

JAPAN INTERNATIONAL COOPERATION AGENCY  
MINISTRY OF HEALTH  
SYRIAN ARAB REPUBLIC

BASIC DESIGN STUDY REPORT  
ON  
THE PROJECT  
FOR  
THE UPGRADING OF  
EMERGENCY SERVICES  
IN  
SYRIAN ARAB REPUBLIC

MARCH, 1963

INTERNATIONAL TECHNO CENTER CO., LTD.

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BASIC DESIGN STUDY REPORT ON THE PROJECT FOR THE UPGRADING OF EMERGENCY SERVICES IN SYRIAN ARAB REPUBLIC

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**INTERNATIONAL TECHNO CENTER CO.,LTD.**



## PREFACE

In response to a request from the Government of the Syrian Arab Republic, the Government of Japan decided to conduct a basic design study on "Project for The Upgrading of Emergency Services" and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the Syrian Arab Republic a study team headed by Dr. Tamotsu Nakasa, M.D., Department of International Cooperation, National Medical Center Hospital under the Ministry of Health and Welfare, and consisted by members of International Techno Center Co, LTD from September 5 to October 10, 1992.

The team held discussions with the officials concerned of the Government of the Syria and conducted a field survey at the study area. After the team returned to Japan, Further studies were made. Then, a mission was sent to the Syrian Arab Republic in order to discuss a draft report and the present report was prepared.

I hope that this report will contribute to the promotion of the project and the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Syrian Arab Republic for their close cooperation extended to the teams.

March, 1993



Kensuke Yanagiya

President

Japan International Cooperation Agency





Mr. Kensuke Yanagiya  
President  
Japan International Cooperation Agency  
Tokyo, Japan

## Letter of Transmittal

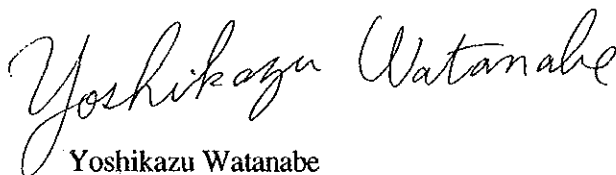
We are pleased to submit to you the basic design study report on the Project for the Upgrading of Emergency Services in the Syrian Arab Republic.

This study has been made by International Techno Center Co., Ltd. based on a contract with JICA, from August. 20th, 1992 to March. 1st, 1993. Throughout the study, we have taken into full consideration of the present situation in the Syrian Arab Republic and have planned the most appropriate project in the scheme of Japan's grant aid.

We wish to take this opportunity to express our sincere gratitude to the officials concerned of JICA, the Ministry of Foreign Affairs, the Ministry of Health and Welfare and Syrian Embassy in Japan. We also wish to express our deep gratitude to the officials concerned of the Department of Medical Services, Ministry of Health, Syrian Arab Republic and the JICA office and Japanese Embassy in the Syrian Arab Republic for their close cooperation and assistance during our study.

At last, we hope that this report will be effectively used for the promotion of the project.

Very truly yours.



Yoshikazu Watanabe

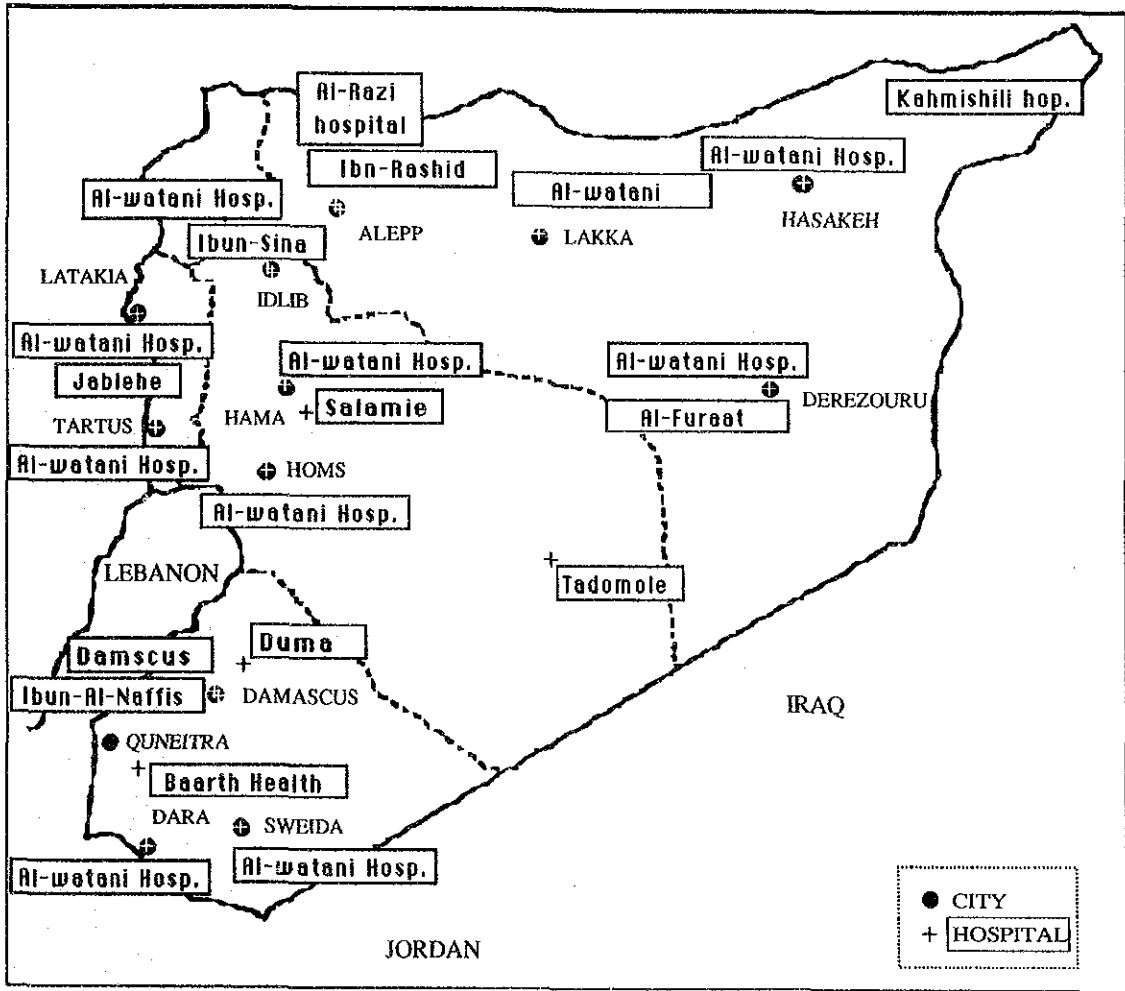
Project Manager

Basic design study team on

the project for the Upgrading of Emergency Services

International Techno Center Co., Ltd.







## SUMMARY



## SUMMARY

In the Syrian Arab Republic, substantial differences from other developing countries are seen in such health and medical care related subjects as disease pattern, medical personnel, educational facilities, and system of medical equipment maintenance. Most prevalent diseases in Syria are perinatal diseases, injuries, and intoxication. Patients with these diseases are treated at hospitals which are sufficiently staffed with medical personnel including engineers for medical equipment maintenance. These medical personnel are educated and trained at educational facilities, and engineers are also trained at these facilities to operate a nationwide medical equipment maintenance system.

As for the disease pattern in Syria, infectious diseases, which are ordinarily a major factor of the disease pattern in other developing countries, are not dominant. Instead, circulatory diseases are the most prevalent, and injuries and intoxication are second on the list among men. As for women, perinatal diseases, injuries and intoxication are prevalent. Primary Health Care (PHC) activities are well organized there. Vaccination is administered to 85 ~ 90% of the population. Infant mortality was 72 per 1,000 live births in 1970, but it fell to 34 per 1,000 by 1990. This figure is a great achievement when it is viewed as an infant mortality rate of one of the developing countries though it doesn't compare well with those of developed countries. As for medical equipment maintenance, the government promotes education and training in medical and clinical engineering. The engineers and technicians working for maintenance of medical equipment have relatively high levels of technical skills in comparison with those of other developing countries.

The Government of the Syrian Arab Republic is making every effort to achieve "Health for all by the year 2000," the overriding priority of the World Health Organization (WHO). To achieve this goal, the government conceived the Fifth Five-Year Plan for Medical Care Development (1981 ~ 1985) in 1980, which has led to the conception of the Sixth Five-Year Plan (1986 ~ 1990, not publicized) and the Seventh Five-Year Plan (1991 ~ 1995, currently in the planning process). The following objectives form the basic policy underlying each of these plans:

- 1) To establish a primary medical care system which meets the demand of the society by providing basic medical services, especially those services in preventive medicine;
- 2) To rectify regional differences existing in the medical services not only between cities and rural areas but also among all the Muhafazats (provinces); and
- 3) To invest for the purpose of expanding the functions of the existing medical facilities.

The Ministry of Health of the Syrian Arab Republic has been working on its own to solve such problems as curable by its own efforts. For example, the ministry has been strengthening PHC activities and developing medical personnel since these two objectives do not require a large amount of hard currency. The ministry has been also improving building facilities of the hospitals with soft currency and boosting the maintenance system for the medical equipment used in those hospitals. However, since medical facilities and personnel tend to concentrate in the urban areas, there are clear regional differences in the medical services provided to the people. The concentration of medical facilities and personnel is particularly evident in Damascus, the capital. On the other hand, there are some villages where no medical facilities exist. Therefore, when patients living in these rural communities require secondary or tertiary medical care, they have to move to provincial cities and subsequently to Damascus over a distance of several hundred kilometers. Besides such problems caused by regional differences in the system of providing medical care, other problems which exist are the dilapidation of the existing medical equipment and the unavailability of essential medical equipment at local hospitals. Even at provincial base hospitals, the dilapidation and unavailability of medical equipment are evident. Necessary treatment and care are often not provided at these hospitals, so patients are constantly moved from the provinces to the capital. Most of the ambulances are of vehicle models more than 10 years old, and some vehicles are 20 ~ 30 years old. The maintenance and repair of these ambulances are carried out by private mechanics or by technicians dispatched from the ministry and most of the existing vehicles are still working. However, some vehicles are unable to attain a reasonable speed, and others require frequent refilling of oil and water on the road. These conditions indicate that the maintenance of the vehicles is becoming increasingly more difficult. In addition to the problem of patient transportation, the conditions under which emergency care is provided are also inadequate. Items of essential equipment such as bedside monitors, ventilators, and suction apparatus are non-existent in emergency rooms and ICUs of provincial base hospitals. As for CT scanner, no hospital under the control of the Ministry of Health has a CT scanner at present. When the need for scanning arises, the patient is sent to a private hospital that has a CT scanner. Such patients are burdened with large expenses for scanning fees.

The Ministry of Health is promoting a project to build medical facilities around the country, and new hospitals are now under construction. However, the reality is that the completion of these facilities has to wait months or even years. Considering this situation and the number of emergency patients, which alarmingly reached one million in 1991, the Ministry of Health has conceived a project to improve the nation's emergency services. The objectives of this project are to rectify regional differences existing in the medical services as well as to improve the services as a whole.



The economy of the Syrian Arab Republic, which had experienced rapid growth in the 1970s, has been suffering negative growth since the latter half of the 1980's. This recession has resulted from reductions in both agricultural production and oil export. Unfavorable weather conditions have weakened the agricultural industry, and the decreased worldwide demand for oil and a subsequent crash in the oil price have greatly affected the production of petroleum. Another cause is the country's burden of the defense costs. Because of both the reduced amount of exports and these defense expenditures, the country's international balance of payments has been in the red, finally forcing the government to cut down the investment for development. In 1992, the GNP of the Syrian Arab Republic has decreased to the level which makes the country eligible for receiving Japanese grant aid assistance.

In these circumstances, the Ministry of Health, Government of the Syrian Arab Republic, has requested the Government of Japan for extending a grant aid assistance to carry out the above mentioned project, "Project for the Upgrading of Emergency Services."

In response to this request, considering that this is the first of such assistance to the Syrian Arab Republic, the Japanese government decided to make a study of the present condition of health and medical care in the Syrian Arab Republic. Thereby, the Japan International Cooperation Agency (JICA) dispatched a Project Formulation study team to Syria in November, 1991. The study resulted in the decision that it is necessary to carry out a basic design study for the present project. A basic design study team was sent to the Syrian Arab Republic in September, 1992. The study team, in consideration of the results of the Project Formulation study, held discussions with officials of the Committee for National Projects, the Ministry of Health, and other health and medical institutions, studied various local hospitals under the control of the Ministry of Health, and collected information related to this project. After returning from the field survey, the study team analyzed the collected information and prepared a draft of this basic design study report. After undertaking the explanation and discussion of the draft report with officials concerned with the project in Syria, the present basic design study report is completed.

A study has been conducted on the present state of medical care and its administrative system, of infrastructure, and of maintenance for ambulances and medical equipment as well as on the existing states of the medical facilities which are to be included on this project and of all garages under the control of the Health Directorates of the muhafazats of the country. After collecting information concerning these matters, an analysis has been made to set an outline for the optimal items of equipment and their quantities which are to be procured on this project.

(1) ICU equipment is procured for the emergency departments of 22 major national hospitals, and CT scanners are procured for four national hospitals. Ambulances are procured for the Health Directorates of all 14 muhafazats.

(2) The followings are the items of medical equipment procured on this project.

- 1) Ambulances
- 2) ICU equipment
  1. Bedside monitors
  2. Suction apparatus
  3. Resuscitators with flowmeters
  4. Defibrillators
  5. Respirators (simple type)
  6. ECG monitors (with 3 channels)
  7. Blood-gas analyzers
  8. Ultrasound-diagnostic apparatus
  9. Pulse oximeters
- 3) CT scanners

(3) Facilities Improved on This Project

1) Ambulances and communications equipment are procured for the following facilities.

Mohafazats	Ambulances & Communications Equipment Sites
Damascus city	Damascus city Garage
Damascus suburb	Damascus suburb Garage
Dara	Dara Garage
Sweida	Sweida Garage
Homs	Homs Garage
Tartus	Tartus Garage
Latakia	Latakia Garage
Hama	Hama Garage
Aleppo	Aleppo Garage
Idlib	Idlib Garage
Derezor	Derezor Garage
Lakka	Lakka Garage
Hasakeh	Hasakeh Garage
Quneitra	Quneitra Baath Health Center

2) ICU equipment and CT scanners are procured for the following facilities.

1.	Damascus city Damascus hospital	12.	Aleppo Al-Razi hospital
2.	Damascus city Ibn Af-Naffis hospital	13.	Aleppo Ibn-Rashid hospital
3.	Damascus suburb Duma hospital	14.	Idlib Al-Watani hospital
4.	Dara Al-Watani hospital	15.	Idlib Ibn Sina hospital
5.	Sweida Al-Watani hospital	16.	Derezor Al-Watani hospital
6.	Homs Al-Watani hospital	17.	Derezor Al-Furaat hospital
7.	Homs Tadmor hospital	18.	Lakka Al-Watani hospital
8.	Tartus Al-Watani hospital	19.	Hasakeh Al-Watani hospital
9.	Latakia Al-Watani hospital	20.	Hasakeh Al-Kahmishili hospital
10.	Hama Al-Watani hospital	21.	Lakka Jableh hospital
11.	Hama Saramieh hospital	22.	Quneitra Baath Health center

CT Scanner	
Damascus city Damascus hospital	Homs Al-Watani hospital
Aleppo Ibn-Rashid hospital	Derezor Al-Watani hospital

The implementation of this project is scheduled as follows.

It is necessary to arrange the implementation of this project in relation with the expansion and renovation work carried out in the Syrian Arab Republic for the purpose of accommodating the medical equipment which is to be procured on this project. Consideration must be given to the completion of this construction work which is being currently carried out at the medical facilities involved on this project. Consideration must be paid also to the budgetary allocation for the construction of accommodations necessary for installing CT scanners as well as to the execution and completion of this construction work. Therefore, this project is implemented in two stages. At the first stage of the implementation, ambulances, which are urgently needed, are procured, and at the same time, discussions are held with Syrian officials in order to confirm the budgetary allocation and schedule for the construction of accommodations for CT scanners. Then, at the second stage, ICU equipment and CT scanners are procured.

The necessary budget borne by the Government of the Syrian Arab Republic is 5,531,000 Syrian pound for the implementation of this project.

The executing agency for this project is the Department for Medical Services of the Ministry of Health, and the medical equipment and ambulances that are procured on this project are managed by the Health Directorates of the muhafazats under the Ministry

of Health as well as by the national hospitals under the control of these Health Directorates.

Upon the implementation of this project, the following improvements can be expected in the emergency services of the Syrian Arab Republic.

1. Appropriate patient monitoring will be possible. At present, 22 major national hospitals located around the country provide emergency care, functioning as medical facilities to provide secondary and tertiary medical care. However, the ICUs of the emergency departments of these hospitals do not have their own ICU equipment, so these departments have to borrow ECG monitors, etc., from other departments. In such conditions, essential medical equipment for emergency care is not easily accessible. If these emergency departments are improved on this project, there can no longer be any restriction in the use of ICU equipment. As a result, these emergency departments will be providing proper patient monitoring.
2. The number of patients transferred to referral hospitals will be reduced. At present, because of a lack of medical equipment at local hospitals, patients with serious conditions are transferred from the hospitals to which they are originally admitted to the nearest other hospitals which offer higher degrees of medical services. After the implementation of this project, the hospitals which admit patients originally will be able to treat many of these patients, thus reducing the number of patients transferred to referral hospitals.
3. A nationwide system for diagnostic services in emergency care will be established with the installation of four CT scanners. One scanner is installed in the capital city and will serve the people living in the southern part of the country. Another scanner is installed to serve those living in the central part of the country, which is the center of the nation's transportation system. One scanner is also installed in the eastern part of the country, which is the nation's agricultural region with some oil fields, and yet another scanner is also installed in the northern part of the country, which is the nation's industrial center. These four CT scanners will be diagnostic bases in the system and examine, e.g., patients with head injuries, which are often caused in traffic accidents.
4. By establishing a referral system for the above mentioned diagnostic bases with CT scanners, diagnoses of emergency patients will be facilitated to make

appropriate treatments possible, thus increasing the number of patients saved with emergency care.

5. Ambulances procured on this project will renew about 47% of all the vehicles under the control of the Health Directorates of all the muhafazats throughout the country. As a result, mobilization of ambulances will be facilitated since the number of vehicles in need of repairs is greatly reduced.

Direct beneficiaries of this project are those who are in need of emergency care throughout the land of Syrian Arab Republic. However, in improving the emergency care system, contribution will be also made indirectly in the welfare of the people of the Syrian Arab Republic. Therefore, it is appropriate that this project is implemented through a grant aid assistance offered by the Government of Japan.

Since this project is implemented in compliance with the system of the Japanese government's grant aid assistance, there is time restriction on the implementation of this project. Therefore, it is necessary for the Syrian side to promptly conduct, in accordance with the required procedures, the signing of the Exchange of Notes, the conclusion of a consulting contract, the certification of the documents of detailed designing which will be prepared on the basis of this basic design study report, the conclusion of a procurement agreement, etc. It is important for the Syrian side to allocate properly the funds necessary to carry out the work borne by the Syrian side, in each appropriate annual budget. Especially, the funds necessary for exempting the Japanese side from taxation on the equipment brought into Syria should be made available before the start of the work borne by the Japanese side. It is also important that the construction work to expand and renovate the emergency departments and the rooms for CT scanners should be completed at those hospitals involved on this project before the work borne by the Japanese side starts. To make best use of the equipment procured on this project, it is essential that appropriate maintenance be carried out by the Syrian side. It is desired for the Syrian side to establish a system which will monitor the operation of the equipment and provide proper maintenance. For example, such a system can be established through maintenance agreements with manufacturers.



**Basic Design Study Report**  
on  
**The Project for Upgrading of**  
**Emergency Services**  
in  
**Syrian Arab Republic**

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## **Chapter 1 Introduction**



## Chapter 1 Introduction

The Ministry of Health of the Syrian Arab Republic has conceived a project to improve the nation's emergency care system, which is called "Project for the Upgrading Emergency Services." The objectives of this project are to rectify regional differences which exists in the nation's medical services and to improve the medical services as a whole. In order to materialize the project, the Government of the Syrian Arab Republic has made a request to the Government of Japan for grant aid assistance.

In response to this request, considering that this is the first of such assistance to be carried out for the Syrian Arab Republic, the Japanese Government decided to make a project formulation study to survey the health and medical care sector of the Syrian Arab Republic. In accordance with that decision, the Japan International Cooperation Agency (JICA) dispatched a project formulation study team to Syria in November, 1991, and the sector survey was carried out in the field of health and medical care of the Syrian Arab Republic. The background, contents and executing agency of this project and the transition of assistance received from international organizations, etc. were studied and confirmed through discussions. Through this project formulation study, it was determined that the Syrian Arab Republic strongly desires the realization of this project as early as possible through assistance received from the Japanese government. The importance and the necessity of the project were also ascertained. This study resulted in a decision by the Japanese Government to carry out a further study for basic designing of the project. JICA conducted the following activities by sending a basic design study team, headed by Dr. Tamotsu Nakasa, Department of International Cooperation, National Medical Center Hospital under the Ministry of Health and Welfare, to the Syrian Arab Republic from September 5 to October 10, 1992:

### (1) Studying the present state of medical facilities in the Syrian Arab Republic,

1.	Damascus city	Damascus hospital	12.	Hama	Saramieh hospital
2.	Damascus city	Ibn Af-Naffis hospital	13.	Aleppo	Al-Razi hospital
3.	Damascus suburb	Duma hospital	14.	Aleppo	Al-Rashid hospital
4.	Dara	Al-Watani hospital	15.	Idlib	Al-Watani hospital
5.	Sweida	Al-Watani hospital	16.	Idlib	Ibn Sina hospital
6.	Homs	Al-Watani hospital	17.	Derezor	Al-Watani hospital
7.	Homs	Tadmor hospital	18.	Derezor	Al-Furaat hospital
8.	Tartus	Al-Watani hospital	19.	Lakka	Al-Watani hospital
9.	Latakia	Al-Watani hospital	20.	Hasakeh	Al-Watani hospital
10.	Latakia	Jableh hospital	21.	Hasakeh	Al-Kahmishili hospital
11.	Hama	Al-Watani hospital	22.	Quneitra	Baath Health center

- (2) Studying the present state of the medical facilities related to the project,
- (3) Holding discussions on emergency care,
- (4) Studying the facilities to be included on the project and determining the need for the requested equipment,
- (5) Ascertaining the executing organization, personnel plan, and budgetary consideration of the project and the division of work to be carried out by both governments on this project,
- (6) Studying the present state of the existing medical equipment,
- (7) Studying the local agents of medical equipment manufacturers, and
- (8) Studying the existing infrastructure related to the project.

After returning from the field survey, the study team analyzed the contents discussed and the material and information collected during the field survey and prepared a draft of this basic design study report. With this draft report, the study team revisited the project site, went through the explanation of the draft report, and discussed it with the officials concerned with the project, of the Syrian Arab Republic. This led to the agreement by both sides on the contents of this basic design study report. The present basic design study report was, thus, completed.

At the end of this report, there are attached copies of a description of the study team, the schedule of the field survey, a list of principal officials interviewed, and the minutes of discussions held with those officials.

## **Chapter 2 Background of the Project**





## Chapter 2 Background of the Project

### 2-1 Present State of the Syrian Arab Republic

#### 2-1-1 Geography and Climate

As seen in Figure 2-1, the Syrian Arab Republic is located at the intersection of 32 ~ 37 degrees North and 35 ~ 42 degrees East, the eastern end of the Mediterranean Sea. The country is bordered by Turkey to the north, Iraq to the east, Jordan to the south, and Lebanon and the Mediterranean Sea to the west. A wide range of land forms are found in Syria. The coastal plain is the center of the nation's economic activities including agriculture, manufacturing, ocean transportation, etc. Natural vegetation is seen on the hills and mountain ranges that roughly parallel the narrow coastal plain as well as on the interior plateau, which lies east of the mountain ranges. Much of the desert land is in the central, eastern, and southeastern part of the country. About 50% of the land is covered with prairies and pastures, one-third is cultivated, and the rest is covered with woods, rocky mountains, and deserts. Two-thirds of the agricultural land has been recently brought under cultivation. About 80% of the agricultural land receives rainfall, so the climate is relatively mild when compared to that of other countries in the Middle East.

In the vicinity of the capital, Damascus, temperatures typically range above 40 °C in the shade in July and August. On the other hand, winters are cold. Temperatures fall below 0 °C in January and February, and snowfalls are sometimes observed.

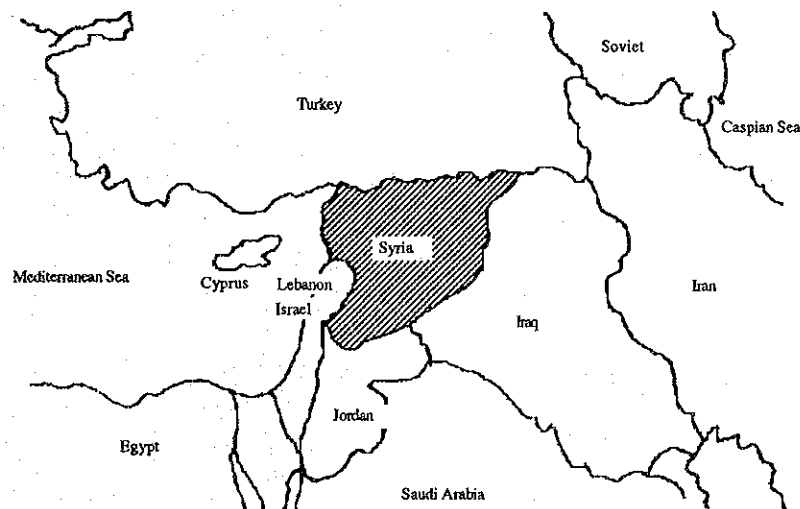
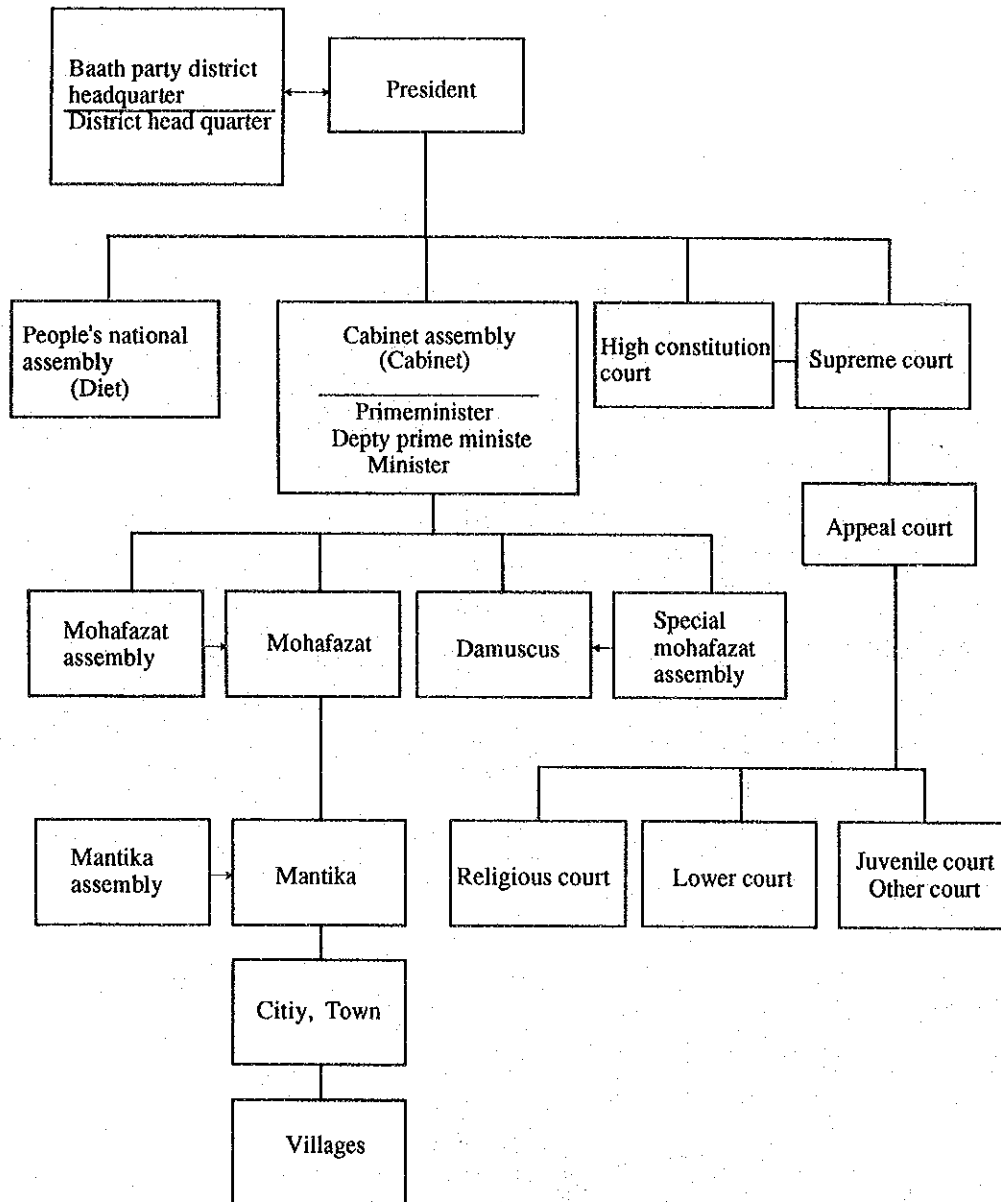


Figure 2-1 Map of Syrian Arab Republic

## 2-1-2 Administrative System

The administrative system of the Syrian Arab Republic is organized as seen in Figure 2-2. The president of this republic is supported by three vice presidents, and the cabinet is organized with a prime minister and 36 cabinet ministers.



**Figure 2-2 The administrative system of the Syrian Arab Republic**

As seen in Table 2-1, the country is divided administratively into 14 provinces. Each province, which is called "muhafazat," is governed by a governor. However, each ministry of the central government has a branch agency in each muhafazat, and this

agency performs specialized tasks in its respective muhafazat. The 14 muhafazats are subdivided into 46 prefectures, and then they are further subdivided into 190 counties. These counties are still further subdivided into 77 cities, 207 towns, and 6,239 villages as administrative units.

**Table 2-1 Country administration**

Mohafazat	Mantika	Nahia	City	Farm	Village	Town
Damascus city	-	-	1	-	-	-
Damascus suburb	8	25	13	55	182	28
Aleppo	7	31	10	1209	1419	33
Homs	5	15	3	484	438	15
Hama	4	16	5	577	490	21
Latakia	3	15	4	847	445	16
Derezor	2	11	5	93	121	17
Idlib	4	15	9	466	410	14
Hasakeh	3	11	5	1662	1665	10
Lakka	2	6	4	930	293	6
Sweida	2	9	8	45	119	9
Dara	2	12	5	61	124	14
Tartus	4	21	5	348	504	21
Quneitra	-	3	-	43	29	3
<b>TOTAL</b>	<b>46</b>	<b>190</b>	<b>77</b>	<b>6820</b>	<b>6239</b>	<b>207</b>

Source: STATISTICAL ABSTRACT, 1991

### 2-1-3 Demography

Changes in the population of the Syrian Arab Republic is shown in Table 2-2. The annual population growth was 3.4% during the period from 1986 to 1990, and the population reached 12,530,000 in 1991. The World Bank foresees the growth rate gradually slowing down and the population reaching 17 million by the year 2000.

As seen in Table 2-3, cities are growing rapidly because of migration from rural areas. The population living in the cities grew from 40% of the total population in 1965 to 50% in 1988. Population densities are highest in the western cities of Damascus, Aleppo, Homs, etc. and along the coast between Latakia and Tartous. The government is now trying to alleviate the excessive urban concentration of the population. To promote settlement in the provincial regions, rural development projects are being carried out. One such project is an ambitious program that will electrify the countryside.

**Table 2-2 The population of the Syrian Arab Republic (unit:1000)**

Year	Male	Female	Total	Year	Male	Female	Total
1964	2644	2512	5156	1978	4170	3978	8148
1965	2731	2594	5325	1979	4310	4111	8421
1966	2820	2680	5500	1980	4455	4249	8704
1967	2913	2767	5680	1981	4595	4401	8996
1968	3008	2858	5866	1982	4749	4549	9298
1969	3107	2952	6059	1983	4909	4702	9611
1970	3203	3054	6257	1984	5074	4860	9934
1971	3301	3157	6467	1985	5244	5023	10267
1972	3421	3263	6684	1986	5420	5192	10612
1973	3536	3372	6908	1987	5603	5366	10969
1974	3655	3485	7140	1988	5793	5545	11338
1975	3777	3603	7380	1989	5986	5733	11719
1976	3904	3723	7627	1990	6189	5927	12116
1977	4035	3848	7883	1991	6400	6129	12529

**Table 2-3 The population living in each mufahazt.**

Population Mohafazat	Urban area			Region area			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Damascus city	742	692	1434	-	-	-	742	692	1434
Damascus suburb	287	270	557	380	365	745	667	635	1302
Aleppo	870	806	1676	453	458	911	1323	1264	2587
Homs	320	300	620	277	270	547	597	570	1167
Hama	177	164	341	343	329	672	520	493	1013
Latakia	169	159	328	221	209	430	390	368	758
Derezor	88	82	170	190	189	379	278	271	549
Idlib	87	82	169	340	329	669	427	411	838
Hasakeh	182	172	354	285	290	575	467	462	929
Lakka	158	150	308	83	84	167	241	234	475
Sweida	42	40	82	94	96	190	136	136	272
Dara	81	78	159	190	194	384	271	272	543
Tartus	71	66	137	250	236	486	321	302	623
Quneitra	-	-	-	20	19	39	20	19	39
Total	3274	3061	6335	3126	3068	6194	6400	6129	12529

Source: STATISTICAL ABSTRACT, 1991

#### 2-1-4 Economic Activity

The Syrian Arab Republic is a middle-income country by the world's economic standard. Agriculture and manufacturing are basic industries of the country, and energy-related industry is now developing. Over the past 30 years, the government had controlled all economic activities such as production, pricing, distribution, and trade. Recently the private sector has come back to life in light industry. For example, small private companies have become a dominant factor in trading products of particular brands. A similar phenomenon is also observed in agricultural industry.

The government used to control not only agricultural production but also prices of the produce on the market. This government control of agriculture is loosening, and restrictions are being removed step by step. In addition, improvement is also seen in social development, especially in the nation's infrastructure. The country has a relatively well laid-out infrastructure, which is distinct from other developing countries of similar wealth.

During the 1970s, Syria had experienced rapid economic growth through the export of agricultural and manufactured products to neighboring Arab countries. The economies of those Arab neighbors fueled by rising oil prices were the original factor of this Syrian economic growth. This rapid economic growth created a sizable amount of foreign investment into the Syrian economy, which further fueled the economic growth. Amazingly, the average annual rate of economic growth was 10% during this period. However, the Syrian economy suffered severely from drops in the export earnings and the depreciation of its national currency during the period from 1982 to 1987. This was an indirect result of a subsequent crash in the international oil prices, which had first depressed the economic activities of other countries in the Middle East. During this period, the growth of GNP was less than 1%. The consequent shortage of hard currency in the nation's coffers forced to limit the import of items necessary for manufacturing such as raw materials and replacement parts. This situation caused an inflation and reduced investments, leading to breed inefficiency in production. Another primary cause of this economic slump was traced to reductions in agricultural production, which resulted from a long drought. In spite of the reduced export earnings from agricultural produce, the country had to run on unbalanced budgets for a long time because of the heavy burden of the defense costs, creating a consistent balance-of-trade debt. This situation finally forced the government to cut down the investment for development. To alleviate these adverse conditions, import controls were reinforced, and a number of exchange rates were tried. However, little improvement was seen. The country could not meet the repayment of its current foreign debts and had to delay the obligation.

However, in 1988, the Syrian economy came back to life and experienced a growth rate of 12%. This economic turn-around resulted from not only a good harvest, which was brought from favorable weather conditions, but also an increase in the oil production. This economic growth, however, slowed down in 1989 because of a reduced production in the agricultural industry and a slump in the service industry, and the nation's GNP increased only by 9% that year.

Entering into the 1990s, some changes have been observed in the economic environment of the Syrian Arab Republic. First of all, international economic cooperation in addition to Arab economic assistance has started to flow into the country again. This renewed cooperation with other countries has been an essential factor for the renewal of the Syrian economy. Syrian agricultural products and manufactured goods have started to flow into new markets overseas, and international financial agencies have reopened loans to the Syrian Arab Republic. Also, petroleum production reached 500,000 bl. a day at the end of 1991. Besides, domestic natural gas has been gradually replacing oil as an energy source at power plants of the country. Thus, these two factors have allowed more oil to be exported, increasing the nation's export earnings.

Eventually, these favorable economic conditions have led to a revival of the private sector, and this private sector has been a locomotive to strengthen export activities, thus improving the balance of trade. In addition to this increased earnings from export, the previously mentioned financial assistance and investments from other countries have been rapidly improving the nation's international balance of payments.

Table 2-4 shows changes in the annual amounts of import and export of both the public sector and private sector for the period from 1980 to 1990.

Although these optimistic signs have been apparent in the economy recently, the Syrian Arab Republic still has some problems. The population, which is now 12,500,000, is growing at an annual rate of 3.4%. This growth rate, which is considered one of the highest in the world, is threatening future economic growth, government budget, and welfare provision. The nation's work force is currently quite small. Although the youth (under the age of 15) now account for 50% of the population, refugees and dislocated people are coming into the cities in alarming numbers, making the nation's demography complex.

Agricultural industry is threatened not only by droughts but also by the above mentioned changes in the demography. Long-lasting droughts at some parts of the country are troubling the agricultural production. There are areas which no longer experience rainfall, and some rivers have dried up. As a result, underground water levels are falling, making irrigation difficult. In addition to the threat of droughts, another problem affecting the agricultural industry is the migration of people from the farming areas to the cities. This concentration of population in the urban areas has created a large demand for agricultural products. Ironically, however, this situation has doubly burdened the production side not only by increasing the demand but also by reducing the number of population who are engaged in farming. All of these problems are requiring immediate government's actions.

**Table 2-4 Annual amounts of import and export from 1980 to 1990**  
(unit: 1,000 SP)

Year	Import			Export		
	Government	Private	Total	Government	Private	Total
1980	2,960.0	1,031.4	3,991.4	1,893.8	148.9	2,042.7
1981	3,840.2	1,044.0	4,884.2	1,859.0	179.0	2,038.0
1982	3,176.3	713.8	3,890.1	1,755.1	208.9	1,964.0
1983	3,882.2	520.0	4,402.2	1,661.7	201.7	1,863.4
1984	3,659.5	329.1	3,988.6	1,619.0	177.3	1,796.3
1985	3,239.0	605.4	3,844.4	1,466.4	120.5	1,586.9
1986	1,974.6	669.9	2,644.2	894.6	389.1	1,283.7
1987	1,948.1	513.2	2,481.3	1,050.6	299.8	1,350.4
1988	1,631.3	594.5	2,225.8	849.9	491.7	1,341.6
1989	1,202.3	890.5	2,092.8	1,560.0	1,439.1	2,999.1
1990	1,291.3	1,103.0	2,394.3	2,328.0	1,876.4	4,204.4

Source : Ministry of Trade and Economic, 1991

### 2-1-5 Infrastructure

As for the nation's infrastructure, roads have been well developed. For example, the total length of the roads is 30,208 km (according to the 1987 statistics), of which 22,538 km is paved with asphalt. That is a pavement rate of 74.6%, and if the roads surfaced with non-asphalt are included, the rate of pavement reaches 94.5%. Also, modern ports have been developed, such as the major ports of Tartous, Latakia, and Baniyas. On the other hand, telephone use is still limited. 495,629 telephones had been

registered by 1987, which is about 4.5 phones per 100 people. In 1992, a project to improve the communications network is being promoted with funds from Kuwait.

It is ironic that rapid industrialization has led to chronic power shortages. Even though the total amount of electricity generated each day is 9,433 MWh, power failure is an everyday occurrence. It is not unusual to experience 4 ~ 5 hours of black-out. This condition is affecting not only the people's daily lives but also industrial activities as a whole.

## 2-2 Present State of the Health and Medical Care

### 2-2-1 State of the Emergency Care

As seen in Table 2-5, major diseases afflicting the people of the Syrian Arab Republic are circulatory disease (22%), injuries and intoxication (20%), perinatal disease (10%), infectious disease (10%), respiratory disease (10%), genital and urinary disease (8%), cardiovascular disease (5%), and others (15%). Compared with other developing countries, the incidence of infectious diseases is relatively low. On the other hand, the incidence of injuries and intoxication is quite high.

**Table 2-5 Major diseases**

Major diseases	Rate
1. Circulatory disease	22%
2. Injuries and Intoxication	20%
3. Perinatal diseases	10%
4. Infectious diseases	10%
5. Respiratory diseases	10%
6. Genitaliary/Urinary diseases	8%
7. Cardiovascular diseases (Acute)	5%
8. Others	15%

**Table 2-6 The causes of deaths**

Major diseases	Rate
1. Cardiovascular diseases	45%
2. Injuries and Intoxication	10%
3. Malignant Tumors	8%
4. Respiratory diseases	7%
5. Genitaliary/Urinary diseases	5%
6. Metabolic diseases	5%
7. Infectious diseases	5%
8. Others	15%

In Table 2-6, the causes of deaths are listed as follows: cardiovascular disease (45%), injuries and intoxication (10%), malignant tumors (8%), respiratory disease (7%), genital and urinary disease (5%), metabolic disorder (5%), infectious disease (5%), and others (15%). As can be seen from these figures, the major cause of deaths is cardiovascular disease, of which cardiac infarction is most common. Also, deaths from injuries and intoxication occur frequently.



Among the diseases and accidents mentioned above, traffic accidents, cardiac infarction, and cerebrovascular disease require emergency care. However, at present, the nation's medical care system lacks an effective emergency care system to treat patients suffering from these diseases. Though the government has made medical care available for the public free of charge or at minimal costs at national hospitals and health centers, the government is financially incapable of providing facilities that are necessary for treating emergency patients effectively. Therefore, the system for providing emergency care has various problems which demand immediate solutions.

The following table shows the annual population growth, birth rate, general mortality, infant mortality, children's death rate, and life expectancy at birth of the Syrian Arab Republic with those of other neighboring countries; Iraq, Jordan, Saudi Arabia, Egypt, and Turkey. Comparing with those figures, Syria is in a good condition than other neighboring countries.

	Annual population growth rate(%)	Birth rate /1000	Mortality rate /1000	Infant mortality /1000	Children mortality /1000	Life expectancy
Iraq	3.6	45.1	11.5	77	6	62 years
Jordan	3.7	45.3	9.1	64	5	Male 60.3 Female 64.2
Saudi Arabia	4.1	43.7	12.6	66	13	Male 54.3 Female 57.6
Egypt	2.4	37.4	10.9	100	14	Male 58.0 Female 61.1
Turkey	2.5	33.6	9.3	92	8	Male 61 Female 66
Syria	3.6	46.5	7.2	59	4	Male 65 Female 69

Table 2-7 shows the number of patients requiring emergency care in each muhafazat. It can be seen that, in 1991, the number of people requiring emergency care reached a total of 1,000,000. In the table, the data for the Muhafazat of Qunaytra are not available. Statistics are not taken there since this muhafazat is not functioning administratively. The reason is that this muhafazat is located on the Golan Heights, two-thirds of which is now under the UN's peace keeping operation.

**Table 2-7 The number of patients requiring emergency care in each muhafazat**

Year	1987		1988		1989		1990		1991	
	Out-patient	In-patient	Out-patient	In-patient	Out-patient	In-patient	Out-patient	In-patient	Out-patient	In-patient
Damascus city	167,801	21,082	176,288	21,024	177,680	29,726	190,82	38,795	227,513	49,946
Damascus suburb	41,526	5,639	33,085	4,375	41,428	6,707	39,615	4,527	45,219	5,029
Aleppo	61,593	28,779	74,519	35,412	93,418	39,667	104,489	31,158	114,551	32,032
Idlib	65,671	21,757	No data	No data	48,927	20,018	53,589	22,725	46,169	24,342
Latakia	-	-	65,991	23,958	41,538	17,251	47,970	21,820	48,149	19,386
Tartus	40,497	9,009	22,577	6,943	28,882	8,211	32,444	1,380	36,155	17,975
Homs	85,487	24,974	92,866	27,767	48,934	16,953	95,191	26,975	128,440	32,769
Hama	56,820	22,809	63,741	27,415	73,630	31,445	63,227	28,126	81,239	30,635
Lakka	29,173	14,372	27,415	18,331	34,548	18,055	39,811	22,893	44,903	22,704
Derezor	45,497	8,862	43,116	9,985	48,533	9,937	48,426	13,904	58,522	18,063
Hasakeh	39,406	12,504	44,615	13,782	52,555	15,204	51,151	14,550	79,706	19,257
Dara	52,500	15,246	36,242	14,890	32,875	11,913	53,235	30,249	59,919	43,848
Sweida	32,291	12,729	31,391	10,489	37,115	16,109	39,089	15,817	35,743	15,119
Quneitra	-	-	-	-	-	-	-	-	-	-
Total	718,262	197,762	711,846	214,371	760,063	241,196	859,219	272,919	1,006,228	331,105

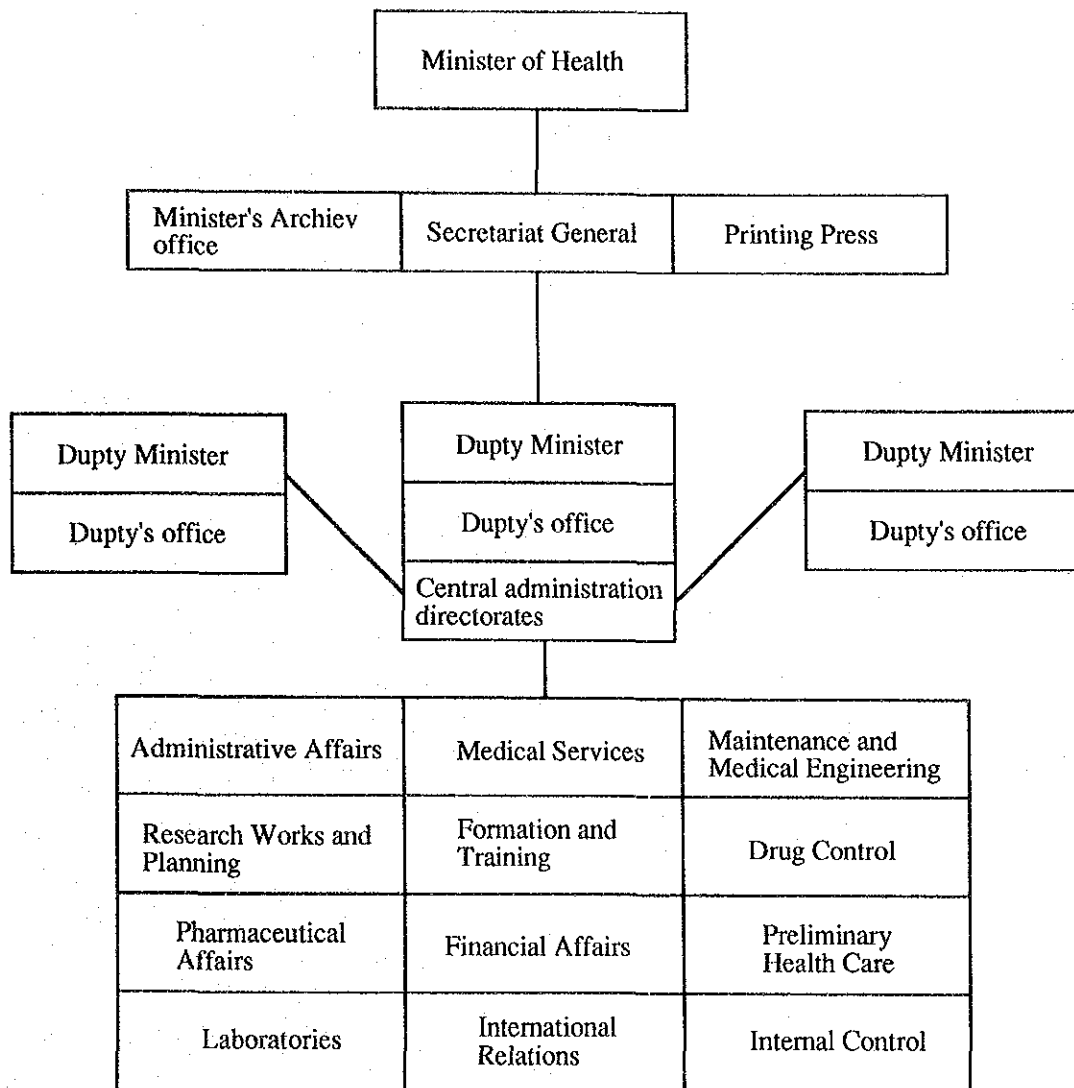
Source : Ministry of Health

### 2-2-2 Administrative System for Health Care

In the Syrian Arab Republic, the Ministry of Health is the main administrative organ for providing health and medical care. The ministry carries out policy planning, its execution and evaluation, budgetary appropriation, acquisition of foreign aid, and cooperation with other ministries and departments in the field of health and medical care.

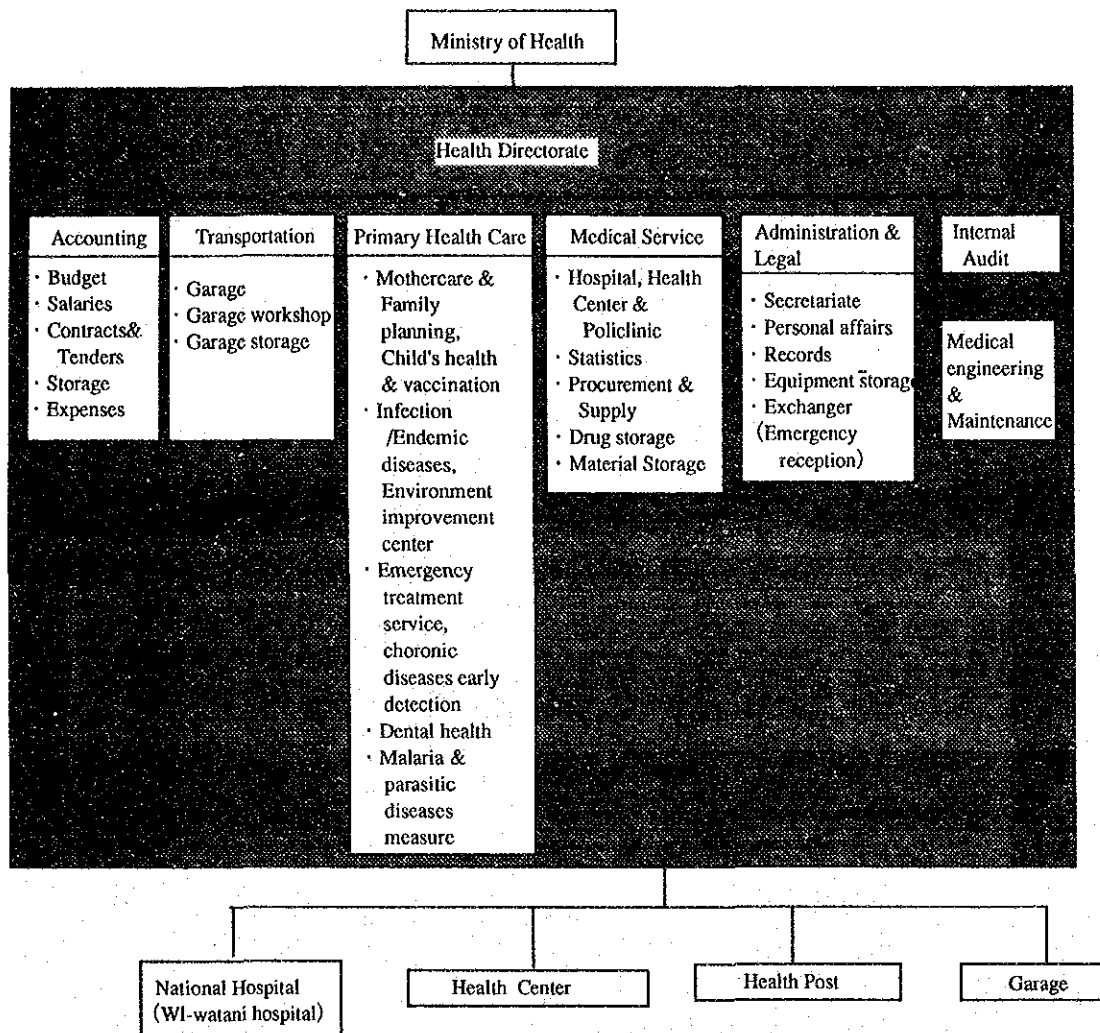
Provincial health care is administered by a health directorate in each muhafazat. The health directorate controls the national hospitals, health centers, health posts, and other medical facilities which are located in its respective muhafazat including the ambulances stationed there.

Figure 2-3 shows the organization of the Ministry of Health, and Figure 2-4 shows the administrative system for providing provincial health care.



**Figure 2-3 The organization of the Ministry of Health,**

Medical equipment and its consumables and replacement parts are procured through the Department of Medical Services, which is described in Figure 2-3 "The Organization of the Ministry of Health." Each hospital then receives these supplies from this department. Accordingly, the selection and specification of medical equipment are also made by this department. On the other hand, the maintenance of the equipment is carried out by the Department of Maintenance and Medical Engineering, which employs about 50 medical engineers and technicians. By visiting all the hospitals under the control of the Ministry of Health throughout the country, these engineers carry out not only the maintenance work but also the training of resident engineers at each hospital on repairing and checking procedures.



**Figure 2-4 The provincial health care administrative system**

Besides the hospitals under the Ministry of Health, there are other medical facilities. University hospitals are administered by the Ministry of Higher Education, and military hospitals are administered by the Ministry of Defense. Both of these ministries are not related directly with the Ministry of Health with respect to the emergency care system. The hospitals under the control of these ministries have ambulances, which are available in emergency for people living in their vicinity. However, the emergency departments of those hospitals do not treat local residents themselves, so emergency patients are taken to other hospitals, which are under the Ministry of Health.

There are four hospitals under the Ministry of Higher Education; each at Damascus University, Aleppo University, Tishrin University, and Al Baath University. In addition to these university hospitals, the Ministry of Higher Education has a pediatric hospital, a cardiosurgery center, a center for nuclear medicine, etc. Among these medical facilities, Al Assad Hospital affiliated to Damascus University is the best in terms of

building facilities as well as in medical equipment. It has a CT scanner and other sophisticated medical equipment. While the hospitals under the Ministry of Health offer free medical care, medical services provided at the hospitals under the Ministry of Higher Education are not free except for patients who are admitted for educational and research purposes. Patients have to pay about US\$100 ~ 120 for CT scanning at the university hospitals. However, it is still cheaper than the charge made at private hospitals, which is about US\$150 ~ 180.

### 2-2-3 System for Emergency Care and Medical Facilities

#### (1) System for Emergency Care

Various cases of emergency patients suffering from scratches to heart attack require emergency medical services. For light cases of emergency, patients are treated at health centers, but the real functions of the health centers are to provide vaccinations, maternity care, pediatric care, and dental care. Patients with serious cases are sent directly to the local base hospital for emergency care. Such base hospitals are generally prepared for treatments in surgery, internal medicine, obstetrics and gynecology, and pediatrics. Patients with most serious conditions, e.g., injuries to the head, chest, or eyes, are sent to national hospitals which provide specialized treatments, in Aleppo, Homs, and Damascus (Damascus Hospital has the highest admission of such patients). Cerebrovascular accidents are very common in Syria because of the frequent occurrence of traffic accidents. Nevertheless, there are not many medical facilities to treat cerebral injuries. Neurosurgery is only available in Damascus and Aleppo. However, these hospitals in Damascus and Aleppo are not equipped with CT scanners. As a result, patients with cerebral conditions which could be treated if the right equipment were used are often lost. The same can also be said of those who have experienced a heart attack or other circulatory accidents.

The following table shows the numbers of patients treated at the emergency departments of all the hospitals under the Ministry of Health for the period from 1987 to 1991.

1987	1988	1989	1990	1991
718,259	711,846	760,063	859,219	1,006,378
Rate based on 1987	99%	105.8%	119.6%	140.1%

During this five year period, there was an increase of 40% in the number of emergency patients. This clearly indicates an growing burden on the emergency departments of these hospitals. However, many emergency departments are not prepared to meet this increasing demand for emergency care and are often provided only with poorly equipped facilities and dilapidating ambulances.

There are many existing medical facilities for emergency care in the Syrian Arab Republic though the number may not be sufficient. Each of these medical facilities is well staffed with doctors, residents, nurses, and paramedics. The hierarchy is arranged with Damascus Hospital at the top, local base hospitals in the middle, and health centers at the bottom. Although medical personnel have been trained with life-supporting equipment necessary for emergency services at university hospital, etc. in the capital, most of them do not have a chance to practice in a real situation after graduation because of the lack of such equipment at their assigned medical facilities. Thus, what has been learned is degrading the medical services offered to the public.

The foundation of the system for providing emergency care is the transportation of patients in emergency. In the current emergency care system, either the local medical facility under the Ministry of Health or the local police station receives an emergency call, and the local medical facility sends an ambulance after receiving a request. However, it is not unusual for those who are in need of emergency care to use taxis or cars. The reason is that it is difficult to make emergency calls since the public communications system is not very effective. Also, ambulances are not available when needed because there is an absolute shortage of vehicles and existing old vehicles often experience breakdowns. Although a nominal emergency care system does exist, the reality is that the system does not function very well as it is hampered by a lack of an effective communications system, shortages of ambulances and medical equipment.

## **(2) Medical Facilities**

Table 2-8 shows the number of medical facilities in each muhafazat. It seems to indicate that there is a sufficient number of facilities, with the ratio of the population to the number of hospital beds smaller than those of other developing countries. However, most of these facilities are actually concentrated in the cities, so there exists much regional inequity in the availability of medical services. Especially in rural areas, it is hard to reach any medical facility.

**Table 2-8 : The number of medical facilities in each muhafazat.**

Medical facility Muhafazat	Government hospital						Total		Private hosp		Grand total		Popula- tion /bed
	Ministry of Health		Ministry of Higher Education		Ministry of Social Affairs		Hosp	Beds	Hosp	Beds	Hosp	Beds	
	Hosp	Beds	Hosp	Beds	Hosp	Beds							
Damascus city	7	1,134	7	2,400	-	-	14	3,534	25	697	39	4,231	339
Damascus suburb	5	1,046	-	-	-	-	5	1,046	5	53	10	1,099	1,185
Aleppo	5	982	2	928	1	99	8	2,009	48	1150	56	3,159	819
Idlib	2	203	-	240	-	-	2	203	9	104	11	307	2,730
Latakia	2	558	1	-	-	-	3	798	8	130	11	928	817
Tartus	1	156	-	-	1	53	2	209	9	181	11	390	1,597
Homs	4	494	-	-	1	65	5	559	20	415	25	974	1,198
Hama	2	440	-	-	-	-	2	440	27	311	29	751	1,349
Lakka	3	303	-	-	-	-	3	303	15	166	18	469	1,981
Derezor	4	349	-	-	-	-	4	349	6	79	10	428	1,283
Hasake	2	269	-	-	-	-	2	269	7	112	9	381	1,247
Dara	1	256	-	-	-	-	1	256	2	46	3	302	1,626
Sweida	1	444	-	-	-	-	1	44	2	22	3	466	584
Quneitra	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>39</b>	<b>6,634</b>	<b>10</b>	<b>3,568</b>	<b>3</b>	<b>217</b>	<b>52</b>	<b>10,419</b>	<b>183</b>	<b>3,466</b>	<b>235</b>	<b>13,885</b>	<b>902</b>

**Source : Statistic Department of Ministry of Health**

Many existing medical facilities, particularly provincial base hospitals, are not sufficiently equipped and have only basic medical equipment. In such conditions, it is hard to make any improvement in the quality of examination and treatment for emergency care. However, many of the medical facilities are now undergoing a process of renovation and expansion. Improvement projects going on at some hospitals are to renovate whole hospital facilities, and others are to refurbish or expand only their emergency departments. Most hospitals which are at muhafazat-administrative level already have reception counters, diagnostic rooms, treatment rooms, operation theaters, examination rooms, X-ray rooms, ICU rooms, etc., for their emergency departments. However, emergency departments of district-level hospitals are simple modifications of rooms for outpatients, and they do not have resuscitation spaces and medical equipment necessary for emergency care, except sphygmomanometers, beds, and suction apparatus. In such conditions, it is impossible to treat patients who are experiencing severe hemorrhage in the chest or stomach, cardiac infarction, or cerebrovascular disorder.

Moreover, some of these emergency departments share operation rooms, examination rooms, X-ray rooms, ICU rooms, etc., with other departments.

Table 2-9 shows the national hospitals in each mufahazt in 1992.

**Table 2-9 The list of national hospitals**

Mofahazat	Ministry	Hospital name	Speciality	Beds
Damascus	Ministry of Health	Damascus hosp	General	558
		Al-Zehrawi hosp	Obs.& Gyn.	76
		Ibn Al-Naffis hosp	General	170
		Al-Eyyon Al Jerahi hosp	Ophthalmology	85
		Al-Kullia Al-Jerahi hosp	Kidney disease & Surgery	110
		Al-Arrad Al-Sariah hosp	Infectious disease	35
		Al-Hillal Al-Ahmmar hosp	General	100
	Ministry of Higher Education	Al-Mouassat hosp	General	773
		Al-Atfal hosp	Obs.& Gyn.	324
		Al-Tibb Al-Nawai hosp	Neuclear Medicine	180
		Cardiac Surgery Center	Cardioc Surgery	50
		Dar Al-Tawllid hosp	Obs.& Gyn.	353
		Al-Assa'd University hosp	General	300
		Al-Amrrad Al-Jeldiah hosp	Dermatology	50
Damascus suburb	Ministry of Health	Yabroud hosp	General	55
		Ibn Sina hosp	Mental Dis.	721
		Durna Al-Zehrawi hosp	General	160
		Ibn Al-Walid hosp	Leprosy	60
		Al-Kalamoun hosp	General	50
Aleppo	Ministry of Health	Ibn Roushid hosp	General	460
		Ibn	General	144
		Zahi Azrak hosp	Communicable	
		Dar Al-Tawlid hosp	Obs.& Gyn.	
		Al-Razi hospital	Surgery	
	Ministry of Higher Education	Halab Al-Kabir hosp	General	583
		Al-Kindi hospital	General	345
		Al-Jabbar Shekhani hosp	General	99
Ministry of Social Affairs				



Idlib	Ministry of Health	Al-Watani hosp	General	103
		Ibn Sina hosp	General	100

Mofahazat	Ministry	Hospital name	Speciality	Beds
Latakia	Ministry of Health	Al-Watani hospital	General	433
		Jabieh hosp	General	124
	Ministry of Higher Education	Al-Assa'd University hosp	General	124
Tartus	Ministry of Health	Al-Watani hosp	General	43
	Ministry of Social Affairs	Al-Ommali hosp	General	53
Homs	Ministry of Health	Al-Watani hosp	General	314
		Al-amrad Al-Sarihh hosp	General	39
		Tadmour hosp	General	45
		Ibn Al-Walid hosp	General	96
Hama	Ministry of Health	Al-Watani hosp	General	286
		Salameih hosp	General	154
Hassakeh	Ministry of Health	Al-Watani hosp	General	200
		Al-Kamehli hosp	General	68
		Mlekiyah hosp	General	35
Derezor	Ministry of Health	Al-Furaat hosp	Internal Med.	83
		Bokamal hosp	Obs. & Gyn.	50
		Al-Watani hosp	General	124
		Al-Mayadin hosp	General	92
Lakka	Ministry of Health	Al-Watani hosp	General	323
		Dar Al-Tawlid hosp	Surgery & Obs.	37
Dara	Ministry of Health	Al-Watani hosp	General	256
Sweida	Ministry of Health	Al-Watani hosp	General	444

## 2-2-4 Medical Personnel

### (1) Number of Medical Personnel

Table 2-10 shows changes in the number of medical personnel in the Syrian Arab Republic. There was nearly a two-fold increase in each category of the medical personnel during the six year period between 1985 and 1990: the number of physicians increased from 6,163 to 11,682; dentists, from 1,975 to 3,841; pharmacists, from 2,621 to 3,644; midwives, from 2,201 to 4,224; and nurses, from 8,326 to 12,438. From these increases, it is evident that the Government of the Syrian Arab Republic is making every effort to develop medical personnel. However, with an annual population growth of 3.3 ~ 3.4%, these increases do not count much, and the ratio of the population to the number of medical personnel is still quite high.

**Table 2-10 The number of medical personnel**

Year	1985	1986	1987	1988	1989	1990
1. Doctor	6,163	6,993	8,146	8,420	9,834	11,684
(Population / 1)	1,666	1,518	1,347	1,347	1,194	1,037
2. Dentist	1,975	2,225	2,456	3,067	3,362	3,841
(Population / 1)	5,198	4,769	4,466	3,697	3,486	3,154
3. Pharmacist	2,621	2,786	2,960	3,313	3,634	3,644
(Population / 1)	3,917	3,809	3,706	3,422	3,225	3,236
4. Midwife	2,201	2,372	3,049	3,201	3,824	4,224
5. Nurse	8,326	7,983	9,786	10,400	11,095	12,438

**Source : STATISTICS ABSTRACT, 1992**

Table 2-11 accounts for the medical personnel of each hospital under the Ministry of Health (in 1990).

**Table 2-11 The number of Medical personnel of each hospital under the Ministry of Health (in 1990).**

1990	Doctor		Dentist		Pharmacist		Midwife	Nurse
	Number	Population /1 doctor	Number	Population /1 doctor	Number	Population /1 pharmacist	Number	Number
Damascus city	3,270	811	1,423	1,863	1,640	1,609	1,252	5,962
Aleppo	2,537	986	539	4,640	419	5,969	699	1,132
Idlib	1,177	955	471	2,386	383	2,327	486	731
Latakia	690	1,422	305	3,216	342	2,868	309	553
Tartus	1,245	590	308	2,386	156	4,712	333	708
Homs	339	1,572	75	7,037	109	4,890	241	438
Hama	534	1,511	323	6,669	101	7,990	141	369
Lakka	318	2,811	100	8,940	105	8,514	139	269
Derezor	291	1,598	49	9,490	51	9,118	48	159
Hasakeh	231	1,143	109	2,422	45	5,867	199	548
Dara	385	1,351	123	4,228	131	3,696	107	675
Sweida	1,109	207	2,908	143	4,210	262	789	
Quneitra	122	320	11	3,545	11	3,545	8	26
<b>Total</b>	<b>11,682</b>	<b>1,037</b>	<b>3,841</b>	<b>3,154</b>	<b>3,644</b>	<b>3,236</b>	<b>4,224</b>	<b>12,438</b>

Source : STATISTICS ABSTRACT, 1992

## (2) Medical Personnel Development

The literacy rate of the Syrian Arab Republic is estimated at 75%. The government provides education from elementary school level to high school level free of charge. School attendance is 100% among boys and 85% among girls at elementary school level; it is 70% and 35% respectively at junior high school level. Doctors are trained at the medical schools and their affiliated hospitals, which are under the control of the Ministry of Higher Education.

Table 2-12 shows the number of students studying at each department of the following four universities: Damascus University, Aleppo University, Tishrin University, and Al Baath University. Doctors, pharmacists, and dentists are trained there.

**Table 2-12 : The number of University students at each department**

Univ. name	Student			New student			Graduate		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Medicine dept.									
Damascus Univ.	3,578	1,473	5,051	456	154	610	470	180	650
Aleppo Univ.	2,476	716	3,192	343	99	442	283	64	347
Tichrine Univ.	1,255	658	1,913	169	127	296	87	32	119
Pharmacy dept.									
Damascus Univ.	1,072	1,387	2,459	149	191	340	124	184	308
Dental dept.									
Damascus Univ.	1,099	709	1,808	181	132	313	176	141	317
Aleppo Univ.	646	269	915	92	42	134	101	45	146
Tichrine Univ.	618	320	938	82	42	124	74	31	105
Al-Baath Univ.	630	272	902	90	41	131	102	44	146
<b>Total</b>	<b>11,374</b>	<b>5,804</b>	<b>17,178</b>	<b>1,562</b>	<b>828</b>	<b>1,780</b>	<b>1,417</b>	<b>721</b>	<b>2,138</b>

Source : \*\*\*\*\* Ministry of Health

Table 2-13 shows the annual numbers of students who have completed their training in respective specialties during the three-year period from 1989 to 1991.

It is seen that the number of graduates has been increasing every year.

**Table 2-13 Annual numbers of students**

Year		1989	1990	1991
Major				
Doctor	Licence	1,070	1,116	1,241
	Master	151	168	139
Dentist	Licence	716	714	737
	Master	34	34	16
Pharmacist	Licence	308	308	329
	Master	20	20	34
Midwife	Licence	44	39	23
Nurse	Licence	186	222	291

Source : Statistic File of Ministry of Health

### (3) Developing of Nurses

Each muhafazat has a nursing school, which is often located on the same premises of the base hospital of the muhafazat or close to it. Table 2-14 shows the numbers of graduates trained for their respective specialties at these nursing schools during the three-year period from 1989 to 1991. At present, there is a shortage of nurses, so it is necessary to train more nurses as soon as possible. Therefore, the numbers of students admitted to these nursing schools are being increased in accordance with a policy established by the Ministry of Health.

**Table 2-14 Number of graduates at nursing school**

Year	1989	1990	1991
Major			
Nurse	1,063	1,414	1,895
Assistant nurse	403	510	414
Midwife	187	168	184
Total	1,653	2,092	2,493

Source : Statistic File of Ministry of Health

### (4) Medical Technicians

The Ministry of Health has a technical institute to train medical technicians, and it is located in Damascus. Table 2-15 lists the subjects taught at the institute. Student are trained on the following 11 subjects: public hygiene, anesthesiology, clinical examination, pharmacology, radiology, physiotherapy, midwifery, dental engineering, nursing, medical-equipment maintenance, and statistics.

**Table 2-15 Number of graduates at technical institute**

Year	1989	1990	1991
Branch of Study			
Public Health	247	72	153
Anesthesia	187	102	160
Laboratory	483	304	453
Pharmacy	193	77	273
X-ray	143	100	159
Physical Therapy	44	23	68
Midwifery	216	82	217
Dentist	136	201	122
Nurse	313	451	500
Maintenance	-	17	220
Statistics	-	15	9
Total	1,692	1,444	2,334

Source : Ministry of Health

### (5) Engineers for Medical Equipment Maintenance

The above mentioned technical college has a two-year course in medical equipment maintenance, and it accepts 20 applicants for the course every year. The tuition is free, and even a scholarship is offered. Moreover, outstanding students are sent abroad for training through international aid organizations such as WHO. The students graduating from this course are obliged to work their first six years at medical facilities under the Ministry of Health. Most of them work at base hospitals located in their hometowns, maintaining medical equipment. Some graduates work at the Maintenance Center of the Ministry of Health, which is located in Damascus, or even inside the ministry itself. Table 2-16 shows the number of engineers assigned to each muhafazat for the purpose of maintaining the medical equipment of the hospitals under the Ministry of Health (in 1990). There are 55 engineers and 35 technicians, which makes a total staff of 90.

**Table 2-16** Number of maintenance personnels in each mufahazt

1990	Number of engineer	Number of technician
Damascus city	16	11
Damascus suburb	4	-
Aleppo	10	2
Latakia	1	-
Homs	4	4
Hama	-	1
Hasakeh	4	1
Derezoru	-	2
Dara	4	2
Sweida	5	2
Idlib	4	4
Lakka	-	5
Tartus	3	1
Quneitra	-	-
Total	55	35

## **2-2-5 Development Programs for Health and Medical Care and Currently Executed Projects**

### **(1) Development Programs for Health and Medical Care**

The government has been increasingly emphasizing the importance of development programs for health and medical care, which are parts of the national development programs. Accordingly, the budgetary allocation for health and medical care has been steadily increasing. In 1989, the portion of the national budget allocated to health and medical care was only 2%. However, in 1991, it was 4.56%. It is planned to exceed 5% in 1993. In addition, there is a plan to fund the programs executed by the Ministry of Health with part of the funds coming from Kuwait, which will be described more later in this report.

The fifth 5-year development program for health and medical care (1981 ~ 1985) was a long-term development program based on the World Health Organization's Alma-Ata Declaration, "Health for all by the year 2000." Both the sixth 5-year program (1986 ~ 1990), which was not announced, and the seventh 5-year program (1991 ~ 1995), which is currently being designed, are, in principle, basically the same as the fifth 5-year program. Thus, it is the fifth 5-year program which has been actually carried out. It is expected that this program will continue until the year 2000. So far as the seventh 5 year program is concerned, the essence of the program is:

1. To continue the execution of the fifth and sixth programs;
2. To improve the existing medical facilities and strengthen the activities carried out there by:
  - renovating existing emergency departments of the hospitals under the Ministry of Health as well as opening new emergency departments at these hospitals,
  - adding specialized departments to the hospitals and health centers under the Ministry of Health,
  - developing personnel who will engage in specialized fields of need,
  - procuring medical equipment necessary for frequent use, and
  - strengthening the system of maintenance for medical facilities and equipment; and
3. To improve the system of managing medical facilities at all administrative levels.

## **(2) Program for Establishing the Emergency Care System**

In response to a presidential decree issued in May 5, 1991, the Ministry of Health has conceived a program to establish the nation's emergency care system. This program is to improve the emergency departments of all the national hospitals throughout the country, to institute a traffic system for ambulances on main highways, and to establish a network for emergency care throughout the country. More specifically, this program includes the following actions:

1. Promoting the status of the emergency sections which are provided at all the national hospitals to emergency departments;
2. Establishing these emergency departments as independent department having examination rooms and X-ray rooms;
3. Constructing new buildings for these hospitals, if necessary, for the purpose of providing emergency care;
4. Installing medical equipment necessary for treatments in surgery, internal medicine, cardiac surgery, and pediatrics for these emergency departments after the completion of their required construction work; and
5. Staffing these emergency departments with well-trained medical personnel.

There is a specific project to renovate and expand the emergency departments of all the medical facilities and to procure ambulances and medical equipment.

## **(3) Project for Constructing 28 Hospitals**

This project is to construct 28 hospitals with 150 ~ 400 beds in areas where no hospitals exist. It started 10 years ago to solve the problem of hospital shortage. However, this project has been experiencing some problems. Construction work of the hospitals planned on the project is not carried out smoothly, and the construction work of some hospitals have been stalled halfway because of a lack of funds. In spite of these conditions, however, construction work is being smoothly carried out at the six hospital sites, each of which is located in Tartous, Dyr-Atyya, Al Kurdaha, Al Bokamal, Manbej,



and Dummar, as "Project for Procuring Medical Equipment for the Six Hospitals." This will be further described in the following, section (4).

**(4) Project for Procuring Medical Equipment for the Six Hospitals (with funds from Kuwait)**

The building facilities of the six provincial hospitals mentioned in the above Project for Constructing 28 Hospitals are almost complete. For these six hospitals, this project is going to procure medical equipment including such sophisticated items as MRI apparatus and CT scanners with funds (a loan of US\$45,000,000) provided by Kuwait. The bidding for a supplier on this project was held in November, 1992. Details of these hospitals are listed below.

Hospital name	Specialities	Beds	Location
1. Tartus hospital	General	450	Tartus
2. Dyratyya hospital	General	100	Dyratyya
3. Kurdaha hospital	General	210	Kurdaha
4. Manbej hospital	General	150	Manbej
5. Bokamal hospital	General	120	Bokamal
6. Cardiac Surgey Center	Cardiac Surgey	100	Dummar

**2-2-6 Transition of Foreign Aid**

**(1) World Health Organization (WHO)**

The World Health Organization has been assisting the Syrian Arab Republic in carrying out mainly primary health care activities. The WHO has been providing effective immunization, developing health manpower, promoting public hygiene, and preserving safe environment. For the two year period from 1992 through 1993, US\$2,000,000 is allocated for the following main activities planned for this period:

- evaluating the present state and trends of medical care;
- managing activities in public hygiene;
- establishing a system for health and medical care on the basis of primary health care;
- developing personnel for health and medical care;

- establishing a system for providing education and information in health and medical care;
- preserving safe environment in the city as well as in the country;
- improving diagnostic, clinical, and X-ray examination techniques;
- promoting rehabilitation treatment;
- promoting safe working conditions;
- preserving mental health and treating mental disorders; and
- expanding the program for immunization.

**(2) United Nations Fund for Population Activities (UNFPA)**

The United Nations Fund for Population Activities has been promoting maternal and child health in the Syrian Arab Republic. For the 5 year period from 1990 through 1994, UNFPA has allocated US\$10,000,000 for the following activities:

- promoting maternal and child health and family planning;
- expanding the communications network for the promotion of education as well as for the dissemination of information;
- collecting and analyzing health-related data;
- advising on policies for controlling population growth;
- studying the population demographically; and
- improving women's status and thereby promoting population control.

**(3) United Nations Children's Fund (UNICEF)**

The United Nations Children's Fund has been promoting, as its main objective in the Syrian Arab Republic, a program for providing effective immunization to children. In addition, UNICEF has been carrying out other activities such as controlling diarrheal diseases, training midwives, and supplying proper foods for nutrition. For the 5-year period from 1991 through 1995, UNICEF has allocated US\$25,000,000 to continue these activities.

**(4) Kuwait**

As previously mentioned, Kuwait has provided a loan of US\$45,000,000 for the Project for Procuring Medical Equipment for the Six Hospitals, which is currently being implemented. The hospitals included on that project are five new hospitals in Tartous,

Dyratyya, Kurdaha, Bokamal, and Manbej, and a new cardiosurgery center in Dummar. The bidding for selecting a supplier was held in November, 1992.

Furthermore, Kuwait has been providing the Syrian Arab Republic with funds for infrastructure improvement. For example, a project for the nation's communications network is being carried out as one of the projects funded by Kuwait. This project is to improve the telecommunications system by adding 700,000 new telephone circuits to the existing 500,000 circuits throughout the country. With the implementation of this project, a two-fold increase is expected in the number of emergency calls for ambulances. Therefore, it is important to improve the existing facilities which organize the nation's emergency care system.

**(5) Denmark**

Denmark has provided the Ministry of Health with five 1989-model ambulances. The ministry has distributed two vehicles to Damascus Hospital, one vehicle to the Health Directorate of Damascus Suburb, one vehicle to the Health Directorate of Deirezzor Muhafazat, and one vehicle to the Health Directorate of Lattakia Muhafazat.

**(6) Others**

France and Germany accept trainees and students from the Syrian Arab Republic, and they also send specialists to Syria.

## **2-3 Background and Outline of the Request**

### **2-3-1 Background of the Request**

There are 52 public hospitals, 175 private hospitals, and 613 health centers in the Syrian Arab Republic. Among 52 public hospitals, 28 base hospitals provided in the muhafazats are the pillars of the nation's medical-care structure. Currently, the government is carrying out the Program for Establishing the Emergency Care System to facilitate the provision of appropriate medical services to a million of patients who require emergency care annually. The objectives of this program are:

1. to establish an effective emergency care system which realizes prompt transportation of patients in need of emergency care to appropriate medical facilities;
2. to establish a system which provides appropriate medical services in emergency care at the base hospitals under the Ministry of Health; and
3. to improve the emergency communications network and patient-transportation system of each muhafazat.

There are some obstacles to the accomplishment of this program. The medical equipment and ambulances which are used at the base hospitals under the Ministry of Health are not only short in number but also old. These conditions are rendering the current emergency care systems of these base hospitals unworkable. To clear these obstacles, the Ministry of Health has conceived the Project for the Upgrading Emergency Services. The purpose of this project is to renew the existing fleets of ambulances by introducing new vehicles and to improve the medical equipment necessary for emergency care. In order to make this project financially viable, the Government of the Syrian Republic has requested the Government of Japan for a grant aid assistance. In response to this request, considering that this is the first of such assistance to be carried out for the Syrian Arab Republic, the Japanese Government decided to carry out a project formulation study to survey the health and medical care sector of the Syrian Arab Republic. In accordance with that decision, the Japan International Cooperation Agency (JICA) dispatched a project formulation study team to Syria in November, 1991, and the study was carried out in the field of health and medical care of the Syrian Arab Republic. The background, contents and executing agency of this project and the transition of

assistance received from international organizations, etc. were also studied and confirmed through discussions. Through this project formulation study, it was determined that the Syrian Arab Republic strongly desires the realization of this project as early as possible through assistance received from the Japanese Government. The importance and necessity of this project were also ascertained. This study resulted in a decision by the Japanese Government to carry out a further study for basic designing of this project. JICA sent a basic design study team, headed by Dr. Tamotsu Nakasa, M.D., Department of International Cooperation, National Medical Center Hospital under the Ministry of Health and Welfare, to the Syrian Arab Republic in September, 1992, and a study was conducted on the possibility of Japanese grant aid assistance for this project.

### 2-3-2 Contents of the Request

The contents requested on this project are ambulances and medical equipment, which includes ICU equipment and CT scanners. The following tables describe the contents in their respective categories.

#### (1) Ambulances

Discription	Q'ty
Vehicle without equipped	90
Vehicle with equipped	25
4WD vehicle	2

#### (2) Medical Equipment (ICU equipment and CT scanners)

Discription	Q'ty
CT	7
Resusitation bed	25
Bed side monitor	84
Ventilator (Pulmovent)	21
Ventilator (Electrical)	12
Blood gas analyzer	12
Suction device	84
Oxygen flowmeter & inhaler	84
Defibrillator (Stationary)	25
Defibrillator (Ambulatory)	25
ECG (3 channel)	21
Portable ultrasonic	12
Puls oximeter	42

The following table shows the medical facilities for which each category of the contents requested is procured.

(1) Medical Facilities to Receive ICU Equipment

		Hospital Name		
Damascus city	1	Damascus hospital	2	Ibn-ALNaffis hospital
Damascus suburb	3	Duma Al-Jelahi hospital		
Aleppo	4	Ibn-Rashid hospital	5	Al-Razi hospital
Idlib	6	Al-Watani hospital	7	Ibn Sina hospital
Latakia	8	Al-Watani hospital	9	Jableh hospital
Tartous	10	Al-Watani hospital		
Homs	11	Al-Watani hospital	12	Tadmor hospital
Hama	13	Al-Watani hospital	14	Saramie hospital
Hasakeh	15	Al-Watani hospital	16	Kahmishili hospital
Derrezor	17	Al-Watani hospital	18	Al-Furaat hospital
Lakka	19	Al-Watani hospital		
Dara	20	Al-Watani hospital		
Sweida	21	Al-Watani hospital		
Quneitra	22	Baath health center		

(Total : 22 Facilities)

(2) Distribution of Ambulances

1	Ministry of Health	9	Hama health directorate
2	Damascus health directorate	10	Aleppo health directorate
3	Damascus suburb health directorate	11	Idlib health directorate
4	Dara health directorate	12	Derezor health directorate
5	Sweida health directorate	13	Lakka health directorate
6	Homs health directorate	14	Hasakeh health directorate
7	Tartus health directorate	15	Quneitra health directorate
8	Latakia health directorate		

(Total : 15 Facilities)

(3) Distribution of CT Scanners

	Hospital name			
Damascus	1	Damascus hospital	7	Ibn-Alnaffis hospital
Aleppo	2	Ibn Razi hospital		
Latakia	3	Al-Watani hospital		
Homs	4	Al-Watani hospital		
Hasakeh	5	Al-Kahmishili hospital		
Derezor	6	Al-Watani hospital		

(Total : 7 facilities)

The following table describes the items of ICU equipment requested for each of the medical facilities.

**EQUIPMENTS LIST (PHASE 2)**

Level	Mofahazi Mame	Equipments Name Hospital Name	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
			Bedside Monitor	Respirator (Pulmovent)	Blood gas Analyzor	Suction Apparatus	Respirator with Flowmeter	Defibrillator (Stationary)	ECG (3ch)	Ultrasound Diagnose unit	Pulse Oximeter	CT
1	Damascus	Damascus Hospital	4	1	1	2	4	1	1	1	2	1
1	Allepo	Ibn Roushi Hospital	4	1	1	2	4	1	1	1	2	1
2	Homs	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	1
2	Hama	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	0
2	Hasakeh	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	0
2	Idlib	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	0
2	Lattakia	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	0
2	Tartous	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	0
2	Deir-ez-zor	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	1
2	Dara	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	0
2	Raqqa	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	0
2	Sweida	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	0
2	Damascus	Al-Watani Hospital	4	1	0	2	4	1	1	1	2	0
2	Allepo	Al-Razi Hospital	4	1	0	2	4	1	1	1	2	0
3	Damascus Suburb	Duma Al-Jarahi Hospital	4	1	0	2	4	1	1	1	1	0
3	Hasakeh	Al-Kameshli Hospital	4	1	0	2	4	1	1	1	1	0
3	Deir-ez-zor	Al-Furaat Hospital	4	1	0	2	4	1	1	1	1	0
3	Idlib	Ibn-Sina Hospital	4	1	0	2	4	1	1	1	1	0
3	Lattakia	Jableh Hospital	4	1	0	2	4	1	1	1	1	0
3	Homs	Tadmour Hospital	4	1	0	2	4	1	1	1	1	0
3	Hama	Salameih Hospital	4	1	0	2	4	1	1	1	1	0
3	Quneitra	Baath Health center	0	1	0	1	0	1	1	1	1	0
TOTAL			84	22	2	43	84	22	22	22	36	4





## **2-4 Profiles of the Medical Facilities Included in this Project**

Each of the medical facilities included in this project are described generally in the following.

### **2-4-1 Profile of Damascus City**

#### **(1) Outline**

Damascus is the capital of the Syrian Arab Republic, and it is the largest city in the country with a population of 1,430,000. Naturally, medical facilities are more concentrated here than in any other muhafazat. Some of the facilities are organized under the Ministry of Health, and others under the Ministry of Higher Education. The facilities organized under these ministries are accounted for below. Seven hospitals are under the control of the Ministry of Health, and other seven hospitals are under the Ministry of Higher Education. In addition to those government facilities, there are 25 private hospitals. All together there are a total of 4,231 hospital beds, making the accessibility to hospital beds 339 persons per bed. Most of the general public are treated at the medical facilities under the Ministry of Health.

#### **1. Hospitals under the Ministry of Health**

(The hospitals marked with "@" are equipped with emergency departments.)

Damascus Hospital (general hospital)	558 beds @
Ibn Al Naffis Hospital (general hospital)	170 beds @
Al Wehrawi Hospital (obstetrics and gynecology)	76 beds
Al Eyyon Al Jerahi Hospital (ophthalmology)	85 beds @
Al Kullia Al Jerahi Hospital (kidney disease & surgery)	110 beds
Al Amrad Al Sariah Hospital (communicable disease)	35 beds
Al Hillal Al Ahmmar Hospital (Red Crescent Society, general hospital)	100 beds @

#### **2. Health Centers under the Ministry of Health**

At the central part of the city	39 health centers
In the surrounding of the city	38 health centers

### 3. Hospitals under the Ministry of Higher Education

(The hospitals marked with "@" are equipped with emergency departments.)

Al Mouassat Hospital (general hospital)	733 beds @
Al Atffal Hospital (pediatrics)	324 beds @
Cardiac Surgery Center (cardiac surgery)	50 beds
Dar Al Tawlid Hospital (obstetrics and gynecology)	353 beds
Al Assad University Hospital (general hospital)	300 beds @
Al Amrad Al Jeldiah Hospital (dermatology)	50 beds

The following table shows the annual total numbers of patients treated at all emergency departments of Damascus City for the period from 1987 to 1991.

		Emergency patient	Rate based on 1987	Rate previous year
1987	Outpatient	167,801	100	100
	Inpatient	21,082	100	100
1988	Outpatient	176,288	105.1	105.1
	Inpatient	21,024	99.7	99.7
1989	Outpatient	177,680	105.9	100.8
	Inpatient	29,726	141	141.4
1990	Outpatient	190,982	113.8	107.5
	Inpatient	38,795	184	130.5
1991	Outpatient	227,513	135.6	119.1
	Inpatient	49,946	236.9	128.7

The average percentage increase for the last five years is 8% for the outpatients and 25% for the inpatients, and the number of patients requiring hospitalization has increased more rapidly than the total number of emergency patients.

#### (2) State of Ambulance Stationing

Damascus Hospital has on its premises an emergency communications center and a garage, where ambulances are stationed for Damascus City's emergency use. With these facilities together with the hospital's emergency department, an around-the-clock emergency care service is operated to cover not only Damascus City but also the area along the highway which reaches Homs City. The hospital has 15 ambulances. However, only nine vehicles are currently mobilized because the other six are under repair.

### **1) Communications System**

Emergency calls (phone number: 90) are received through four ordinary telephone lines. In addition to these telephone lines, this emergency communications center is connected to the police station and fire department of the city in direct communication. Furthermore, the center has a radio station, which can reach anywhere within a communication range of 1 km with a transmission power of 50 watt.

However, this center has only one piece of vehicle-mounted wireless equipment. This wireless equipment has been modified to be removable so that it is arranged to be mounted in the stand-by vehicle of the day.

### **2) Staff Arrangement**

A system of 24-hour ambulance mobilization is made possible by always keeping three stand-by ambulances ready for mobilization and by arranging the working days of 12 drivers in a rotation of one workday followed by two days off. Doctors are also kept ready for emergency mobilization while working on their routines. Three doctors are available for emergency mobilization for the time period between 8 a.m. ~ 2 p.m. They are replaced by other three doctors for the period between 2 p.m. ~ 8 p.m. Then, another doctor takes the responsibility for the period between 8 p.m. ~ 8 a.m. In addition, four nurses are assigned to the task for the time periods between 8 a.m. ~ 2 p.m. and 2 p.m. ~ 8 p.m. Then, three nurses are assigned for the period between 8 p.m. ~ 8 a.m. The staff members for communication are also arranged in a triple shift. Three groups, each having three staffers, work in turn for the periods between 8 a.m. ~ 2 p.m., 2 p.m. ~ 8 p.m., and 8 p.m. ~ 8 a.m.

### **3) Checkup and Repair**

The garage of Damascus Hospital has a workshop, and ambulances are taken care of for their daily maintenance, oil change, tire replacement, repainting, etc. at the workshop. However, repairs on the vehicles are carried out by mechanics at the private garage which has a vehicle-maintenance contract with the Health Directorate of Damascus City.

### (3) Present State of Emergency Departments

#### 1) Damascus Hospital

##### a. Profile

**Specialties** : surgery ( general surgery, cerebro surgery, orthopedic surgery, plastic surgery, thoracic surgery, urology, otorhinolaryngology, and ophthalmology ), internal medicine, pediatrics, radiology, anesthesiology, and physiotherapy

**Number of Beds** : 558 beds

Damascus Hospital is the largest (558 beds) and best-equipped of all the hospitals under the control of the Ministry of Health. This hospital is referred by medical facilities all over the country, so it receives patients from all provinces.

The following table accounts for the personnel arrangement of this hospital in 1992.

Doctor			Resident			X-ray technician
Medical	Surgical	Others	Medical	Surgical	Others	
20	40	43	101	142	132	35

Laboratory technician	Nurse	Clark	Driver	Emergency Clew	Others
109	400	102	17	34	197

The following table lists the hospital's main items of medical equipment.

Major equipments in operation room	Q'ty	Country of manufactured	Procured year	Comment
Anesthesia apparatus	15	Holland, UK	Before 1980	All operative
Operation table	17	UK, USA	Very old	Occasionally out of order
Shadowless Lamp	17	USA, USSR, Europe	15 units are very old	Operative
Electro surgical unit	18	Germany, UK, France	Old	10 units operative
Aspirator	8	Europe	Very old	Some operative
Sterilizer	9	Germany, France	Old	7 units operative

Major equipment of ICU	Q'ty	Country of manufactured	Procured year	Comment
Ventilator	3	Switzerland, USA	1991(1unit)	2units faulty
Defibrillator	2	USA	Old	Out of order
Bedside monitor	2	USA	Old	Out of order
Blood gas analyzer	1	Denmark	1988	Operative
Electrolyte analyzer	1	Germany	1988	Operative

In addition to ICU's provided for the emergency department, this hospital has CCU's and NICU's and more ICU's at other departments of the hospital. These life supporting units consist of bedside monitors, defibrillators, respirators, suction apparatus, sphygmomanometers, etc. All these items of equipment are relatively well maintained. Only, some items are left unrepaired as they are too old to be supplied with replacement parts. Many items of the medical equipment used in this hospital are more than 10 years old, yet most of these items are still working irrespective of their aging. This high-quality maintenance work is provided for the equipment through a medical equipment maintenance system. In this system, highly competent engineers are dispatched to the hospital not only from the Maintenance Center of the Ministry of Health but also from suppliers of medical equipment in compliance with maintenance agreements, which are arranged to maintain such major items of medical equipment as X-ray apparatus.

#### **b. Emergency Department**

This hospital has an emergency department, which has been renovated recently (renovation work completed in 1992). This emergency department has a reception, consulting rooms, examination rooms, X-ray rooms, treatment rooms, ICU's, etc. This department is currently receiving, on the average, 600 patients a day, and this number is evermore increasing. Even though the building of the emergency department has been expanded to admit more patients, the provision of quality emergency care services is still hampered by a shortage of medical equipment. Since power failures happen very frequently in the Syrian Arab Republic, this department is equipped with power generators to power medical equipment necessary for operations as well as for lighting during the blackout.

The following table lists main items of medical equipment installed in the emergency department.

Major equipment	Q'ty	Country	Procured year	Comment
Anesthesia apparatus	1	Holland	1991	Operative
Operation table	1	Italy	1991	Operative
Shadowless lamp	2	Poland	1991	Operative
EKG	1	Japan	1991	Operative
Defibrillator	1	Japan	1991	Operative
X-ray apparatus	2	USA	1991&1992	Operative
Auto developer	1	Korea	1991	Operative
Electrolyte analyzer	1	Germany	1991	Operative

The following table shows the annual numbers of patients treated at this emergency department for the 5 year period from 1987 to 1991.

1987		1988		1989		1990		1991	
Out-Patient	In-Patient	Out-Patient	In-Patient	Out-Patient	In-Patient	Out-Patient	In-Patient	Out-Patient	In-Patient
82,433	15,940	86,570	15,856	85,936	24,619	94,951	34,115	100,774	45,646

## 2) Ibn Al Naffis Hospital

### a. Profile

Specialties : general hospital (mainly internal medicine)

Number of Beds : 170 beds

Ibn Al Naffis Hospital is located in the southern hilly area of Damascus, where both Al Eyyon Al Jerahi Hospital (specialized in ophthalmology) and Al Kullia Al Jerahi Hospital (specialized in nephrology) are located on the same premises, making a hospital complex. Ibn Al Naffis Hospital was originally a specialized hospital in internal medicine. However, it has been renovated and promoted to a general hospital.

The following table accounts for the personnel arrangement of this hospital in 1992.

Doctor			Resident			X-ray technician
Medical	Surgical	Others	Medical	Surgical	Others	
23	21	3	36	8	-	19

Laboratory technician	Nurse	Clark	Driver	Emergency staff	Others
41	97	18	3	1	92

The laboratory and X-ray rooms of this hospital are equipped with minimum medical equipment necessary for examination. The ICU's installed in the main building of the hospital are equipped mostly with defibrillators. Besides being applied for their designed purpose of defibrillation, the monitoring features of these defibrillators are utilized as substitutions for bedside monitors. The hospital has only one functioning ECG apparatus, which is equipped only with one channel for ECG monitoring.

The following table lists this hospital's main items of medical equipment.

Major equipment of operation room	Q'ty	Country	Procured year	Comment
Sterilizer	4	-	-	3units operative
Ultrasonic cleaner	2	USA	-	operative
Aspirator	4	Japan, Germany	-	Operative
Anesthesia apparatus	3	Germany, UK	-	Operative
Aspirator	8	Europe	-	Some operative
Ventilator	1	-	-	Operative
Operation table	4	Japan, Germany	-	Operative
Shadowless lamp	5	Germany, Poland	-	Operative
Electro surgical unit	2	Japan	-	Operative

Major equipment of ICU	Q'ty	Country	Procured year	Comment
ECG	2	Japan, UK	-	1unit out of order
Defibrillator	1	Japan	-	Operative
Aspirator	1	Japan	-	Operative



## b. Emergency Department

The emergency department of this hospital is arranged only with diagnosis and treatment rooms and doesn't have much medical equipment. At present, the hospital is carrying out a building expansion plan for the emergency department. This construction work started in November, 1992, and its completion is scheduled in April, 1993.

The following table lists main items of medical equipment installed in the emergency department.

Major equipment	Q'ty	Country	Procured year	Comment
Aspirator	1	Japan		Operative

The following table shows the annual numbers of patients treated at the emergency department of Ibn Al Naffis Hospital for the 5 year period from 1987 to 1991.

1987		1988		1989		1990		1991	
Out-patient	In-patient	Out-patient	In-patient	Out-patient	In-patient	Out-patient	In-patient	Out-patient	In-patient
38,945	1,138	41,582	1,146	41,833	953	39,200	694	69,393	655

### 2-4-2 Profile of Damascus Suburb

#### (1) Outline

Damascus Suburb, the administrative region which covers the suburbs of Damascus, has a population of 1,300,000. There are five hospitals under the Ministry of Health, as listed below, and 73 health centers. There are no hospitals under the Ministry of Higher Education in this region.

The Health Directorate in charge of these hospitals and health centers itself resides in Damascus City. Thus, this Health Directorate carries out medical care activities in cooperation with the Health Directorate of Damascus City. Not only most of the patients suffering severe cases are sent from hospitals in the suburbs to hospitals in the city, but also people living in the suburbs prefer to visit hospitals in the city. The reason is that hospitals in the city have specialized doctors as well as better medical equipment, and the commuting doesn't take much time, only 30 minutes by car.

1. Hospitals under the Ministry of Health

(The hospitals marked with "@" are equipped with emergency departments.)

Yabroud Hospital (general hospital)	55 beds	@
Ibn Sina Hospital (psychiatry)	721 beds	
Doumma Hospital (general hospital)	160 beds	@
Ibn Al Walid Hospital (Leprosy)	60 beds	
Al Kalamoun Hospital (general hospital)	50 beds	@

2. Health Centers under the Ministry of Health

In the urban areas of Damascus Suburb	12 health centers
In the surrounding areas of Damascus Suburb	61 health centers

The following table shows the annual total numbers of inpatients and outpatients treated at all emergency departments of Damascus Suburb for the period from 1987 to 1991.

		Emergency patient	Rate based on 1987	Rate previous year
1987	Outpatient	41,526	100	100
	Inpatient	5,639	100	100
1988	Outpatient	33,085	79.6	79.7
	Inpatient	4,375	77.6	77.6
1989	Outpatient	15,416	37.12	46.6
	Inpatient	4,444	78.8	101.6
1990	Outpatient	39,615	95.4	257
	Inpatient	4,527	80.3	101.9
1991	Outpatient	45,219	108.9	114.1
	Inpatient	5,029	89.2	111

The number of emergency patients has been increasing in the last five years, excluding the figure for 1989's outpatients, which is extremely low. The increase is not very great. The reason is probably that emergency patients are transferred often to hospitals of Damascus City rather than treated at hospitals of Damascus Suburb.

## **(2) State of Ambulance Stationing**

Ambulances are maintained at a garage which is directly under the control of the Ministry of Health. Ambulance service for the administrative region of Damascus Suburb is managed by the Health Directorate of Damascus Suburb, whose office resides in Damascus City.

Since most of the vehicles are more than ten years old, carrying out their maintenance is not easy. They experience mechanical problems repeatedly, costing a great deal of maintenance expenses as well as impairing the ambulance mobilization service. Repairs are also not easily carried out since it is impossible to find replacement parts for old vehicles since manufacturers do not keep parts for their old models. The ambulance mobilization is organized in such a way that three ambulances are always kept ready at the garage and dispatched to transport patients to hospitals of higher degrees of medical care. For example, patients are moved from health centers which are scattered in rural areas to Doumma Hospital and, if necessary, even to Damascus Hospital.

### **1) Communications System**

In addition to a telephone line, through which emergency calls (phone number: 90) are received, the emergency communications center of the Health Directorate of Damascus Suburb has direct telephone lines which are connected to the police station and fire department of the city. However, this center does not have means of wireless communication.

### **2) Staff Arrangement**

A system of 24-hour ambulance mobilization is maintained by always keeping three ambulances ready for mobilization and by arranging 12 drivers in a rotation of one workday followed by two days off. The staff members for communication are arranged in a triple shift. Three groups, each having three staffers, work in turn for the periods between 8 a.m. ~ 2 p.m., 2 p.m. ~ 8 p.m., and 8 p.m. ~ 8 a.m.

### **3) Checkup and Repair**

The garage of the Ministry of Health has a workshop, and ambulances are taken care of for daily maintenance, oil change, tire replacement, repainting, and simple repair work. However, complicated repairs on the vehicles are carried out by mechanics at the

private garage which has a vehicle-maintenance agreement with the Health Directorate of Damascus Suburb.

**(3) Present State of Emergency Department**

**1) Doumma Hospital**

**a. Profile**

Specialties :general hospital (general surgery, urology, internal medicine, orthopedic surgery, anesthesiology, pediatrics, obstetrics, ophthalmology, otorhinology, radiology

Number of Beds :160 beds

There are three hospitals which are equipped with emergency departments in Damascus Suburb: Yabroud Hospital, Al Kalamoun Hospital, and Doumma Hospital. Of these three, Doumma Hospital has the largest emergency department.

The following table accounts for the personnel arrangement of Doumma Hospital in 1992.

Doctor			Resident			X-ray technician
Medical	Surgical	Others	Medical	Surgical	Others	
8	20	-	21	18	-	29

Laboratory technician	Nurse	Clark	Driver	Emergency staff	Others
36	56	11	5	-	84

The following table lists the hospital's main items of medical equipment. The ICU room of this hospital is equipped with five beds but only with one bedside monitor and three defibrillators. The operation rooms and X-ray rooms are equipped with only basic items of medical equipment, and most of them are quite old. This hospital has power generators, and they are operated for lighting during the scheduled power cut-outs, which occur several times a day. In October, 1992, when the field survey was conducted, the hospital was undergoing a process of renovation, and the examination room next to the emergency department was under construction.

Major equipment	Q'ty	Country	Procured year	Comment
Aspirator	6	Sweden, Germany	1978	Operative
Audiometer	3	UK	1977	Operative
ECG	5	UK	1980	Operative
Sterilizer	3	France	1970	Operative
Anesthesia apparatus	3	Germany	1971	Operative
Ventilator	7	Germany	1981	Operative
X-ray apparatus	2	Germany	1970 1990	Operative
Shadowless lamp	6	France	1965 1971	Operative
Operation table	7	Germany, France	1968 1972	Operative
ECG	1	Japan	1986	Operative
Portable ultrasonic diagnostic apparatus	1	Japan	1986	Operative

#### b. Emergency Department

The emergency department of this hospital is arranged with a reception counter, diagnosis and treatment rooms, and emergency rooms. The facilities of this emergency department are ill equipped, so this department uses operation theaters, examination rooms, X-ray rooms, and ICU's of other departments of the hospital. Emergency patients who are not treatable at this hospital are transferred to hospitals in the city, e.g., to Damascus Hospital. When the field survey was conducted, the hospital was under renovation, and the completion of this renovation work was scheduled at the end of 1992.

The following table shows the annual numbers of inpatients and outpatients treated at the emergency department of Doumma Hospital for the 5 year period from 1987 to 1991.

1987		1988		1989		1990		1991	
Out-Patient	In-Patient	Out-Patient	In-Patient	Out-Patient	In-Patient	Out-Patient	In-Patient	Out-Patient	In-Patient
26,795	2,975	22,561	2,332	6,040	1,853	29,609	2,173	34,222	2,543

### 2-4-3 Profile of Aleppo Muhafazat

#### (1) Outline

The Muhafazat of Aleppo has a population of approx. 2,580,000, and it is the second largest city of the Syrian Arab Republic, Aleppo. Thus, in the Muhafazat of Aleppo, there are five hospitals under the Ministry of Health, two under the Ministry of Higher Education, one under the Ministry of Social Affairs, and 48 private hospitals. These hospitals together have a total of 3,159 hospital beds, which indicates a hospital accessibility of 819 persons per hospital bed. However, there are great regional differences within this muhafazat in the distribution of these medical facilities. There are some towns and villages which do not have any medical facilities.

#### 1. Hospitals under the Ministry of Health

(The hospitals marked with "@" are equipped with emergency departments.)

Ibn Khaldoun Hospital (psychiatry)	460 beds @
Ibn Roushd Hospital (general hospital)	144 beds
Zahi Azrak Hospital (infectious disease)	118 beds
Dar Al Tawlid Hospital (obstetrics and gynecology)	80 beds @
Al Razi Hospital (surgery)	180 beds @

#### 2. Health Centers under the Ministry of Health

In the urban areas of Aleppo	28 health centers
In the surrounding areas of Aleppo	47 health centers

#### 3. Hospitals under the Ministry of Higher Education

Halab Al Kabir Hospital (general hospital)	583 beds @
Al Kindi Hospital (general hospital)	345 beds @

#### 4. Hospitals under the Ministry of Social Affairs

Abd Al Jabbar Shekhani Hospital (general hospital)	99 beds
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The following table shows the annual total numbers of inpatients and outpatients treated at all emergency departments of Aleppo Muhafazat for the period from 1987 to 1991.

		Emergency patient	Rate based on 1987	Rate previous year
1987	Outpatient	61,593	100	100
	Inpatient	28,779	100	100
1988	Outpatient	74,519	121	121
	Inpatient	35,412	123	123
1989	Outpatient	93,418	151.7	125.4
	Inpatient	39,667	137.8	112
1990	Outpatient	104,489	169.6	111.9
	Inpatient	31,158	108.3	78.5
1991	Outpatient	114,551	186	109.6
	Inpatient	32,032	111.3	102.8

The number of emergency patients has increased by average rate of 13% annually during these five years.

## (2) State of Ambulance Stationing

The Health Directorate of Aleppo manages driver's salaries as well as vehicle maintenance expenses for all its ambulances. 22 ambulances are kept for mobilization at the garage of the Health Directorate. However, many vehicles are old, and some are unrepairable. Only 15 of them are really mobilizable at present. For the City of Aleppo, Al Razi Hospital manages the mobilization of ambulances. This hospital has a driver's office, which is equipped with three telephone circuits, in the parking lot of the hospital. Ambulances are arranged in three groups, each group consisting of three vehicles, and are ready for 24-hour mobilization. When an ambulance is call for, this hospital responds first. If the hospital cannot meet the request, then an ambulance is sent from the garage of the Health Directorate. In the system of ambulance mobilization arranged for the countryside, one ambulance is stationed for each of the 47 health centers of the muhafazat, and the maintenance work of these vehicles is carried out at the garage. However, because most vehicles used for ambulances are old and in bad conditions, it is impossible to secure a sufficient number of vehicles in good condition for the system. In

reality, a few ambulances after being repaired are routed to visit these health centers periodically.

### **1) Communications System**

In the City of Aleppo, emergency calls for ambulances are received by ambulance drivers on duty. Three telephone lines are installed at the ambulance driver's office, which is located in the parking lot of Al Razi Hospital. On the other hand, telephone communication is not reliable in the rural areas. Therefore, requests for ambulances are relayed through the police station to the garage of the Health Directorate, which is located in the city. However, emergency patients in the rural areas are usually transported to hospitals in the city by ambulances which are in circulation visiting rural health centers on their scheduled routes.

### **2) Staff Arrangement**

A system of 24-hour ambulance mobilization is established with 3 stand-by ambulances and 12 drivers. These drivers are assigned to the task in a rotation of one workday followed by two days off to keep a sufficient number of drivers always ready for ambulance mobilization.

### **3) Checkup and Repair**

The garage of the Health Directorate takes care of its ambulances for daily checkups and simple maintenance procedures such as oil change. However, repairs which cannot be dealt with at the garage are carried out by mechanics at private garages.

## **(3) Present State of Emergency Departments**

### **1) Al Razi Hospital**

#### **a. Profile**

Specialties :surgery

Number of Beds :180 beds