in the vicinity of the major urban areas. The location and type of emergency medical services available is unknown.

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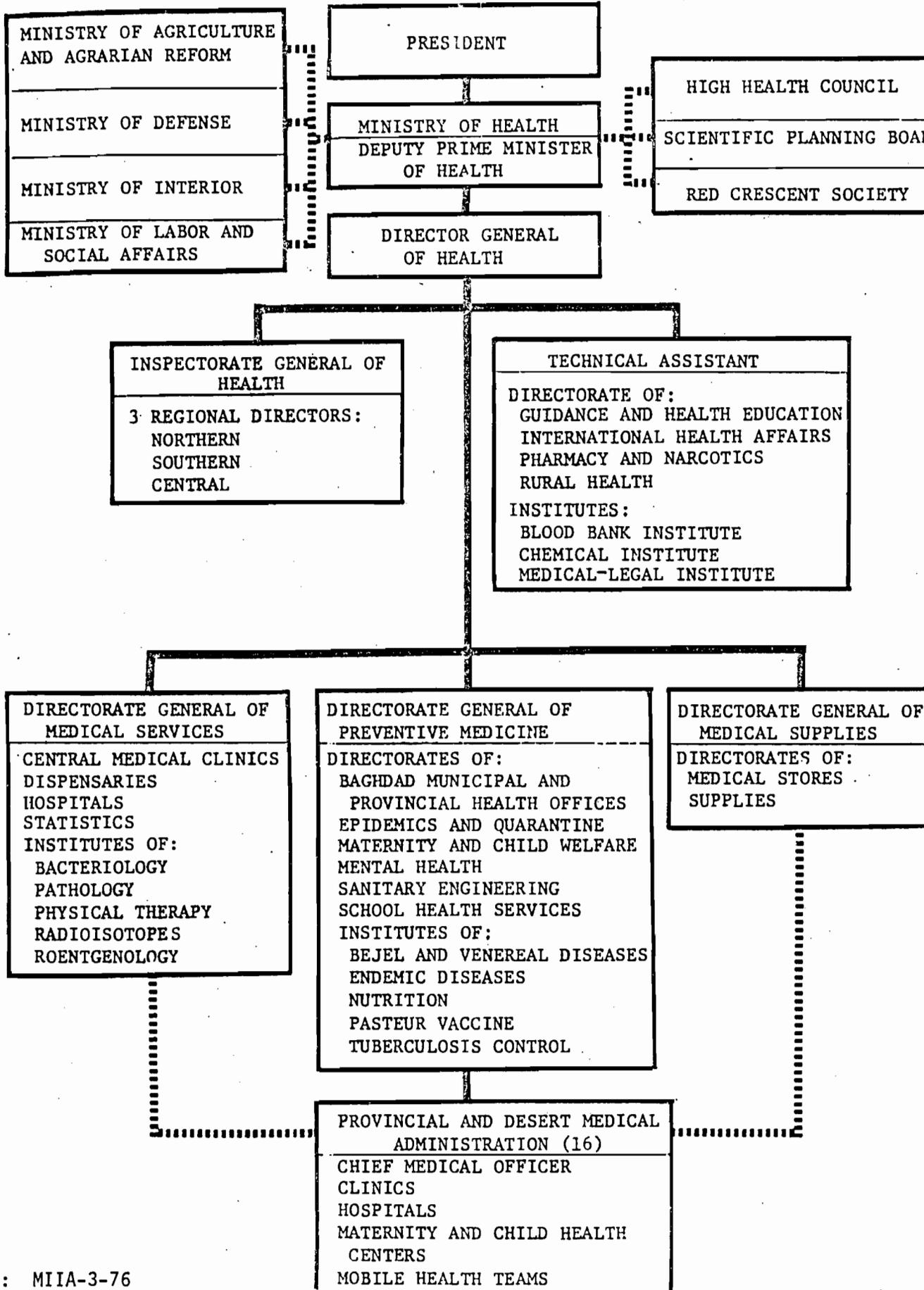
CHAPTER FIVE
INFRASTRUCTURE OF HEALTH SERVICES

Ministry of Public Health

The Ministry of Public Health (MOH) is headed by a Deputy Prime Minister of Health. He is responsible for the organization and administration of public health services and is accountable to the President. The operational aspects of the MOH devolve on the Director General of Health, a physician. At the Directorate level is the Inspectorate General of Health, having as its head, the Inspector General of Health, also a physician, with three subordinate regional directors. Also at the Directorate level is a Technical Assistant and three Director Generals, each heading one of the following: Medical Services, Preventive Medicine, and Medical Supplies. The Directorate General of Preventive Health is responsible for the operation of the 16 Provincial and Desert Medical Administrations. (See organogram, next page).

The Inspectorate General of Health oversees inspection of all government and private medical facilities, institutes, and pharmacies. This inspectorate is divided into three regional divisions responsible for the annual inspection of all medical facilities.

The Technical Assistant is responsible for four directorates. The Directorate of Guidance and Health Education plans and arranges disease prevention programs and health education programs to protect public health. The Directorate of International Health Affairs, headed by a physician, deals with all international health problems including international health affairs related to domestic health such as fellowships, deputations and



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study leaves. It is the co-ordinating body for multilateral health programs and bilateral aid in health from Arab countries. The Directorate of Pharmacy and Narcotics, headed by a pharmaceutical chemist, enforces the laws on the practice of pharmacy and the trade in drugs, narcotics, and poisons. Finally, the Directorate of Rural Health is responsible for matters concerning rural health. The Technical Assistant is also super-ordinate to the three institutes; the Blood Bank Institute, Chemical Institute and the Medical Legal Institute all fall under his aegis.

The Director General of Medical Services, headed by a physician, handles all therapeutic health matters including the operation of medical facilities and therapeutic institutes (see organogram). A physician heads the Directorate of Preventive Medicine which maintains surveillance and control of epidemic and endemic diseases, as well as public health, prevention programs. This Directorate undertakes management and organizational functions, as well as importation, storage, and distribution of technical medical equipment and other supplies required by the MOH.

At the provincial level there is a chief medical officer, a physician usually stationed at the main hospital in the province. He is in charge of all medical activities, both private and governmental, in the provincial and desert administration. He heads the department of health at this level and is responsible for the operation of federal directorates in the province such as medical installations, medical care, preventive medicine, rural and school health, medical supplies and sanitary engineering. Coordination between the directorates, i.e. medical services and medical supplies, and the provincial and desert administrations is maintained. In the larger municipalities the

duties of the chief medical officer are delegated to a municipal health officer who is responsible for the medical activities that the CMO does elsewhere in the province.

The provincial and desert level hospital clinics engage mainly in diagnostic work, vaccine distribution, and public health statistics gathering. (See Health Facilities Section for details).

The Ministry of Health maintains liaisons with other sectors in order to coordinate programs of joint interest. With the Ministry of Agriculture and Agrarian reform, there is coordination on veterinary programs; with the Ministry of Defense, public health programs; with the Ministry of the Interior, public health aspects of civil defense; with the Ministry of Labor and Social Affairs, social security programs; with the High Health Council, projects and policies to raise health standards in the country; and, with the Scientific Planning Board, research in public health.

The Red Crescent Society aids the Ministry of Public Health with blood collection and MCH programs as well as certain public health programs.

Social Security Program

Legislation in 1956 (with Amendments in 1971), established the social insurance system in Iraq. Employees of firms with 15 or more workers are covered. Specifically excluded are agricultural employees, domestic servants, family labor, and temporary employees. (Public employees, and

employees of nationalized industries, lawyers and journalists are covered under special systems.)

Contributions are as follows:

Insured person	5% of earnings
Employer	12% of payroll (25% if 100 or more workers)
Government	30% of total employer and employee contributions

Cash sickness benefits, equal to 75% of average earnings, are payable after an eight-day waiting period (during which the employer is obligated to pay full wages) for up to six months (up to one year for specified diseases). There is no minimum qualifying period. Maternity benefits equal to 100% of earnings are payable for at least ten weeks including at least four weeks for confinement. Benefits may be extended up to nine months if there are medical complications, however the benefit then falls to 75% of earnings. A maternity grant equivalent to one month's wages for each year of contribution is payable to those women who leave their employment at this time.

Health services are provided through government or private health centers and hospitals. There are no separate health facilities operated by the Social Security Institute. Included are general and specialist care, hospitalization, surgery, medicines, X-rays, appliances, laboratory services, and rehabilitation. Benefits are the same for dependents as for the insured person.

The programs are administered by the Social Security Institute, which is attached to the Ministry of Labor and Social Affairs. The Institute is managed by a tripartite board and director-general.

Medical benefits are the same for work injuries except the prescribed medicines are also covered. Other benefits include widows and orphans pensions, survivor pensions, disability benefits, and old age pensions.

Private Sector

No reliable information is available on the extent and role of the private health sector in the delivery of medical care.

CHAPTER SIX

HEALTH RESOURCES

Health Facilities

There has been a great deal of emphasis in Iraq on the construction of hospitals and other health facilities. The primary objective of the 1970-74 Development Plan was to increase the number of health facilities which would lead to an improvement in the health status of the population. Specifically, the number of hospitals and hospital beds were to be increased so that the ratio of population to hospital beds was improved.

The number of hospitals in Iraq has increased from 150 in 1970 to 194 in 1976. The number of hospital beds has increased from 18,254 to 23,324 during the same period. (See Table 18) Unfortunately, population estimates are not available for 1976, therefore, it is not possible to determine the population per hospital bed ratio for that year. In 1973, there were approximately 498 persons per hospital bed. The increase in hospital facilities since 1970 appears to have been evenly distributed throughout the country. Every governorate except Kerbela has had an increase in hospital bed capacity since 1970. Bagdad's share of hospital bed capacity has decreased slightly from 44% of all beds in 1970, to 40% in 1976. (In 1974, Baghdad governorate contained 33% of Iraq's population).

The 800 bed hospital in Medical City in Baghdad is the largest health facility in the country. The cost of construction of the hospital and

Table 18

Number of Hospitals in Iraq by
Governorates: 1970 and 1976

Governorate	1970		1976	
	Hospitals	# Beds	Hospitals	# Beds
Nineveh	10	1,274	14	1,575
Salah Al-Deen	3*	200*	4	242
Al-Ta'meem	3*	200*	8	710
Diala	9	479	13	916
Baghdad	39	7,960	43	9,312
Al-Anbar	10	481	9	656
Babylon	6	885	8	830
Kerbela	3	662	3	442
Al-Najaf	3*	204*	3	736
Al-Qadisiya	8	785	10	822
Al-Muthanna	3	160	6	367
Thi-Qar	7	463	8	762
Waist	6	519	13	773
Maysan	7	771	10	1,125
Basrah	13	1,679	18	2,142
Autonomous Region:				
D'hok	3	134	5	277
Arbil	9	815	9	833
Al-Sulaimaniya	6	583	10	804
Total	150	18,254	194	23,324

* Since 1970, three new provinces were created from Kirkuk province. It is unclear which of the 1970 facilities were located in each of these provinces, therefore, each was assumed to have one third of the hospital facilities of the former province of Kirkuk.

Source: Iraq Annual Statistical Abstract, 1970, 1976.

other Medical City facilities is estimated to be in excess of U.S. \$20 million. The hospital is said to be operating well below capacity because of the shortage of medical staff.¹ Nurses in particular are in short supply, and so most of the nursing care is reportedly provided by nurse aides who enter a 2-year training program at the age of 13. In other hospitals in Iraq, relatives are permitted to stay with patients. They provide food and a good deal of basic nursing care. This is not allowed in Medical City.

Other information related to the quality of care is extremely limited. The average length of stay in all hospitals during 1976 is estimated at 17.7 days. This may include patients in long term care facilities such as the mental health hospitals or it may include an overnight stay by all emergency patients, as is required in Syria.

A study of wound infection rates at the teaching hospital in Basrah in 1974 revealed rates that ranged from 3% after an appendectomy to 100% after an operation for renal calculi. The incidence of infections was highest after genitourinary operations.² The hospital wards in Basrah are multibedded and moderately ventilated, however there are no isolation rooms for septic cases. All patients are in contact with the doctors and their staffs, students, and large number of visitors. The operating theatre of the hospital is in a separate building which is connected to the wards by an open veranda.

Mental health patients do not appear to share the benefits of the new facilities at Medical City. The outpatient facility for mental health

patients is housed in an old building several blocks from Medical City. Twelve miles from Central Baghdad, the old, overcrowded and under-staffed mental health hospital of Shammarijah serves all of Iraq. A few patients are occasionally brought to the medical school in Medical City for teaching purposes.

The quality of the data available concerning hospital care indicates some shortcomings in record-keeping and possibly in other administrative procedures.

There is a large number and variety of outpatient facilities in Iraq. There are not necessarily separate physical facilities. (See Tables 19-21. The MCH Center, outpatient clinic, dentist unit, school health dispensary, and evening clinic could conceivably utilize the same staff, equipment, and building. The services provided by the various facilities include preventive and curative care, however the assignment of functions to the various facilities is apparent in only a few cases. The endemic disease clinics are known to deal with the discovery, diagnosis and treatment of schistosomiasis, malaria, and ankylostomiasis. Eye diseases are found in large numbers throughout the country. Kerbela, which reported the largest number of cases of eye diseases in 1973 (33,272 cases) and Al Muthanna (22,646 cases in 1973) still had no ophthalmic treatment centers by 1976, while Babylon, which reported only 7,635 cases of trachoma and acute ophthalmia in 1973, had a treatment center.

Other inconsistencies are evident in the location of MCH Centers. Basrah, which reported almost 20,000 births in 1973, had six MCH Centers

while Al-Qaqdisiya, with only 3,324 births, had the same number of MCH Centers. Nineveh, with 15,277 births reported, had five MCH Centers. All of these areas have doctors in private practice as well as hospitals and other health facilities where some MCH care may be provided. Nevertheless, it would be useful to know the criteria which are used to make decisions concerning the location of various health facilities. Given the apparent absence of significant health planning (see below) it is likely that such criteria are either non-existent or of little relevance.

Table 19

Number of Health Institutions Distributed
By Kinds: 1976

Governorate	Grand Total	Others	T.B.* Centre	Ophthalmic Treatment	Endemic* Diseases	Dental Clinic	City* Health Centre	Evening Clinics	Public Clinics	Mobile River Dis-pensary	Mobile Land Dis-pensary	School Health	M.C.H. Centre	Central Clinic	Branch Health Centre	Main Health Centre	Dispensary
Nineveh	188	5	1	1	1	--	1	31	5	--	16	4	6	4	72	25	16
Salah Al-Deen	94	--	--	--	--	--	--	15	--	--	9	--	2	1	49	13	5
Al-Ta'mem	104	3	1	--	--	--	1	10	13	--	1	1	2	4	40	9	19
Diala	145	1	1	1	1	--	--	26	7	--	1	1	2	2	84	12	6
Baghdad	221	15	2	--	--	5	--	12	29	--	8	14	13	31	35	8	49
Al-Anbar	164	1	2	--	1	1	1	22	4	--	13	1	6	1	88	12	11
Babylon	108	2	1	1	1	--	1	16	7	--	7	1	1	3	47	12	8
Kerbela	63	--	1	--	--	--	2	9	8	--	6	1	1	2	17	8	8
Al-Najaf	72	--	--	1	--	--	2	9	7	--	5	2	2	4	18	13	9
Al-Qadisiya	84	4	--	--	1	1	1	14	8	--	1	1	4	2	28	9	10
Al-Muthanna	45	3	1	--	1	1	1	9	5	--	1	1	--	1	9	4	8
Thi-Qar	115	--	1	--	1	1	1	20	10	4	11	1	1	1	40	14	9
Wasit	86	2	1	--	1	1	1	20	7	--	13	1	2	1	30	4	2
Maysan	67	--	1	--	1	1	1	15	7	--	1	1	1	3	26	8	1
Basrah	140	--	1	1	1	3	--	27	14	--	--	3	7	2	46	8	27
Autonomous Region:																	
D'hok	48	1	--	--	1	--	1	13	2	--	--	1	2	--	17	8	2
Arbil	113	1	1	1	1	1	1	22	6	--	--	1	1	1	49	14	13
Al-Sulaimaniya	190	1	1	1	1	--	1	31	7	--	1	1	1	--	102	22	20
Total	2047	39	16	7	13	15	16	321	146	4	94	36	54	63	797	203	223
Total	1651**	20		0		13		240	47	5	78	22	61	29	572	180	328

* Represents a type of facility not in existence in 1973.

** In addition to the facilities listed above for 1973, there were 42 polyclinics, 13 Out-patient clinics, and 1 mobile X-ray unit. Total includes these facilities.

Source: Annual Statistical Abstracts 1974, 1976.

Table 20

Hospitals by Kinds and Governorates: 1973

Governorate	General Hospitals	Childhood Welfare	Maternity	Chest Diseases	Mental and Nervous Diseases	Ophthalmia	Leprosy	Fevers	Nuclear Medicine	Neuro-Surgery	Total
D'hok	3	-	-	-	-	-	-	-	-	-	3
Nineveh	7	1	1	1	-	-	-	1	-	-	11
al-Sulaimaniya	4	1	-	-	-	-	-	-	-	-	5
Arbil	6	1	-	1	-	-	-	-	-	-	8
Kirkuk	6	1	1	-	-	-	-	1	-	-	9
Diala	5	2	-	1	-	-	-	-	-	-	8
al-Anbar	9	-	-	-	-	-	-	-	-	-	9
Baghdad	24	4	6	2	2	1	-	1	1	1	42
Wasit	6	1	-	-	-	-	-	-	-	-	7
Babylon	5	1	-	1	-	-	-	-	-	-	7
Kerbela	3	1	1	-	-	-	-	-	-	-	5
al-Qadisiya	6	2	-	1	-	-	-	1	-	-	10
al-Muthanna	3	2	-	-	-	-	-	-	-	-	5
Maysan	5	1	-	1	-	-	1	1	-	-	9
Thi-Qar	4	1	-	1	-	-	-	1	-	-	7
Basrah	8	1	4	1	-	-	-	1	-	-	15
Total	104	20	13	10	2	1	1	7	1	1	160

Source: Iraq Annual Statistical Abstract

Table 21

Number of Out-Patients and In-Patients in Hospitals and Other
Health Institutions Distributed Governorates: 1973

Governorate	Hospitals	Other Health Institutions	
	Out-Patient (In thousands)	In-patients (In thousands)	Out-Patients (In thousands)
D'hok	215	9	264
Nineveh	725	42	1597
al-Sulaimaniya	292	18	1002
Arbil	217	17	619
Kirkuk	250	19	889
Diala	317	21	1360
al-Anbar	718	17	905
Baghdad	4260	233	3741
Wasit	620	19	726
Babylon	630	26	1175
Kerbela	376	25	867
al-Qadisiya	325	23	865
al-Muthanna	200	12	374
Maysan	310	15	699
Thi-Qar	373	21	735
Basrah	1162	55	1676
Total	10990	572	17494
Total of 1972	11261	510	19317
Total of 1971	12861	757	22354

Source: Iraq Annual Statistical Abstract

Laboratories and Blood Banks

General hospitals in Iraq are equipped with their own laboratory facilities where they conduct basic diagnostic tests. In addition there are fourteen laboratories which provide a variety of special services. They are listed below.

Laboratories

Abu Ghurab - Veterinary laboratory

Research and production of vaccines for the more common animal diseases.

Baghdad -

Bejel and Venereal Disease Institute

Cancer Research Institute

Chemical Institute (Baghdad University)

Clinical Research Laboratory

Endemic Disease Institute

Medico-Legal Institute

Nutrition Institute

Near East Animal Health (FAO) Institute

Pathology Institute

Physical Therapy Institute (Baghdad Univ.)

Radioisotope Institute

Tuberculosis Control Institute

Roentgenology Institute

(branches at Basrah, Kirkuk, Mosul)

There are Blood Banks in Baghdad, Basrah, and Mosul. There is some difficulty in meeting the need for blood and blood plasma in Iraq because of the reluctance of the population to donate blood.

Health Manpower

The health manpower system in Iraq is notable for a shortage of personnel at all levels, an imbalance in the ratio of doctors to other medical personnel, and a geographical maldistribution of personnel which favors Baghdad over other areas. (See Tables 22 and 23).

Supply and Distribution. The doctor/population ratio for the entire country was 1/2802 in 1973, however, only Baghdad, with 1 M.D. per 1,676 population, had a ratio under 1/3000. The median ratio for the country was 1/4030 and the range was 1/1676 to 1/6642 (al-Sulaimaniya).

For dentists, a similar picture emerges. While the reported dentist/population ratio for the country is 1/17,823, the range is 1/10,476 (Baghdad) to 1/59,778 (al-Sulaimaniya). By 1976, there were an additional 458 doctors and 82 dentists practicing in Iraq. The distribution pattern, however, does not appear to be radically changed.

The distribution of doctors and other health personnel does not appear to be based upon the activity rates of health facilities. An analysis of outpatient visits to hospitals and clinics, and manpower available to provide care at these levels, indicates that paramedical personnel handle between ten and twenty out-patients per day, while doctors, in order to see all users of public health facilities, would have to see 28 patients per day in Baghdad and 77 patients per day in Salah-al-Deen.³ The governorates which appear to suffer the greatest manpower shortages are

Table 22

Medical Personnel in Iraq by Governorate 1970, 1973, 1976

Governorate	Physicians ¹		1976	Dentists ¹		1976	Pharmacists		
	1970	1973		1970	1973		1970	1973	1976
Nineveh	201	290	194	11	25	24	18	23	50
Dhok	24	44	56	2	5	7	1	2	5
Sulaimaniya	57	81	111	6	9	9	3	9	14
Arbil ²	61	78	102	6	13	15	2	9	12
Kirkuk ²	100	145		15	24	--	8	11	--
Diala	68	135	133	11	18	25	7	14	16
Baghdad	1,246	1,994	1,381	87	319	164	209	151	195
Anbar	71	96	127	14	19	23	4	15	21
Babylon	83	131	140	7	24	29	12	22	31
Kerbela	89	127	91	12	21	15	7	9	6
Waset	55	101	107	8	17	18	6	13	18
Qadissiya	81	103	92	6	18	16	3	10	11
Thi-Qar	62	90	101	7	15	15	6	8	13
Muthanna		49	62	3	4	6	3	6	11
Maysan	49	74	80	8	19	19	4	12	17
Basrah	166	304	273	31	54	45	16	25	31
Salah Al-Deen ²	--	--	69	--	--	17	--	--	16
Al-Ta'meem	--	--	119	--	--	20	--	--	19
Al-Najaf	--	--	97	--	--	16	--	--	12
Total-Min.of Health			3,335	234	--	483	309 ³	339 ³	494 ⁴
Others (private practice)	516	--	965	122	--	203	500 ³	500 ³	862
Total	2,908	3,842	4,300	356	604	686	809	839	1,356

¹ Represents all in country. Geographic distribution of medical personnel in private practice is not available for 1970 and 1976.

² In 1976, Kirkuk was divided into three governorates - Salah-Al-Deen, Al-Ta'Meem, and Al-Najaf

³ Estimate based on number of private pharmacies in Iraq in 1970.

⁴ Does not include pharmacists who are employed in evening clinics.

Source: Annual Statistical Abstracts 1970, 1974, 1976

Table 23

Physician and Dentists to Population
Ratios, Iraq, 1973

	<u>Population/Doctor</u>	<u>Population/Dentist</u>
Nineveh	4,598	35,680
Kirkuk	4,041	24,417
Diala	3,600	27,000
al-Anbar	3,937	19,895
Baghdad	1,676	10,476
Wasit	3,762	22,353
Babylon	4,412	24,083
Kerbela	4,394	26,571
al-Qadisiya	4,019	23,000
al-Muthanna	3,082	37,750
Maysan	4,878	19,000
Thi-Qar	6,044	36,267
Basrah	3,010	16,944
D'hok	3,773	33,200
Arbil	6,102	36,615
al-Sulaimaniya	6,642	59,778

Source: Annual Statistical Abstract, 1974.

Nineveh, Thi Qar, Arbil, and al-Sulaimaniya. The low number of outpatient visits per capita per year (1.5) in a country with serious health problems in every population sub-group suggests that the basic health needs of the people are rarely met.

The ratio of doctors to other health personnel should be high enough to relieve doctors of routine chores which can be performed by subordinate personnel. This is particularly important in a country which has a shortage of all trained health workers. In Iraq's hospitals, where laboratory, x-ray, and other diagnostic services are performed, the ratio of auxiliary personnel to doctors ranges from two per doctor in Kerbela to 4.8 per doctor in Maysan. In Baghdad, which is the center for specialized medical care, the ratio is only 2.4/1.

In clinics, doctors outnumber other health workers in five of Iraq's governorates and there are equal numbers of doctors and other health workers in eight areas. Even in the governorates where other health workers outnumber doctors, the ratio does not exceed 1.5 per doctor. Iraq appears to be following Syria's example in developing a health care system which is heavily dependent on doctors.

The tendency of doctors to specialize is also increasing. In 1974, 18% of doctors were specialists. By 1975, 24% were specialists (see Table 24 for specialists).

Information on nurses and other health personnel is limited to the 1970 data shown on Table 25 .

Table 24

Number of Physicians in Iraq By
Specialization, 1974, 1975

Specialization	1974	1975
General Surgery	121	168
Gynecology and Obstetrics	80	121
Cardiology and Internal Medicine	79	106
E.N.T.	50	57
Ophthalmologist	50	51
Public Health (Tropical Disease)	63	70
Skin and Venereal Disease	23	25
Tuberculosis and Chest	21	28
Pediatrics	93	124
Pathology and Bacteriology	46	49
Psychiatrist	26	27
Radiologist	32	50
Anaesthesia	25	39
Urologist and Genital Disease	12	23
Physiology	2	3
Nuclear Medicine	3	2
Forensic Medicine (Anatomy)	4	6
Industrial Health	2	1
Pharmacology	2	2
Plastic Surgery	4	3
Physiotherapy	10	16
Nutrition	1	4
Allergy	1	2
Orthopedics	14	23
Neuro-Surgery	--	2
Other Branches	<u>7</u>	<u>24</u>
Total	771	1026

Note: Includes specialized physicians registered in the medical doctors association of Iraq.

Source: Annual Statistical Abstract, 1976.

Table 25

Nursing and Auxiliary Personnel
Iraq, 1970

Nurses	1,606
Pharmaceutical Assistants	306
Midwives	175
Dressers	2,019
X-Ray technicians	233
Laboratory Assistants	356
Health Inspectors	277
Health Visitors	<u>230</u>
Total	5,202

Since there were reported to be 14,450 paramedical professionals in 1976, the number and proportion of workers in any of these categories may have changed substantially. It can be noted from Table 26 that Baghdad does not also monopolize the supply of paramedical workers. Male workers are more likely to work outside the hospital setting, where they outnumber women by almost five to one, whereas 75% of female paramedical workers are employed by the hospitals.

Table 26

Number of Paramedical Professions in All Public Health Medical
Institutions By Sex and Governorates as of 12/31/76-Iraq

(Except evening clinics)

Governorate	Grand Total ¹			In Other Health Institutions	In Hospitals
	Total	Female	Male	Total	Total
Nineveh	1,050	404	621	588	437
Salah Al-Deen	315	62	253	183	132
Al-Ta'meem	525	157	325	280	202
Diala	606	111	458	336	233
Baghdad	3,787	1,964	1,672	891	2,745
Al-Anbar	808	108	681	415	374
Babylon	656	130	493	350	273
Kerbela	343	78	234	178	134
Al-Najaf	590	89	474	279	284
Al-Qadisiya	608	101	475	363	213
Al-Muthanna	387	73	281	168	186
Thi-Qar	688	134	525	408	251
Wasit	553	97	421	230	288
Maysan	533	140	361	249	252
Basrah	1,280	460	778	397	841
Autonomous Region:					
D 'hok	312	83	216	156	143
Arbil	714	201	465	355	311
Al-Sulaimaniya	795	165	584	501	248
Total	14,550	4,557	9,317	6,327	7,547

¹Totals do not agree because workers in public clinics were not included in the original breakdown by sex.

Source: Annual Statistical Abstract, 1976.

Training. While the information on education in health-related fields is incomplete and not up-to-date, it does give some indication of the quantity and types of health professionals being trained in Iraq. In 1976/77, there were eight new doctors graduated from medical schools for every one nurse or nurse-midwife.⁴ The graduates of the Technical Medical Institute (presumably radiology assistants, laboratory technicians, pharmaceutical assistants and others listed in the section on Supply and Distribution, were outnumbered three to one by medical school graduates. (See Table 27)

The only information available related to the number of students enrolled dates from 1969/70 (See Table 28.), however, the emphasis on the training of physicians rather than other health professionals is clear. Unfortunately there is no current information on the development of new educational institutions. If the present mix of training is continued, the shortage of medical support personnel will worsen. The extension of medical care to a larger proportion of the population will be more costly and more difficult to achieve. (In Morocco the cost of training a physician is estimated to be seven times the cost of training a registered nurse and 25 times the cost of training a nurse aide). While the need for more doctors in Iraq cannot be disputed, there appears to be official recognition of that need, while the need for paramedical personnel has been seriously underestimated.

Table 27

Summary of Medical-Field Students in Iraq
Graduated 1976/77

	<u>Total</u>	<u>Female</u>	<u>Male</u>	<u>Iraqi</u>		<u>Foreigners</u>
				<u>Female</u>	<u>Male</u>	
Baghdad University						
Medicine	219	53	166	49	144	26
Pharmacy	89	54	35	51	28	10
Dentists	112	39	73	37	63	12
Nursing & Midwifery	49	49	--	49	--	--
Veterinary	102	8	94	8	91	3
Basrah University						
Medicine	74	8	66	8	59	7
Mosul University						
Medicine	104	19	85	19	75	10
Foundation of Technical Institutes						
Medical-Baghdad	135	22	113	22	113	--

Source: Annual Statistical Abstract, 1976

Table 28

Students Enrolled in Health-Related Courses 1969/70

Baghdad University	Male	Female	Total
Medicine	1,352	282	1,634
Dentist	310	110	420
Pharmacy	303	241	544
Nursing & Midwifery	--	91	91
Technical Medical Institute	61	10	71
Mosul University			
Medicine	698	155	853
Pharmacy	147	68	215
Basic Medical Sciences College	7	1	8
Agriculture and Veterinary	435	--	435
Basrah University Medical	155	14	169
Sulaimaniya University			
Agriculture and Veterinary	182	13	195
Total Number of Students Enrolled			
Medicine	2,656		
Dentistry	420		
Pharmacy	759		
Nursing, Midwifery	91		
Technical	79		
Agriculture and Veterinary	630		

Source: Annual Statistical Abstract, 1970.

The course of instruction in medical schools is six years. The degree of Bachelor of Medicine and Bachelor of Surgery is awarded upon graduation. The quality of the medical schools is considered to be comparable to those in Iran and Syria. Every male medical school graduate is obligated to spend 18 months in the armed forces, one year of internship rotating between various branches of medicine and surgery, then one year of service in rural areas. A three-year residency is then served, usually in a provincial hospital.

The course of study for a Bachelor's degree in Dental Surgery lasts five years and for nurses, a Bachelor of Science in Nursing is granted after three years of study. The pharmacy course is five years, as is the course for veterinarians.

Training for other health care personnel is conducted in hospitals, clinics, and laboratories located throughout the country. The courses vary from one to three years in length. The location of these training programs and the annual output of the programs is unknown. Despite the absence of formal diplomatic relations between the United States and Iraq, over 100 Iraqi physicians, dentists, pharmacists, and nurses were granted immigration visas by the U.S. government between 1971 and 1975. The pattern of emigration to other countries is unknown.

Medical Materials

Iraq produces approximately 30% of the pharmaceutical products used by the country at the Samarra Pharmaceutical Plant. By 1980, 50% of domestic demand will be met. The plant was completed in 1970 at a cost of seven million dinars. Production capacity is currently limited to common biologicals, including cholera, plague, antirabies, smallpox, typhoid, and paratyphoid vaccines. Some drugs and antibiotics are also produced, but the country must import most of its raw materials.

The State Pharmaceutical Organization regulates the importation and distribution of drugs. There have been recent changes in the laws concerning pharmaceutical practice and the sale of narcotics. It is now prohibited to sell narcotic or psychotropic drugs without a prescription.

Medical materials are imported from 25 countries, including Sweden, Egypt, Switzerland, Italy, and the United Kingdom. Small amounts of locally produced drugs are sold to neighboring Arab countries.

The State Pharmaceutical Organization has nine warehouses located in the governorates of Baghdad, Basrah, Mosul, and Kirkuk. There are also private warehouses which serve the pharmacies not owned by the government.

There were 500 private pharmacies in 1969. Sixty percent were located in Baghdad. The continued maldistribution of pharmacists indicates that the pharmacists' preference for the capital city has not diminished. The current number of private pharmacies and their location is not available.

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CHAPTER SEVEN
FOOD, SUPPLY AND NUTRITION

Food Supply

With a low population/km² ratio, Iraq is certainly capable of fulfilling her own needs for food. Yet, food imports have been growing at an alarming rate. The ratio of imported foods to other imports has also been increasing rapidly reaching 30% of all imports in 1974, with a value of U.S. \$600 million. Disaggregation of food imports by commodity shows sugar accounted for \$201 million, grain for \$268 million, and fruit and vegetables for \$57 million. The 1976 budget allocated \$507 million for food subsidies of which 67.6 million was for sugar.

The U.S. and Australia were the main suppliers of cereals; Pakistan and the U.S., rice, and; New Zealand, wheat. Cuba signed a contract in 1975 to supply Iraq with 100,000 tons of sugar per year for five years and to aid them in the development of their sugar manufacturing capabilities.

The goal of the Government of Iraq (GOI) is to become self-sufficient in agricultural supplies and to this end U.S. \$11.5 billion will be spent on this sector over the 1976-80 period. Thus far, projects which have been initiated include meat, poultry, eggs, and sugar production, as well as improving mechanized farming and dam construction. Data on food production for the years 1973 to 1975 appear in Tables 3,4 and 6 in the section on Agriculture.

Compounding the problem of availability of food is the poor distribution network of Iraq. Roads wash out in the rainy season. Rail and highway

transport connect major cities, but important agricultural areas are the least well served. Often, primitive forms of transportation such as draught animals, carts, boats, barges, and humans are used to transport food to markets because of the lack of adequate transportation channels.

Food storage, handling, and preparation are other areas of public health concern. Perishable foods are exposed to heat, light, and vermin. Fruits and vegetables are handled unsanitarily. The date industry, for example, has too few inspectors to insure sanitary methods during the picking, sorting, and packaging stages. Some types of dates are highly perishable and cannot be washed to remove insecticides until just before eating. Meat preparation is carried out for the most part outside the abbatior and fish are sold in the open where shoppers handle them; stale fish are also sold. Adequate and proper facilities for grain storage are in short supply.

Nutrition

Iraq, with its low population density, large tracts of arable land, and the capacity for further development of agricultural resources through oil revenues is quite capable of producing enough food for domestic consumption. Yet, due to climatic, topographical, and technical factors, agricultural productivity is low and the standard of living for peasants is still poor in spite of an impressive per caput GNP. Agricultural techniques are primitive for the majority of rural Iraqi farmers and periodic seasonal flooding devastates low-lying farms, resulting in the need to import large quantities of food.

A large proportion of Iraqis, particularly the rural population and the urban poor, have diets inadequate in quality and sometimes in quantity. The staples of the diet in all population groups include cereals, dates, onions, and sweetened tea or coffee. Meat, fish, eggs, fresh vegetables and fruit are lacking in most diets to varying degrees. However, there are variations in diet on an urban/rural differential basis to be discussed later.

Cereals, usually eaten in the form of a flat unleavened bread supply about half of the protein and calorie intake in the "average" diet (see Table 29. Meat is too costly for the average family. When eaten, it is usually goat or mutton. Eggs and poultry, production usually being the domain of women, are sold for cash and rarely eaten by the producers. Milk and milk products are popular and partaken on a regular basis, but due to their relative expensiveness for the poorer inhabitants, consumption is rather low. Fish is available only in river and coastal areas, but is quantitatively a negligible part of the diet.

Vegetable supplies are limited both absolutely and seasonally. Peas, beans and lentils are the most commonly consumed vegetables and are available the year round in some areas. Other vegetables such as potatoes, french beans, beets, cauliflower, marrows, spinach, broadbeans, carrots, turnips, and lettuce are only available during the winter season. Per caput consumption is thought to be quite low.

Dates are the most important fruit in Iraq and a staple in the diet, particularly in the south. During the sixties, consumption was estimated at 18 kg. per person. Other fruits are available on a seasonal basis.

Table 29 - Population, Food Supply and Demand for Food In Middle East Countries

Region and Country	Annual rates of growth			Per caput daily		
	Population	Food production ¹	Domestic demand for food ^{2,3}	Dietary energy supply ^{3,4}	Protein supply ^{3,4}	
		Percent ⁵		Kilo-calories	Percent of requirements ⁶	Grams
NEAR EAST						
Iraq	3.5	4.2	5.2	2,160	90	60
Afghanistan	2.4	1.5	2.2	1,970	81	58
Cyprus	0.9	5.7	2.3	2,670	108	6
Egypt	2.8	3.2	3.8	2,500	100	69
Iran	3.0	3.6	5.4	2,300	96	60
Jordan	3.3	4.6	6.6	2,430	99	65
Lebanon	3.0	4.5	3.1	2,280	92	63
Libya	3.2	5.6	...	2,570	109	62
Saudi Arabia	2.8	4.0	5.0	2,270	94	62
Somalia	2.3	3.3	1.5	1,830	79	56
Sudan	3.1	4.8	3.9	2,160	98	48
Syria	3.3	1.0	4.6	2,650	107	75
Turkey	2.7	3.1	3.8	3,250	129	91
Yemen Arab Republic	2.8	0.9	3.9	2,040	84	61
Yemen, People's Dem. Rep. of	2.8	2.3	1.0	2,070	86	57

¹ Food component of crop and livestock production only (i.e. excluding fish production) - ² Calculated on basis of growth of population and per caput income, and estimates of income elasticity of farm value of demand in FAO Commodity Projections 1970-1980, Rome, 1971 - ³ Total food, including fish - ⁴ 1969-71 average - ⁵ Exponential trend, 1961-74 - ⁶ Revised standards of average requirements (physiological requirements plus 10% for waste at household level).

Source: The State of Food and Agriculture, 1975, F.A.O.

However, since they are grown in the north and transportation problems hamper distribution, there is probably a dramatic difference in quantity consumed between the north and the south.

The most common beverages traditionally have been sweetened tea and/or coffee. Both of these are imported, as is most of the country's sugar. Together these products consume a large portion of the family food budget. Other popular beverages include sour milk, cinnamon and lime tea, fruit juices, and arak (a liqueur made from dates). Western-style carbonated beverages such as Coca-Cola have also become more popular, but are beyond the means of much of the population.

A survey of childrens' diets conducted in 1971 showed that this diet is quite general in Iraq but that there are differences between urban and rural diets. The survey found that generally, the subsistence diet consists of bread made from wheat and/or barley, dates, some milk or yoghurt and sweetened tea. Rice and potatoes are consumed, particularly near Baghdad. Dates are a more common part of the diet as one moves away from Baghdad. Meat or poultry is consumed every other day near Baghdad, but every four days in the rural areas. Markets where meat is available are less frequently found in rural areas. Legumes were consumed less than twice a week in both areas. In summer, both fruits and vegetables were consumed. Whereas in winter, children near Baghdad consume vegetables once a day, while far from the city, eat vegetables only once every three days.

People in rural areas have a diet consisting mainly of cereals and starchy foods, yet total intake is so low that even calorie requirements are not being met. It can also be seen that intake of protective foods, such

as vegetables, fruits and good quality protein, is also low.

This inadequacy of protective foods becomes evident in disease patterns of a nutritional etiology. While starvation is very rare, malnutrition is a major health problem in Iraq. Nutritional balance and calorie intake are deficient in the diet. Undernutrition, anemia, and avitaminosis are prevalent especially in rural areas. In spite of a lack of good quality protein, protein edema is rare. Subclinical signs of vitamin deficiency diseases are often found and clinical signs of Vitamin A deficiency are widespread, keratosis being the common finding. Vitamin B deficiencies are rare, usually taking the form of infantile beri beri, probably due to the prolonged breastfeeding time of two years, common in rural Iraq as well as poor weaning foods and practices. Vitamin C is absent from the diet for as much as three months of the year and clinical signs of this deficiency in the form of scurvy are common. Calcium and Vitamin D deficiencies are seen in the many cases of osteomalacia and rickets. Minor symptoms of ariboflavinosis and cheilosis are reportedly observed frequently.

Poor maternal nutrition is evidenced by low growth rates of lactating infants when compared to those of European children. While the study done on this is dated, it is probably still valid in most rural areas and among nomads. It was found that among 1800 infants aged 1 to 18 months, there was no difference between average weight up to the age of 2 months. After the third month, however, the weight differential between Iraqi children and French children grew progressively greater. At 2 months, Iraqi children were 400 gms less, at 9 months 1 kg less, at one year 1,300 gms less and by 18 months Iraqi children averaged 2 kg less than French children.

This marked difference is a result of prolonged lactation together with a lack of proper supplemental feeding. This difference continues on into childhood and adolescence. Poor nutrition in adolescence was evidenced by numerous cases of keratosis and inflamed gums resulting from low Vitamin C intake. Among 100 students studied at an agricultural school in Abu-Ghreb, 68% weighed 8 kg or less of their expected weight and only 11% fell within a normal weight range. Forty percent of this group had gingivitis.

While data are minimal on dental health, it seems impossible that dental disease is not a major problem given the propensity of the whole population to drink large amounts of sweetened tea or coffee and consume large quantities of dates. In many developing countries, lack of dental health care is offset by a general absence of refined sweeteners and sweets or their prohibitive costs. This does not appear to be the case in Iraq and hidden dental disease may constitute a major public health problem.

In short then, Iraq has the resources and potential to adequately feed her population. However, because of various factors, technological, climatic, cultural and other, many of the Iraqi population suffer from nutritional deficiencies.

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CHAPTER EIGHT
ENVIRONMENTAL HEALTH

Water Supply

Iraq is blessed with an ample primary supply of water in the form of the Tigris and Euphrates rivers. At times of flooding, though, this blessing is at best, mixed. Contamination of water supplies at these times causes a marked increase in the incidence of waterborne diseases. Another mixed blessing is the irrigation capability of Iraq. While contributing to increased self-sufficiency in food production through expansion of arable land, expansion of irrigation programs will also facilitate the spread of schistosomiasis in a country already noted for being one of the top two endemic areas in the world.

As of 1970, more than 50% of the Iraqi population received its water from rivers, reservoirs, irrigation canals, drainage ditches, and open wells, and only 49% had access to potable water. By 1972, according to the Fifth Report on the World Health Situation less than 40% of the population, principally rural dwellers, had no access to safe water supplies and used polluted water sources.¹ These sources are polluted by human and animal wastes, by laundering, by bathing, and by watering animals. The high incidence of schistosomiasis is directly attributable to these unsanitary practices with such a large reservoir of infected persons using these types of water sources and contributing to disease spread. With expansion of irrigation capabilities, the spread of schistosomiasis is virtually certain unless precautionary measures are instituted.

Communal usage of water receptacles is customary from the source (standpipe or well) to the home (water pot and ladle). Animals such as dogs, sheep, chickens, and goats roam freely and live in close proximity to humans. The high incidence of enteric infection is attributable to the nature of the water sources and poor sanitary practices. Without a commensurate change in health attitudes and practices the expansion of irrigation farming may generate an increase in the incidence of enteric infections. Data were not available as to the degree of interaction between gastrointestinal disorders and disease, particularly in infants and children, but if other developing countries in the Middle East and Africa are any barometer, it is probably safe to assume that the two conditions have a synergistic effect on health status.

Another health problem related to water systems in Iraq is leishmaniasis. The vector is a tiny fly (1.5-2.8mm) that usually breeds near human or animal habitats. They require a constant temperature range of 80°-82°F with a moisture saturated atmosphere. The humid, warm, irrigated areas between the Tigris and Euphrates with their animal and farmer populations provide an excellent breeding and living habitat. The seasonal prevalence is highest between April and June, and between September and November.

The rest of the population, those located in urban areas, some villages and small towns, are served by piped water systems in the urban areas and by itinerant water vendors in the towns and villages located near municipalities with piped water systems. (See Table 30 below). Water obtained from vendors is carried in tins or skin containers and is contaminated by the time it reaches the consumer.

Table 30

Total Population With Access to Potable Water	
	<u>1970</u>
Iraq	49%
Syria	71%
Lebanon	92%
Jordan	77%
Egypt	93%

SOURCE: W.H.O. Statistics Report, Volume 26, #11, 1973.

The main sources of water for Baghdad and some other major municipalities are the Tigris and Euphrates. The cities of Basrah, Mosul and Kirkuk have elevated storage tanks and the water is chemically treated prior to distribution. In Baghdad, the water is filtered and chlorinated before being piped into homes or communal fountains and standpipes throughout the city. In the northern mountains, spring water is adequate, if not abundant. Principal cities using this source include As Sulaymaniyah and Irbil.

Plans are underway to double the capacity of the Baghdad water system to meet the increased demand generated by urban growth. Plans are also underway for a long term project that will eventually provide water supplies for 9,400 villages with aid from the United Kingdom. A feasibility study for an additional 450 villages is also being undertaken. As of January 1976, 300 villages had completed construction of sites for 300 water units.²

Waste Disposal and Sewerage

The City of Baghdad is served by a piped sewerage system. The treatment plant is located in Ar Rustamiyah on the east bank of the Tigris and also serves the cities of Al Karradah and Al Alwiyah. In other large cities, cesspools and septic tanks are used. Disposal of the accumulated wastes is carried out by contractors who empty the tanks and dump them on the outskirts of town or use them as fertilizers for vegetable gardens. In many cities, septic tanks empty into canals through unscreened pipes. In small towns and villages, indiscriminate defecation and dumping of garbage is common as waste disposal facilities are minimal. Pit privies do exist, but are in limited usage and poorly maintained. Animal dung is used as fuel and human waste as fertilizers.

In the larger cities and towns, solid waste collection and disposal is in operation. In rural areas though, the responsibility of solid waste disposal is up to the individual house holder.

The most obvious health problems which arise out of the juxtaposition of water supply, human habitation and waste disposal systems are the enteric diseases such as amebiasis, cholera, and shigellosis. Other diseases related to contaminated food and water are botulism, hepatitis, leptospirosis, paratyphoid fever and typhoid. Anthrax can also be transmitted if animals and humans have access to the same water supply or live in close proximity.

Pollution Problems

Water pollution is a serious problem throughout Iraq, though industrial sources of pollution are not yet major factors. It is mostly due to human and animal wastes contamination as mentioned above.

Air pollution is also a problem, but unlike water pollution, it is confined principally to areas around petroleum refining plants as well as the larger cities. A WHO consultant found the problem serious enough to recommend abatement measures at the source of pollution.

While industrial toxins have not been a significant problem in the past, there will almost certainly be an increase in industrial pollution in the future as Iraq bends to the task of industrialization. Mercury contamination of cereals for preservation has already been implicated in the poisoning of significant numbers of people.³

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2. Area Medical Intelligency Study (unclassified), Iraq, USA Medical Intelligency and Information Agency, 1976.
3. A. Ternelou, "Environmental Contamination by Mercury in Iraq," WHO Bulletin, 53 Suppl., pp. 115-8, 1976.

CHAPTER NINE
NATIONAL DEVELOPMENT PLANNING AND HEALTH POLICY

The National Development Plan for Iraq for 1970-74 states that one of its social objectives is to extend social services such as health care and education so that they become a guaranteed right of all the Iraqi people. Other social objectives expressed by the Plan include the improvement of employment opportunities in order to guarantee an adequate standard of living for all, and the more equal distribution of incomes in order to benefit the poorest groups.

The general economic objectives which will provide the means to achieve the social objectives include the following:

- Maintenance of a 7% annual increase in national income in order to improve the general standard of living. This is the maximum growth rate recommended by the U.N. Economic and Social Council and is equivalent to two times the population growth rate.
- Concentration of development in the commodity sectors of industry and agriculture.
- Exploitation of untapped mineral resources.
- Equitable geographic distribution of projects, especially in the northern governorates, and adequate economic, social, and technical analysis of projects.
- Economic coordination and integration with other Arab states.

The health services portion of the Development Plan states simply that in order to increase the population covered by the health care system, more hospitals will be built to improve the bed/population ratio. Preventive care will be improved through the construction of preventive care health posts and the continuation of the malaria eradication program and the Project for the Fight Against Tuberculosis.

In addition, the provision of potable water through the expansion of 55 water systems and the construction of 86 new projects will also improve health conditions. The completion of these projects will cause a 214% increase in the amount of potable water available to the Iraqi population.

Information on the process of health planning is limited to a brief description of the general planning process contained in the 1970-74 Development Plan. Each Ministry or State Organization estimates the cost of its projects, and in cooperation with the Ministry of Planning, implements the projects, and prepares studies and recommendations for the coordination of public and private sector activities. Each Ministry must submit monthly and annual reports on the progress of the Plan to the Ministry of Planning. The Ministry of Finance keeps accounts and prepares monthly reports on disbursements.

Within the Ministry of Health there is a Scientific Health Planning Board which is attached directly to the office of the Deputy Prime Minister of Health. Its functions and membership are unknown.

While national development plans rarely reveal the actual process of health planning, the brevity of the Iraqi plan for the health sector suggests that "health planning" in Iraq consists of the construction of medical treatment facilities and medical education centers. There is no apparent attempt to define the leading health problems or to develop a strategy to attack them. There is an implied assumption that hospitals and health centers will best meet the health needs of the people and that people will somehow know how to use these modern facilities when they are built. While it is recognized that adequate supplies of potable water are an important contribution to improved health status, there is no indication that health education is also considered important.

Table 31 shows the health-related projects scheduled for completion during the period of the 1970-74 National Development Plan.

Table 31

Completion Schedule and Costs for
1970-74 National Development Plan Health Projects

Project	Total Cost (in thousands of Dinars)	Plan Alloca- tion	Year of Comple- tion
Medical City	6,340 ¹	570	73-74
Emergency Hospital Sulaimaniya	100	100	72-73
Malaria Eradication*	8,800	300	74-75
Teaching hospital - Basrah	2,600	1,700	73-74
Children's Hospital-Sulaimanya	100	100	72-73
Sulaimaniya Hospital	400	300	72-73
Central Medical Clinics in Government Centres	440	440	74-75
Construction of Main Medical Centers in Centre of Nahiyas*	2,235	2,050	74-75
Combat Tuberculosis*	280	160	71-72
Construction Hospital Qadhas	2,241	1,800	74-75
Enlarge Hospital Qadhas	479	330	74-75
Hospital expansions in various governorates	931	600	74-75
Construction of medical quarantine quarters	190	40	70-71
Construction Institute Natural Medical Treatment-Baghdad	100	100	72-73
Construct Medical stores	525	370	74-75
Expansion General Hospital Kirkuk	100	100	72-73
Construction General Hospital Kerbala	550	460	72-73

Exchange Rate: 1 Iraqi Dinar = U.S. \$3.38

Table 31 (Cont'd)

	Total Cost (in thousands of Dinars)	Plan Alloca- tion	Year of Comple- tion
Construction General Hospital Baquba	550	410	72-73
Comp. Hospital for Chest Disease in Mosul & convert to General	1,000	600	72-73
Chest Disease hospital-Nasiriyah	230	190	72-73
Participate in Construction of Chest Disease Hospital* in Kirkuk	100	100	72-73
New Chest Disease Hospital - Mosul	230	230	72-73
Construction of General Health Laboratories in Baghdad	150	150	73-74
Expand Chest Disease Hospital in Arbil	50	50	71-72
Apparatus and Equipment*	1,155	1,000	70-74
Const. virus & vaccines factory - Baghdad	150	150	73-74
General Hospital Construction Hilla	550	410	72-73
Construction Centres for Preventive Medicine in government centres	250	250	74-75

*Ministry of Health is executing agency. All other projects are the responsibility of the Ministry of Public Works and Housing.

Other Health-Related Projects
Medical Education

Veterinary College and Hospital Buildings - Baghdad	440	150	71-72
Building Dentistry College - Baghdad	211	40	70-71
Building Pharmacology College - Baghdad	200	20	70-71

Exchange Rate: 1 Iraqi Dinar = U.S. \$3.38

Table 31 (Cont'd)

	Total Cost (in thousands of Dinars)	Plan Alloca- tion	Year of Comple- tion
Completion Laboratories of Medical** College in Mosul	300	50	70-71

**Ministry of Public Works and Housing - All others are Ministry
of Higher Education

Housing

Construction of 3000 rural houses in Northern governorates in accordance with agreement for Development of the North (Ministry of Northern Affairs)	900	900	72-73
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Water Supply

Water Projects - Municipal and Villages (Ministry of Munici- palities and Rural Affairs)	23,620	13,000	74-75
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Exchange Rate: 1 Iraqi Dinar = U.S. \$3.38.

CHAPTER TEN
INTERNATIONAL DONOR ACTIVITIES

International organization assistance in Iraq appears to be limited to the United Nations Development Program and the World Health Organization. The World Bank has recently terminated a transportation project and has no plans to begin any new efforts. Information on possible assistance from Canada, Sweden, or the United Kingdom is not available.

Bilateral agreements with France, the USSR, Spain, and Japan provide Iraq with technical assistance in the design and implementation of new projects in industry, agriculture, transport, and services.

Health program assistance from WHO and UNDP are summarized in Table 32.

Table 32.

UNDP and WHO Proposed Program and Budget for 1976-1979

	Estimated obligations			
	1976	1977	1978	1979
GENERAL HEALTH SERVICES	US\$	US\$	US\$	US\$
<u>Health services development</u>				
Hospital service administration	9,000	13,500		12,000
Maintenance and repair of equipment	40,600	37,500	12,000	13,000
<u>Primary health care and rural development</u>				
Comprehensive basic health services training*	12,000			
Centre for basic health services development and research, Abu Ghraib			22,000	23,500
HEALTH MANPOWER DEVELOPMENT				
College of Nursing, Baghdad		10,500		9,000
Medical education	39,000	40,500	38,000	39,000
Fellowships	65,000	80,000	80,000	80,000
COMMUNICABLE DISEASE PREVENTION AND CONTROL				
<u>Epidemiological surveillance</u>				
Pilot project in epidemiological surveillance		11,400		9,000
<u>Malaria and other parasitic diseases</u>				
Malaria eradication programme	147,500	142,200	125,300	67,000
Visceral leishmaniasis control		5,000		6,000
<u>Prevention of blindness</u>				
Communicable eye disease control and prevention of visual impairment	13,500			4,500
NONCOMMUNICABLE DISEASE PREVENTION AND CONTROL				
<u>Cancer</u>				
Cancer control	21,800	16,500		15,000
<u>Oral health</u>				
Preventive oral health services	16,000		4,000	6,000
<u>Health of working populations</u>				
Occupational health	41,100	37,000		
PROPHYLACTIC, DIAGNOSTIC AND THERAPEUTIC SUBSTANCES				
<u>Drug policies and management</u>				
Drug policies and management				9,000

Table 32 (Cont'd)

Estimated obligations

	1976 US\$	1977 US\$	1978 US\$	1979 US\$
<u>Health laboratory technology</u>				
Public health laboratory services	7,000	8,000	8,000	9,000
PROMOTION OF ENVIRONMENTAL HEALTH				
<u>Pre-investment planning for basic sanitary services</u>				
Rural water supply programme, phase II*	344,700 22,000	29,800		
<u>Control of environmental pollution and hazards</u>				
Study on the pollution of Tigris River	3,000			
ASSISTANCE TO COUNTRY PROGRAMMES				
WHO representative's office	59,500	63,300	77,400	83,100
TOTAL-IRAQ	841,700	495,200	366,700	385,100
Of which: Regular budget	460,000	465,400	366,700	385,100
Other sources	381,700	29,800		

*UNDP funds. All other is WHO.

SOURCE: W.H.O. Proposed Program Budget 1978 and 1979.

SUMMARY AND CONCLUSIONS

The modern nation of Iraq, which is situated at the center of the West Asian "Fertile Crescent," is in a process of transformation from a traditional agrarian society to an urban industrialized society. The modernization process has been complicated by the volatile political situation in neighboring countries, and slowed by a series of internal political changes as well. While Iraq has for centuries considered the wealth of its agricultural land as its major natural resource, the exploitation of vast reserves of oil has recently provided the capital necessary for the implementation of a comprehensive social and economic development plan. The national development plan which is now being assembled will be the first to be written since the oil price increases. It is expected to reflect the enormous growth in financial resources which has taken place during the past three years.

The health problems in much of Iraq are a reflection of its past. Schistosomiasis, malaria, ancylostomiasis and leishmaniasis have been endemic in the area for several thousand years. Most of the population live and work in constant contact with the waters which aid in the transmission of these diseases. Trachoma and the other eye infections which have also been common in Iraq for centuries are indicative of the unfavorable health environment of the desert, and poor sanitary conditions.

Improvements in the quality of the water supply and waste disposal systems will contribute much to the control of these diseases.

The traditional settlement pattern of isolated rural communities scattered throughout the country has confounded the best efforts of the small public health sector to deal with these and other disease problems. The isolation of these rural communities has insured the continuation of both traditional living patterns, and ancient beliefs relating to the cause of diseases and their cure. The high rate of infant mortality (estimated to be in excess of 100/1,000 live births) and high incidence of preventible communicable diseases are evidence of the impoverished living environment shared by most Iraqis. The cost effectiveness of inoculations against preventible diseases such as tuberculosis, diphtheria, tetanus, and whooping cough has been well documented in other areas of the world. The successful eradication of smallpox in Iraq suggests that a campaign against other vaccine-preventible diseases would be accepted, and therefore successful.

The trend to urbanization has accelerated in Iraq during the past decade. The increased government investment in the industrial sector during this period has created new jobs and a higher wage scale which continue to attract people from the relatively poorer rural areas. Industrialization has been accompanied by the usual health-related problems - air pollution, occupational health hazards and diseases, and the chronic degenerative diseases which increase as life expectancy increases. The rush to the cities has taxed the ability of the government to provide services for the rapidly growing urban population. The overcrowded slums of Iraq's cities appear to rural migrants to provide many amenities which were lacking in the countryside, yet they provide ideal conditions for the rapid spread of diseases such as tuberculosis, enteric infections, and childhood diseases.

Although information concerning the nutritional status of the Iraqi population is limited, the macro-indicators of food production and available supply of nutrients suggest serious deficits. Because the nutritional requirements of growing children and pregnant and lactating women are often unmet in societies at an equivalent stage of development, it is quite possible that these groups also suffer in Iraq.

Iraq seems sparsely populated when compared to the overcrowded nations of East Asia, however, the high rate of population growth has implications which go beyond the availability of arable land. When the population doubles every twenty years, as Iraq's will if the current growth rate continues, so must the food supply, housing stock, educational facilities, and health services; in sum, the production of all goods and services. If the standard of living is to be improved, social and economic development must outstrip population growth. While financial resources can be generated overnight by an increase in prices, it takes several years to produce a skilled laborer, a teacher, a nurse, or the administrator who must guide their work.

The nature of the administrative structures of the Iraqi government makes it difficult to form a clear picture of the financial and other resources which are invested in health. However, the available supply of facilities and manpower is clearly inadequate for the provision of even minimal health care for the majority of the population. The supply of

physicians is insufficient but the shortage of auxiliary medical manpower is even more serious. Priority must be given to the training of more health auxiliaries if serious efforts are going to be made to contain costs and extend the health system beyond the urban areas.

The new development plan should provide an indication as to the direction of the Iraqi health system for the next five years. Because the investments of this Plan period are expected to be far greater than those made in previous plans, the decisions made will affect the development of health services in Iraq for many years beyond the actual Plan period.

The 1970-74 Plan was notable for the absence of a comprehensive section on health problems, priorities, and program goals and objectives. There are indications that the W.H.O. has been assisting the Iraqi Ministry of Health with the planning of health services, however, the impact of this assistance on the preparation of the health section of the National Development Plan is as yet unknown.

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