BASIC DESIGN STUDY REPORT ON THE PROJECT FOR IMPROVEMENT OF MEDICAL EQUIPMENT IN THE MONGOLIAN PEOPLE'S REPUBLIC

AUGUST, 1990

JAPAN INTERNATIONAL COOPERATION AGENCY

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PREFACE

In response to a request from the government of the Mongolian People's Republic, the Government of Japan has decided to conduct a Basic Design Study on the Project for Improvement of Medical Equipment and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Mongolia a Survey Team headed by Mr. Yasuo Saito, Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs, from March 25th to April 17th, 1990.

The team exchanged views with the officials concerned of the Government of Mongolia and conducted a field survey. After the team returned to Japan, further studies were made. Then, a mission was sent to Mongolia in order to discuss the draft report and the present report was prepared.

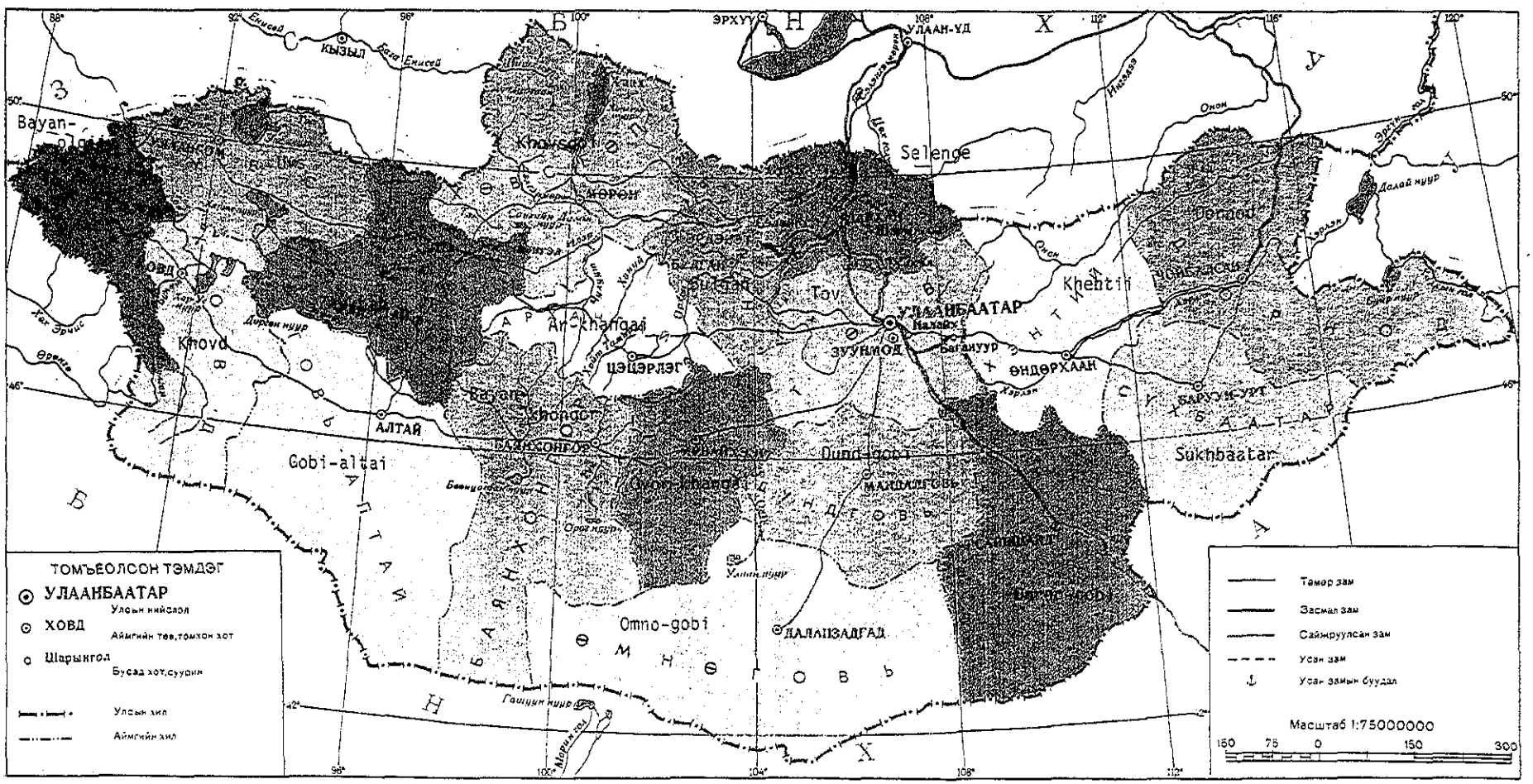
I hope that this report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Mongolian People's Republic for their close cooperation extended to the teams.

August, 1990

Kensuke Yanagiya
President
Japan International Cooperation Agency

MAP OF THE MONGOLIAN PEOPLE'S REPUBLIC



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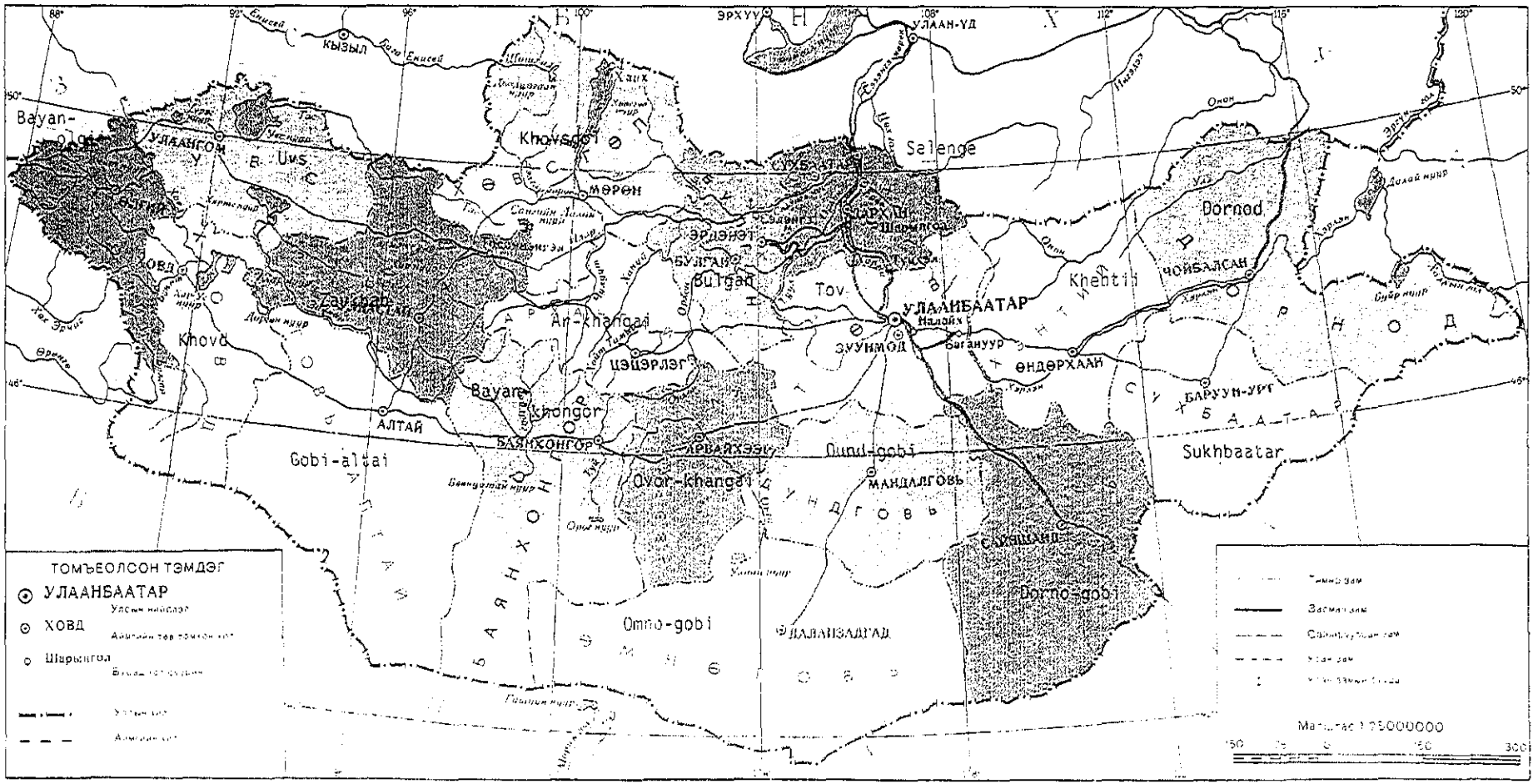

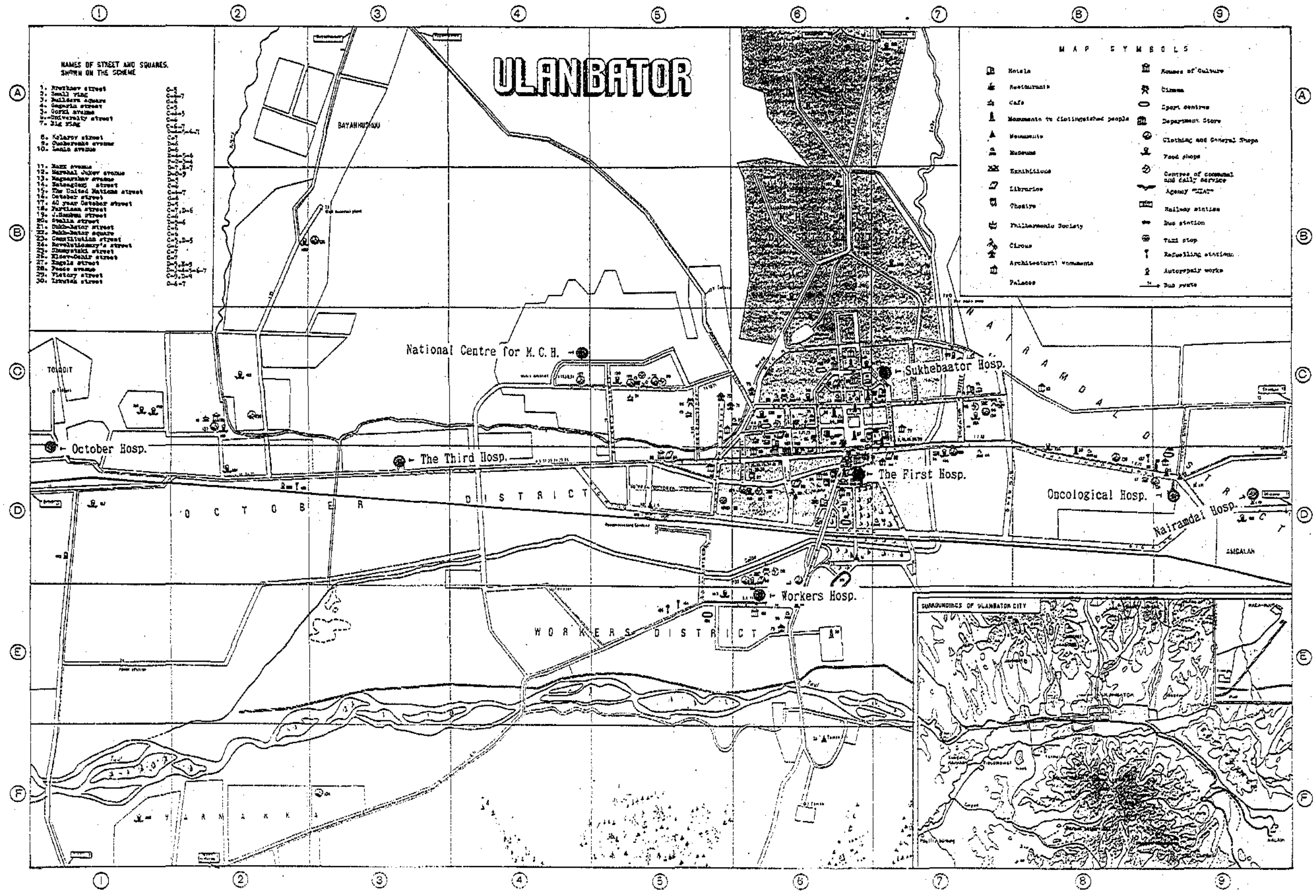
ULANBATOR
NAMES OF STREET AND SQUARES. SHOWN ON THE SCHEME
MAP SYMBOLS
Hotels
Restaurants
Cafe
Monuments to distinguished people
Monuments
Museums
Exhibitions
Libraries
Theatre
Philharmonic Society
Circus
Architectural Monuments
Palaces
Houses of Culture
Cinema
Sport centres
Department Store
Clothing and General Shops
Food shops
Centres of communal and daily service
Railway station
Bus station
Taxi stop
Refuelling stations
Autorepair works
Bus route
TOLGOIT
BAYANHOSHUU
National Centre for M.C.H.
Sukhebaator Hosp.
October Hosp.
The Third Hosp.
The First Hosp.
Oncological Hosp.
Nairamdal Hosp.
Workers Hosp.
OCTOBER DISTRICT
NAIRAMDAL DISTRICT
WORKERS DISTRICT
YARMAKKA
AMGALAN
SURROUNDINGS OF ULANBATOR CITY
A B C D E F
1 2 3 4 5 6 7 8 9

SUMMARY

The Mongolian People's Republic is located approximately in the middle of the eastern part of the Asian Continent. It is an inland country, surrounded by the Soviet Union on the north and the People's Republic of China on the south, is approximately 1500 meters above sea level and forms a part of the Great Steppes of the South-Western sector of the Asian Continent. It has an area of 1,566,500 km² (4 times larger than that of Japan) but only a very small population of 2,043,400 persons (1/60th of the Japanese population).

In June 1921, Mongolia declared its independence from China and established a republican form of government followed by the formal recognition of the country's name as the Mongolian People's Republic in 1924. After World War II, Mongolia began to actively tackle the problems of developing the country by formulating basic policies and projects based on the country's 5-year plans, which have been continually reassessed and revised when necessary, and at present it is pursuing its 8th consecutive 5-year plan. In the execution of the present 5-year plan, related to the basic development policies in the health and medical sector, serious efforts in the realization of the following 6 items are being made.

(1) Reinforcement of preventative measures and activities as well as strengthening of the health care registration system.
(2) Amplification of medical care and preventive measures.
(3) Fulfillment of child and maternal medical care measures.
(4) Normalization of personnel in medical sector.
(5) Efficient application of scientific technology.
(6) Improvement of the pharmaceuticals supply system.

At the Mongolian People's Revolutionary Party's 19th General Meeting in 1986, the party approved amplifying the specialization of medical care, raising the level of medical and diagnostic services as objective to realize the basic policies of the Eighth 5-year Plan. In order to realize these objectives, the plan for construction of the National Diagnosis Centre was formulated, and a request was submitted to the Government of Japan for grant aid on this Project.

The Government of Japan responded to this request, and the Japan International Cooperation Agency (JICA) dispatched a Preliminary Study Team to confirm the details of the request and to study the background and the implementation organization of the Project in October 1989. The conclusion of this survey was that the plan to construct a single diagnosis centre was unjustified due to the geographical circumstances involved in examining, diagnosing and providing clinical service for the numerous scattered groups with a nomadic style of living throughout the vast area of the country. Moreover, even if such a diagnosis centre were equipped with highly efficient testing, clinical, and diagnostic and treatment equipment, and even granted that it was a well functioning referral hospital able to effectively raise the level of early diagnosis, there is still the problem that the early screening operation ability of the overall Mongolian medical system is not enough and would keep the diagnosis centre from obtaining the expected level of performance. Therefore, in consideration of the general circumstances, the Government of the Mongolian People's Republic and the Preliminary Study Team have come to an understanding mentioned below.

Both parties have agreed that the National Clinical Centre would be an unjustifiable project and, consequently, an alternate proposal which is thought to be much more beneficial to the people's needs, is in supplying medical equipment that would actually raise the level of the diagnosis and medical treatment in the General Hospitals, Specialized Hospitals, Aimak General Hospitals, and Somon Health Institutions. To this end, the Government of the Mongolian People's Republic has revised their request for grant aid into this new alternate proposal.

The Government of Japan, after receipt of the newly revised proposal, decided to set up a Basic Design Study on this Project. To this end, JICA dispatched the Basic Design Study Team to the site for 22 days from March 26 to April 16, 1990. The team studied and surveyed the background of the Project and the context of the request, and held discussions with the Mongolian side. After returning to Japan, the results of the survey and the gathered information were analyzed by the team, which then drafted the Basic Design of this Project. The contents of the Basic Design were compiled in the Draft Final Report and explained to the Mongolian side by the team (explanation of the draft final report) dispatched for 15 days from July 23 to August 6, 1990.

The Mongolian People's Republic has set up a medical care system in line with its administrative structure, and also in accordance with the life style of the inhabitants of its metropolitan and provincial areas. The metropolitan administrative zones, KHOTO, are made up of RAION (districts), and KHURUU (subordinate organization of RAION), and coinciding with the administrative zones, District General Hospitals, and KHESEG or KHURUU Clinics were established to ensure medical care for its inhabitants. On the other hand, the provincial areas are being split into two separate administrative structures Aimak (prefectures) and Somon (subordinate organization of Aimak). In line with this administrative demarcation, Aimak General Hospitals and their Somon Joint Health Institutions and Somon Health Institutions shall be established in order to develop a provincial medical care network covering the nomadic population. Moreover, the two general hospitals in the city of Ulan-Bator (Central Republican Clinical Hospital and Ulan-Bator City Central Clinical Hospital) and the two specialized hospital (Republican Oncological Research Centre and National Centre for M.C.H.) to be positioned and function as the backup General Medical Organization in the medical system for the nation as a whole.

The present medical system was set up after Mongolia became an independent state, and has been built up to the present state over the past 60 years or so. Every medical care facility is operated basically on yearly plan, which is a distinctive feature of the Mongolian People's Republic. The situation being such, there are cases where the medical care facilities that were planned and set up during the early period of this system have become dilapidated. In addition, the medical equipment installed or presently being used which is from 15 to 20 years old, and most of which is in satisfactory working condition as early stage diagnosis equipment. Also, many of these newly constructed or rebuilt facilities have made little progress in their equipment, supplies control and maintenance at the present time.

In view this background, a drastic primary health care improvement plan is urgently required, placing emphasis on medical equipment and supplies. In order to provide the basic medical equipment which can play important role in the early stages of medical care in the metropolitan medical care centres and the District General Hospitals, Aimak General Hospitals, Somon Joint Health Institutions and Somon Health Institutions, the Mongolian People's Republic has requested the grant aid of the Government of Japan. The following is the synopsis of the request.

(1) Project Sites for the Improvement of Medical Equipment

1) Central Republican Clinical Hospital (The First Hospital)
2) National Centre for M.C.H
3) Republican Oncological Research Centre (Oncological Centre)
4) Ulan-Bator City Central Clinical Hospital (The Third Hospital)
5) District General Hospitals
   a. General Hospital of October District
   b. General Hospital of Worker's District
   c. General Hospital of Sukhebaatar District
   d. General Hospital of Nairamdal District
6) Darkhan City General Hospital
7) Aimak General Hospitals (6 hospitals)
8) Somon Health Institutions and Somon Joint Health Institutions (40 institutions)
   a. Somon Health Institutions (8 institutions)
   b. Somon Joint Health Institutions (32 institutions)

(2) Contents of Medical Equipment for the Project

1) Endoscope Equipment
2) Ultrasound Diagnostic Equipment
3) Equipment for Surgical, Anesthetic and Recovery Room
4) Equipment for Clinical Laboratory
5) Physical Function Test Equipment
6) Equipment for ENT, Dental and Gynecology
7) Ophthalmic Equipment
8) X-ray Equipment
9) Urology Equipment
10) Equipment for "Maintenance Centre for Medical Equipment"

Reflecting the Mongolian People's basic princiles in developing the field of health care, the appraisal of the Basic Design has been carrined out based on the information gathered from each of Project sites. As a result of study and examinations, the equipment recommended for this project is mostly similar to the one already in use. It is also observed that various institutions that require these equipment and supplies have competent doctors to use this equipment. Facilities are also available for its maintenance and repair in its Maintenance Centre which is the central organization for this purpose and pos-

sesses adequate maintenance personnel who are dispatched to where they are needed. Therefore no problems are anticipated concerning maintenance and operations.

The basic policy of this Project is as follows;

(1) Back up of Primary Health Care with primary health facilities (somon Health Institutions).
(2) Improvement of Provincial referral (Somon Joint Health Institutions, Aimak General Hospitals) diagnosis and treatment.
(3) Improvement of effective urban referral system (District General Hospitals).
(4) Improvement of diagnosis and treatment facilities for patients with special diseases from throughout the country by improving centre functions (2nd and 3rd level medical treatment).
(5) Suggestion of a plan for future modernization and contribution to peripheral improvement plans as a means to modernize medical care.

Paying full attention to the above mentioned considerations, the Basic Design of this Project was formulated as outlined below.

(1) Endoscope Equipment

1)	The First Hospital	.. Gastrointestinal Fiberscope...etc.
2)	National Centre for M.C.H.	.. Gastrointestinal Fiberscope
3)	Oncological Centre	.. Gastrointestinal Fiberscope
4)	District General Hospitals	.. Gastrointestinal Fiberscope
5)	Aimak General Hospital	.. Gastrointestinal Fiberscope

(2) Ultrasound Diagnostic Equipment

1)	The First Hospital	.. Diagnostic Ultrasound Appratus, Portable (with Probes)
2)	National Centre for M.C.H.	.. Diagnostic Ultrasound Appratus for Ostetrics & Gynecology (with Probes)
3)	Oncological Centre	.. Diagnostic Ultrasound Appratus, Portable, (with Probes)

4) 6 Aimak General Hospitals .. Diagnostic Ultrasound Appratus, Portable (with Probes)

(3) Equipment for Surgical, Anesthetic and Recovery Rooms

1) The First Hospital .. Surgical Operating Instrument Set
Operating Table
Respirator ...etc.

2) The Third Hospital .. Surgical Operating Instrument Set
Operating Table
Respirator ...etc.

3) National Centre for M.C.H. .. Pediatrics Surgery Instrument Set
Cesarean Incision Instrument Set
Dialysis Equipment for children
...etc

4) Oncological Centre .. Surgical Operating Instrument Set
Operating Table
Respirator ...etc.

5) District General Hospitals .. General Surgery Operating Instrument Set ...etc.

(4) Equipment for Clinical Laboratory

1) The First Hospital .. Clinical Spectrophotometer
Auto Blood Cell Counter ...etc.

2) The Third Hospital .. The same as the above

3) National Centre for M.C.H. .. The same as the above

4) Oncological Centre .. The same as the above

5) District General Hospital .. Hemoglobin Meter
Colorimater ...etc.

6) Darkhan and Aimak General Hospitals .. Hemoglobin Meter, Hemacytometer ...etc.

(5) Physical Function Test Equipment

1) The First Hospital .. Electrocardiograph 3-ch...etc.
...etc.

2) The Third Hospital .. Electrocardiograph 6-ch...etc.

3) National Centre for M.C.H. .. Ergometer ...etc.

4) Oncological Centre .. Auto Spirometry Apparatus

5) Darkhan and Aimak General Hospitals .. The same as the above

(6) Equipment for Ear, Nose and Throat

1)	The First Hospital	.. Standard E.N.T. Treatment Instrument for Outpatients Surgical Instruments for E.N.T.
2)	The Third Hospital	.. The same as the above
3)	National Centre for M.C.H.	.. The same as the above
4)	District General Hospitals	.. Standard E.N.T Treatment Instrument for Outpatients
5)	Darkhan and Aimak General Hospitals	.. The same as the above
6)	Somon Health Institutions and Somon Joint Health Institutions	.. Standard E.N.T. Treatment instruments for Outpatients

(7) Ophthalmic Equipment

1)	The First Hospital	.. Ophthalmoscope Microsurgical Set for Cataracts, Glaucoma and Crystalline Lenses .....etc.
2)	The Third Hospital	.. Slit Lamp, Ophthalmoscope ...etc.
3)	National Centre for M.C.H.	.. Slit Lamp, Ophthalmoscope ...etc.
4)	District General Hospitals	.. Slit Lamp ...etc.
5)	Darkhan and Aimak General Hospitals	.. Ophthalmoscope
6)	Somon Health Institutions and Somon Joint Health Institutions	.. The same as the above

(8) Dental Equipment

1)	Laboratory Micromotor	.. The Third Hospital, 4 District Hospitals and 6 Aimak General Hospitals
2)	Dental Treatment Instrument Set	.. The First Hospital, The Third Hospital, National Center for M.C.H, 4 District Hospitals, Darkhan and Aimak General Hospital

(9) X-ray Equipment

1)	The First Hospital	.. Diagnostic X-ray TV System

2) The Third Hospital .. Diagnostic X-ray TV System
3) National Centre for M.C.H. .. The same as the above
4) Oncological Centre .. The same as the above
5) Darkhan and Aimak General Hospitals .. The same as the above

(10) Gynecological Equipment
1) National Centre for M.C.H. .. Salpingoplasty Set ...etc.
2) Darkhan and Aimak General Hospital .. Vacuum Extractor
3) Somon Health Institutions and Somon Joint Health Institutions .. The same as the above

(11) Urological equipment
1) The First Hospital .. Cystofiberscope Set & Cold Light ...etc.

(12) Equipment for Maintenance Centre
1) Maintenance Centre .. X-ray Voltage Current Meter Memory Oscilloscope ...etc.

If this Project is implemented under grant aid from the Japanese Government, the Japanese side will be responsible for providing consulting services, cost of equipment procurement, transprotation to each Project site located in Ulan-Bator, supervision for equipment installation, test running and training; and the Mongolian side will be responsible for securing the cost of the equipment installation work and transportation to each Project site located other than in Ulan-Bator.

The first-Phase plan Mongalian side : 0.14 million yen

The second-Phase plan Mongolian side : 8.39 million yen

The implementation period required for the execution of this Project is estimated to be 8 months or so after the Supply Contract is signed with the supplier. And the route to be taken to transport the medical equipment from a Japanese port to Ulan-Bator in the Mongolian People's Republic shall be the usual route of commerce between both countries. (i.e., via Nakhodoka port and then using the Siberian train would be the best transportation route.)

The contents of the Project for the First Phase and the Second Phase have clearly been spelled out; that is, the Project will contribute to balanced operations at the central level and down to the Somon level. The First Phase will aim at fully equipping the medical facilities in the city of Ulan-Bator and raising the level of the referral hospitals so that they also will be in a position to be equipped. The Second Phase aims to fully equip the medical facilities in the city of Darkhan, and in the Aimak as well as its subordinate organizations facilitie and also raise the level of operations for the Provincial Hospitals by improving their screening ability for early diagnosis to enable them to fully collaborate with the referral hospitals.

In the implementation of this Project in the Mongolian People's Republic, the Ministry of Trade & Cooperation shall be the prime contractor for purchase of the equipment and supplies, and the MHSS shall be the agency responsible for taking over all the equipment.

In implementing this Project it is the responsibility of the Japanese side to install the main items of equipment, to do the running tests and to provide guidance. Competent Japanese supervisors shall manage the equipment until the Mongolian engineers are able to operate the said items and to do the daily maintenance and repairs. Also, for the main items, the supplier shall provide manuals in Mongolian or Russian (operation, service and repairs) so that the equipment can be operated daily in a sound and steady condition. Those engineers that are experienced and or are working in reassembling the equipment will be able to utilize these manuals in their operations and daily maintenance as well as for minor repairs. In case an engineer finds it a bit difficult to repair some items of equipment, a request can be made to the affiliated Maintenance Centre of the MHSS.

For the sake of smooth implementation of this Project and effective operations after installation of the medical equipment and supplies, the Mongolian People's Republic responsibility now is to take steps to appropriate the budget for the necessary infrastructure and acquisitions (space, electrical

sources, water supply and drainage) so that the Project can be completed as scheduled, as well as budgetary measures necessary to insure good operational results.

This Project also includes adjustments in the maintenance system of the medical equipment presently used within the National Central Hospital, Aimak hospitals and Somon Health Institutions aiming at improving the medical technology level throughout the National Health Care System. By the execution of this Project, it will be possible to improve the basic diagnosis and treatment of the installed medical facilities, raise the level of clinical examinations, save time in X-ray diagnosis, which would ensure a higher level of safety measures and treatment, provide emergency life saving equipment and servicing. And even at the Somon level, the prescribed criterion for clinical techniques can be practiced, which will greatly improve the medical care for the widely scattered nomadic inhabitants within the country. Based on this point, the execution of this Project can be expected to make an extremely important contribution to the Mongolian People's Republic.

ABBREVIATION LIST

Mongolia	Mongolian People's Republic
JICA	Japan International Cooperation Agency
MHSS	Ministry Health & Social Services
The First Hospital	Central Republican Clinical Hospital
The Third Hospital	Ulan-Bator City Central clinical Hospital
Oncological Centre	The Republican Oncological Research Centre
National Centre for M.C.H.	National Centre for Mothers & Children
District Hospital	District General Hospital
Maternity Hospital	Obstetrics & Gynecological Specialized Hospital
Pediatrics Hospital	Pediatrics Specialized Hospital
Aimak Hospital	Aimak General Hospital

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CHAPTER 1

INTRODUCTION

CHAPTER 1 INTRODUCTION

The Mongolian People's Republic is located approximately in the middle of the eastern part of the Asian Continent. It is an inland country surrounded by the Soviet Union on the north and the People's Republic of China on the south. The area of the country is 1,566,500 km², and it has a population of only 2,043,400 persons, scattered sparsely around the country.

In June 1921, Mongolia declared its independence from China and, in 1921, a republican form of government was established. In November 1924 the country's name was formally changed to the Mongolian People's Republic (hereinafter called Mongolia). After independence, it became a socialist nation. It laid the economic foundation of promoting a 5-year term planning policy to be continually reappraised. The practice of instituting 5-year economic plans as a national policy is still being implemented, and at present it is in its 8th consecutive term (1986-1990).

In the Eighth 5-year Plan, the basic policy concerning advancing the scope of national health care that has to be strenuously pursued for the plan's success are:

(1) Reinforcement of preventive measures and activities as well as escalating the health care registry activities
(2) Amplification of medical care and preventive measures
(3) Fulfillment of child and maternal medical care measures
(4) Normalization of personnel in medical care
(5) Efficient application of scientific technology
(6) Improvement of the pharmaceuticals supply system

At the 19th General Meeting of the Mongolian People's Revolutionary Party in 1986, it was noted that the realization of the above basic policy formed a link in the chain of resolutions to provide better specialized medical care and medical services as well as to raise the present level diagnosis and medical care management, and registration and its control. In order to realize their resolutions, they proposed to set up a National Diagnosis Centre and requested Japanese grant aid. To this end, the Japan International Cooperation Agency (hereinafter called JICA) dispatched a Preliminary Study Team in October of 1989. The conclusions of the team were that under the present conditions and circumstances in Mongolia, the proposal of setting up a National

Diagnosis Centre was too early to be justified, as yet. In fact, the government of Mongolia indicated that priority should be, firstly, placed on the improvement of the basic medical equipment and increasing its efficiency which are indispensable matters for the main General Hospitals, the Specialized Hospitals, Aimak Hospitals, and Somon Institutions that are proving medical care to the people. On these matters, the viewpoint of the Government of Mongolia and the Preliminary Study Team coincided and were confirmed, and both parties came to be in full agreement.

Accordingly, in January of 1990 Mongolia requested Japanese grant aid for procurement of the necessary medical equipment for the purpose of adjusting the diagnosis functions of the present medical facilities at the 6 General Hospitals and Special Hospitals in the city of Ulan-Bator, Darkhan City General Hospital, General Hospitals situated in 6 Aimaks and the 40 local Somon Institutions. This Project is to be undertaken as a replacement for the Government of Mongolia's request for the National Diagnosis Centre.

In pursuance of this request, the Japanese Government acknowledged its receipt and decided to conduct a Basic Design Study on this matter. JICA, for the purpose of studying the appropriateness and necessity of grant aid and confirmation of the contents, dispatched a Basic Design Study Team on 25 March, 1990 for a 25-day field survey, headed by Mr. Yasuo Saito, Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs.

In the field survey, the study team investigated the background of this Project in Mongolia, its outline and the contents of the requirements, carried out deliberations on the course this Project is pursuing, and reached an understanding on the general aspects. The contents of the understanding reached between Mr. Sh. Jigjidsuren, First Deputy Minister, Ministry of Health (present; MHSS) on the Mongolian side and Mr. Saito, Leader of the Basic Design Study Team on the Japanese side, have been recorded in the Minutes of Discussions, which were exchanged between both parties, and also signed by Mr. G. Battsenmgel, Chief of Department, Ministry of External Economic Relations and Supplies (present; Ministry of Trade & Cooperation).

The Study Team upon its return to Japan, worked on analyzing the materials and information gathered in Mongolia as well as the results of deliberation held there and formulated a basic concept for this Basic Design.

The contents of the Basic Design were compiled into the Draft Final Report and explained to the Mongolian side by the Basic Design Study Team (Draft Final Report explanation) dispatched for 17 days from the 22th July, 1990. This study team in its turn confirmed the contents of the basic design with the Mongolia side, and the Minutes of Discussions on the Draft Final Report was exchanged between the Mongolian side represented by Mr. Dashizebeg, First Deputy Minister, MHSS and Mr. Battsenmgel, Chief of Department, Ministry of Trade & Cooperation and the Japanese side represented by Mr.Isobe, Deputy Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs.

The present report compiles the results of all preceding studies. The members of the Study Teams, Survey Schedule, Main Attendant List and the Copy of the Minutes of Discussions are attached at the last part of this report in the Addenda.

CHAPTER 2

BACKGROUND OF THE PROJECT

CHAPTER 2 BACKGROUND OF THE PROJECT

2-1 Outline of the Mongolian People's Republic

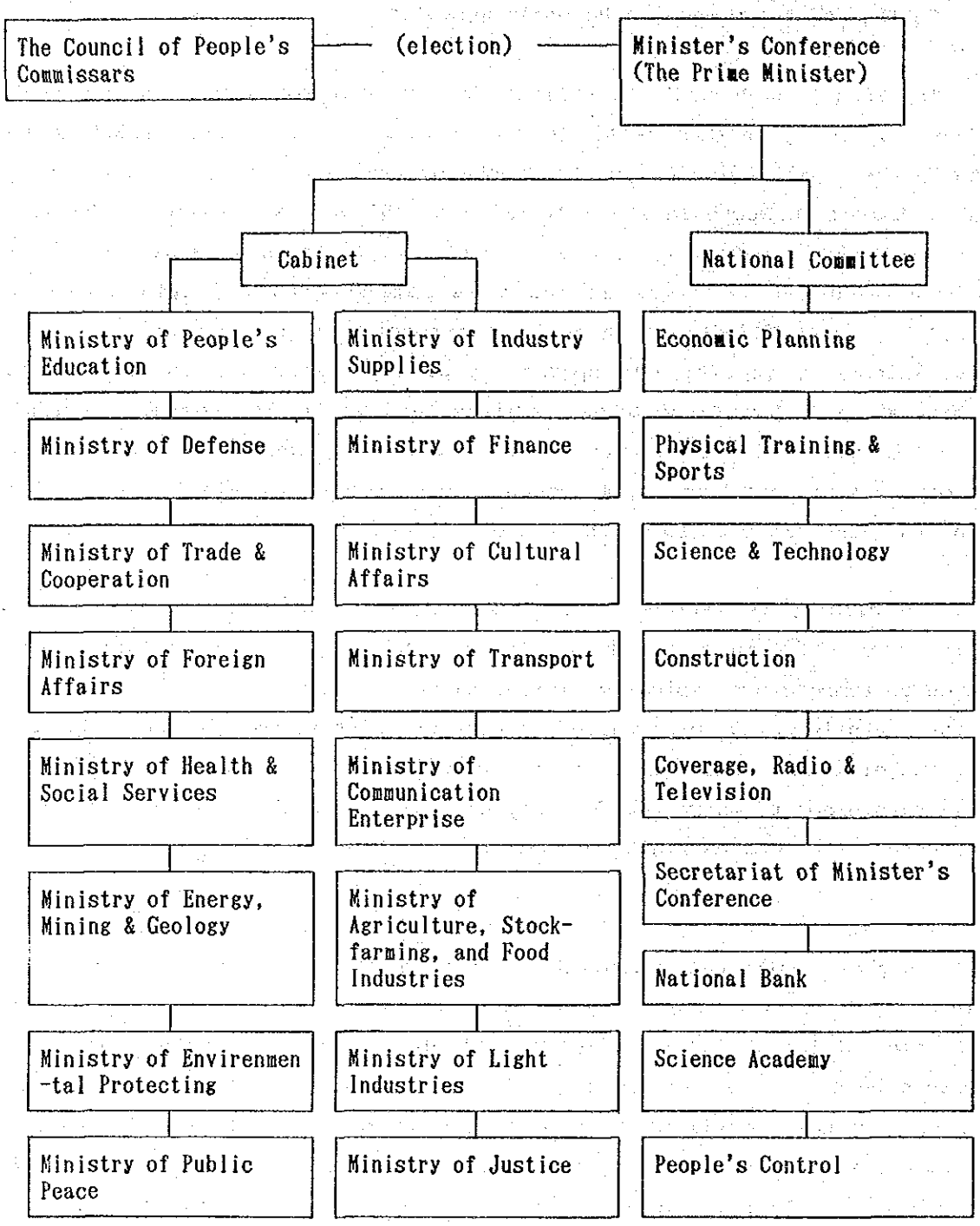
The Mongolian People's Republic is situated approximately in the centre of the eastern Asian Continent. It is an inland country surrounded on the north by the Soviet Union and on the south by the People's Republic of China. It is situated in North latitude $41^{o}32'$ - $52^{o}15'$ and East longitude $87^{o}32'$ - $119^{o}54'$ and approximately 1,580 m above sea level. It is a large area covering 1,566,500 km^2 (4 times as large as Japan) with population of only 2,043,400 persons (1/60th of Japan). Its population density is 1.3 persons square kilometer, an extremely sparsely populated country. Its country side is where as it is the Great Steppe Prairie land verdantly covered. Southern part is in the Gobi Desert with hardly any verdant land. On the Northeast side of the Altai and Hangain, mountain ranges from a mountainous country land and on the northern part forms the ranges of forests.

The climate is extreme both in summer and winter with a temperature ranging from $+30^{o}C$ in summer to as low as $-40^{o}C$ in winter; an extreme difference of temperature typical of inland climate. The annual average rainfall for the South is below 50 mm while for northern part it goes beyond 300 mm.

Mongol became independent from the China in June 1921, and formed a people's government, which was formally called the Mongolian People's Republic in November 1924, and continues up today.

The legislative body of the country is the People's Grand Council which is the highest political organization that elects the Chief of State. Its Meeting is held only once a year. During its recession, the Ministers (consisting of 9 members) represent the People's Council. The Chairman of the Ministers become the Prime Minister of the country. The Administrative organ is headed by the Council of Ministers, and it makes up the Ministries Committees and an Academy headed by a Minister. The head of the Ministers is the Prime Minister Administrative organ is headed by the Council of Ministers, and is it makes up the Ministries Committees and an Academy headed by a Minister. And the head of the Ministers is the Prime Minister who is at the top of the administrative organ (refer to Fig. 1 - Administrative Structure of the Mongolian People's Republic of July, 1990). As for the Provincial administrative units, there are 3 Khotos (special counties) and 18 Aimaks (equivalent to our "ken").

Fig. 1 Administrative Structure of the Mongolian Pepole's Republic
(July, 1990)



The Aimak's subordinate administrative organs are called Somon which are around 20 or so (Depending on the Aimak, the divisional numbers might be from 15 to 27). The Judicaial organ is headed by the Supreme Courts and consists of 3 types of subordinate courts.

The State of Mongol is structured and operated under the 3 divisions of Legislative, Administrative and Judicial Departments.

Ever since its independence, the country has been a socialist state and has promoted the country's course along this principle in its shperes of economics and cultural interchanges with the Soviet Union and Eastern Europe. Placed under such relations, the chances of exchange with the Western European countries were negligible, and thus they continued to remain isolated. In 1961 it become a member of the United Nations, which widened their sphere of interchanges with the free worked. In February 1972 diplomatic relations were established with our country. These events let to a closer relations with the free world.

In 1948, after the World War II, Mongol started out its First 5-year Development Plan in order to seriously promote their economy. Thereafter, they have continuously pursued this 5-year Plan. The First 5-year Plan (1948-1952) was aimed at recovery of the live stock reduced during the war years. The 2nd 5-year Plan (1953-1957) and the 3rd (1958-1962) were aimed at developing the manorial resources and promoting the country's basic policies in industrialization. It was at this period when they became members of COMECON, which resulted in greatly advancing the industrialization within the country through the help of the Soviet Union and Eastern Europe. Darkhan and Khoto are typical examples of the country's industrialization.

The Structure of Industry in 1980 charts is as below.

	Percentage	
	Worker	National Income
Agriculture, Stock Farmer	40.2%	15.4%
Industry	15.2%	29.3%
Communication, Transportation	6.9%	10.8%
Commercial Relations	6.8%	36.5%
Construction	6.3%	6.0%
Non-production (services)	24.2%	2.0%
Total	100.0%	100.0%

(Source:National Economy of the MRP for 60 years, 1981)

Out of the total production of agriculture and live stock farming, live stock farming shares 80.8% of production and agriculture is only 19.2%. The total heads of live stocks are 23,771,400 which is a bit above 10 heads per person. The agriculture cultivated land area is 700,000 hectare, mainly growing wheat, rye and barley. In the phase of cereals, the country is self-sufficient (1980).

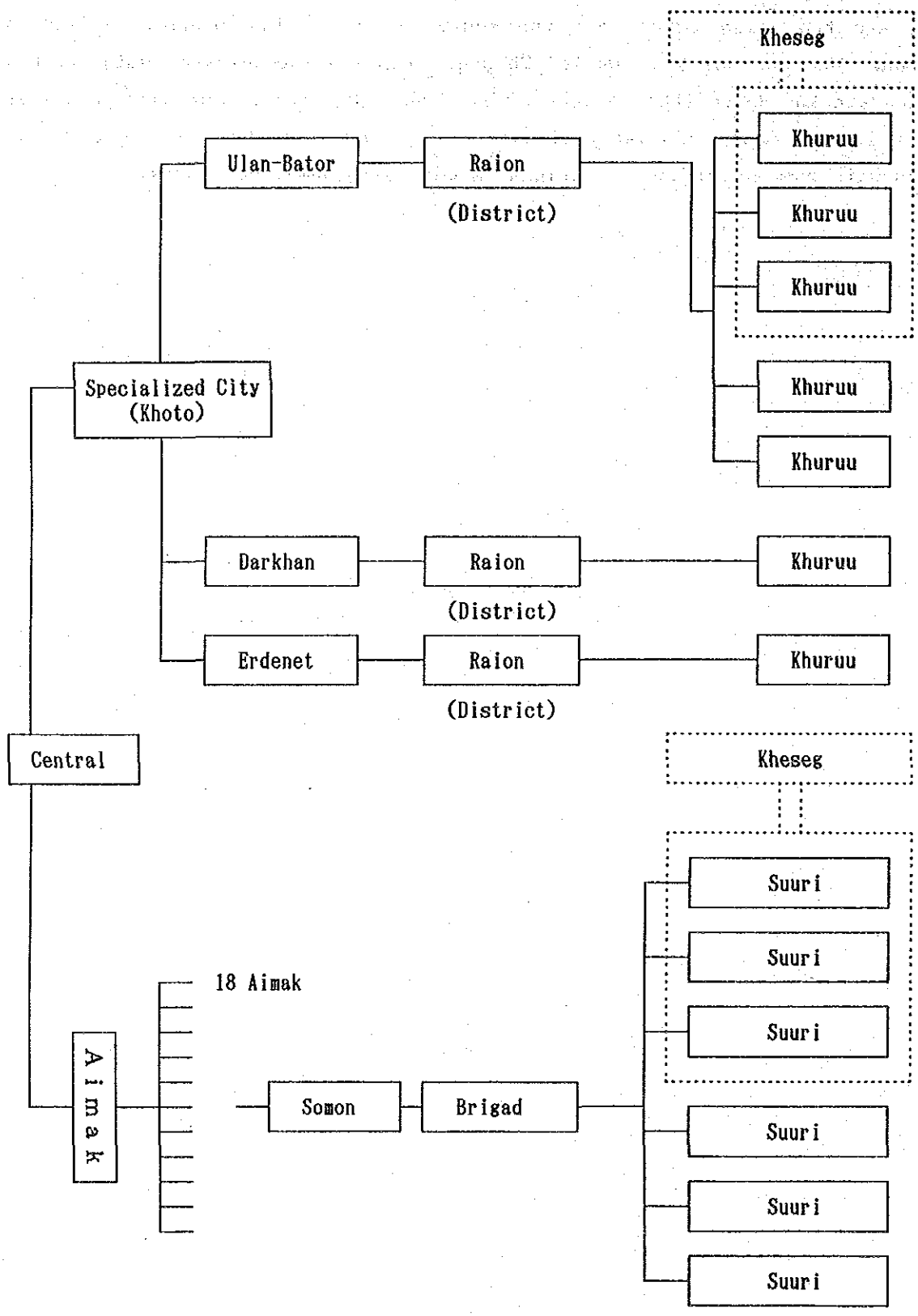
Industrial production is practically in textiles, garment and hosiery goods, food, hides and leather, lumber, electric power industries. Mineral resources are mostly in coal, and to name a few others are copper, oil and molybdenum. Copper from Erdenet and Khoto mines, as well as molybdenite mines well known throughout the world.

Foreign trade is mostly centered with the COMECON countries (Appro. 96%) totaling 810 million dollars (US$ is equal to 2.997 Tug.). Total imports in 1988 amounted to 1.18 billion dollars. The main export items are live stock farming and its related goods and mineral resources. Imports were machinery and its related equipment and facilities. Trade with the Western world was mostly with Japan. Export items mostly in cashmere wool, and the import items were mostly in machinery and its related goods, including medical equipment. Perestroika policies of the Soviet Union has also affected changes in the government of Mongol, and its effects in the economic structure has brought in enterprise operations on the principles of independent self paying basis (1989) and opened the way for private ownership in the agriculture and live stock farming (1990). These changes has led to revising the laws to meet the changes and the times. To this end, a new economic frame work and structure had to be introduced into the economy and life-style policies which will level up the quality, profits and efficiencies.

From the 60's and onwards the rail to industrialization was laid, which in turn distinctly moved the people in herds into the cities. The population living in the cities increased tremendously to 861,400 (42.2% of the total population). At this rate of population increase it will approach and go over that of the farming and cattle-breeding area. Especially noticeable is the capital, Ulan-Bator, inhabitants of 548,000 (27% of the total population) an excessive concentration of peoples making their living here. This is the situation and conditions as of 1989, instant.

The provincial administrative organizations that are directly under the jurisdiction of the central government are 3 Khotos (Ulan-Bator City, Darkhan City and Erdenet City) and 18 Aimaks. Khoto's subordinate administrative organs are the Raion (Ward) and the Khuruu (town). The grouping of several Khuruus into one unit, is called Kheseg. Aimak's subordinate administrative organs are the Somon (the Countys : more than 300 units). Moreover, there are the Brigad (Nomadic community or villages living in Tents) the Suuri (2 to 3 tents unit community) and the Brigad is composing numerous Suuris.

Fig. 2. Organization Structure of Local Administrative Organs



The production organization units are designed and organized by these Administrative organs into such organizational units as Negudel (Agriculture Live Stock Cooperatives, the equivalent to Kolkhoz of Soviet Union), Sangiin Aji Akhoi (National Agriculture Farms, the equivalent to the Sovchoz of Soviet Union). These two production units are in the scale equivalent to the size of a Somon. Under these two units are the smaller units of production. The Brigad (working party) and the Suuri (working groups, the smallest unit of live stock production). Kheseg is the organization formed by the grouping of several Suuri.

The present literacy rate is said to be 100%. This is due to the great emphasis placed in education after the Independence Revolution, and the reform of unifying the National Language in 1941 (the abolishing of Uighur alphabets, and the adoption of the Kiliru alphabets). Compulsory education system starts at the age of 8 and continues until 15 years of age, a span of 8 years, in which the first 3 years are the primary grade. The primary grades and the middle school grades educational system are made up of an 8 year period and a 10 year period systems. Out of those graduating, the compulsory educational system 84% of the graduates are entering into higher educational facilities.

The above is the general outline features, but with the Soviet Union promoting the Perestroika, which has also affected Mongol, and due process of changes in the political and economic system have altered the country. This in due course will call for administrative reforms, and even go up to changes in the ministerial organization. The Ministry of Health had 2 Administrative Organs (Department of Social and Supplies of the Ministry of Industry Supplies, and Physical Training & Sport National Committee), which were consolidated into the MHSS (April 1990).

The election was conducted to choose members of large scale-people's conference (large Fural). It is planned to call a large scale-conference and to elect a president and members of small scale-people's conference (small Fural). A small scale-people's conference is a permanent legislative organ in place of the former leading Members' Committee. Hence, as Mongol becomes more democratized, she is having closer relations in the field of economics with the West including Japan while maintaining the normal relationship with the Soviet Union and Eastern European countries.

2-2 Health Medical Care

(1) Administrative Organization of Medical Care System

Administrative organization of medical care system is under the administration of the competent Minister of the MHSS, who is assisted by 4 Deputy Ministers, that administrate the 11 sections (Fig. 3 Organization Chart of the MHSS). As it is shown in Fig. 4, Organization Chart of Health and medical service, its service for medical health care has been promoted under the constituents as indicated.

The health medical care for residents is carries out mainly by the department of Medical Services and Preventive Medicine, and practiced in the city hospitals, the district hospitals, and various Aimak's medical care facilities through out. The department of Mother and Child shall be supplemented to this providing their service to mother and child.

(2) Personnel Post of the MHSS

Dept. of Public Health & Infectious Research	8 persons
Dept. of Medical Research	3 persons
Dept. of Medical Services & Preventive Medicine	10 persons
Dept. of Mother and Child	6 persons
Dept. of Nursing Services	4 persons
Dept. of Scientific Research & Talent Training	2 persons
Dept. of Administrative Services	11 persons
Management	3 persons
Dept. of Society and Economy	7 persons
Dept. of Social Services	12 persons
Dept. of Physical Training	3 persons

(3) Administrating Budget of the MHSS

The budget for the MHSS is resolved at the regular People's Revolution Party Grand Meeting held once every year. The Mongolia Medical Care Services are in principle provided free, except for purchases of the medicines. Therefore, there in principle are no revenues in the execution of its operation other than that of the National Budget, which are distributed.

Fig. 3. Organization Chart of the MHSS (July, 1990)

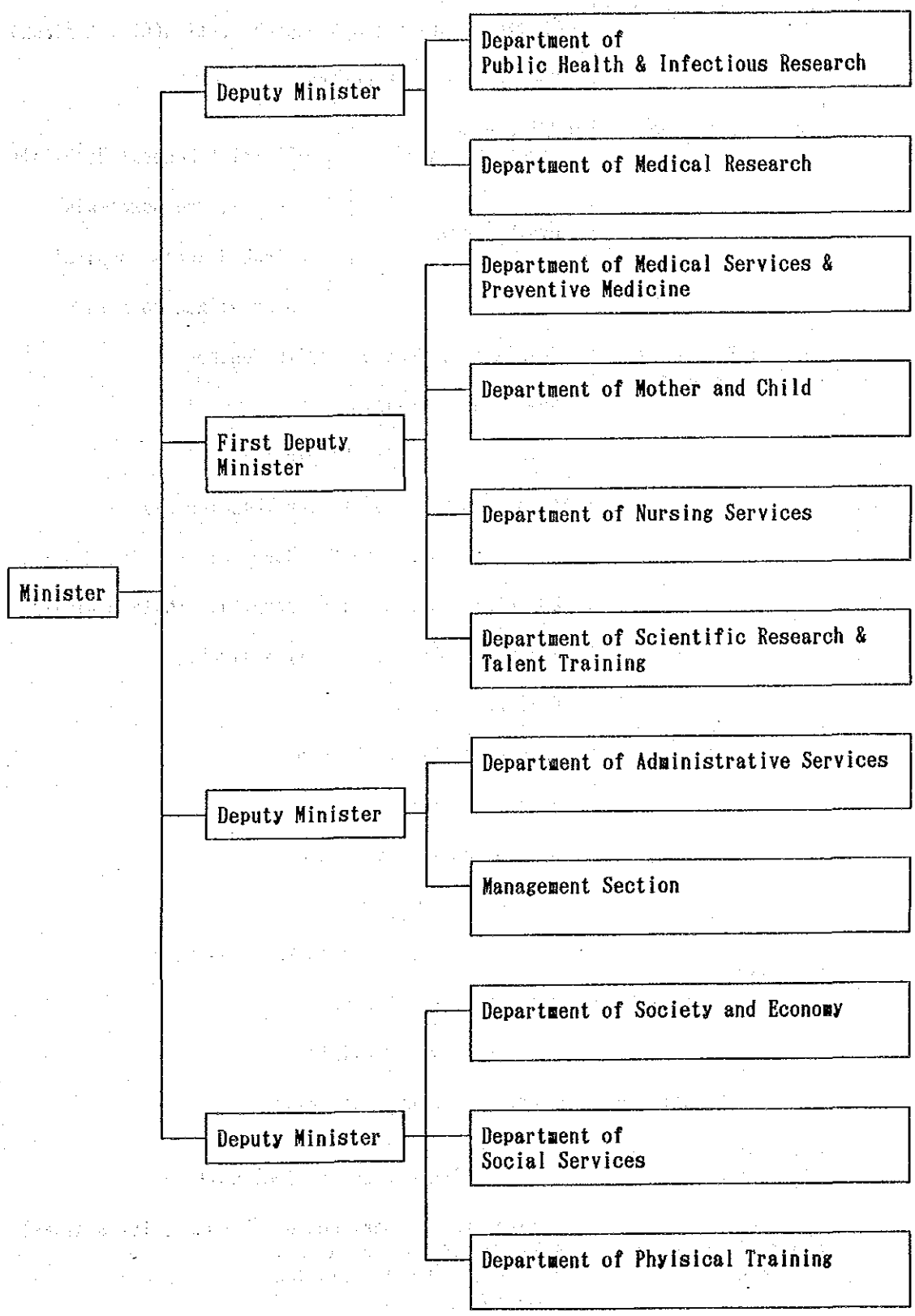
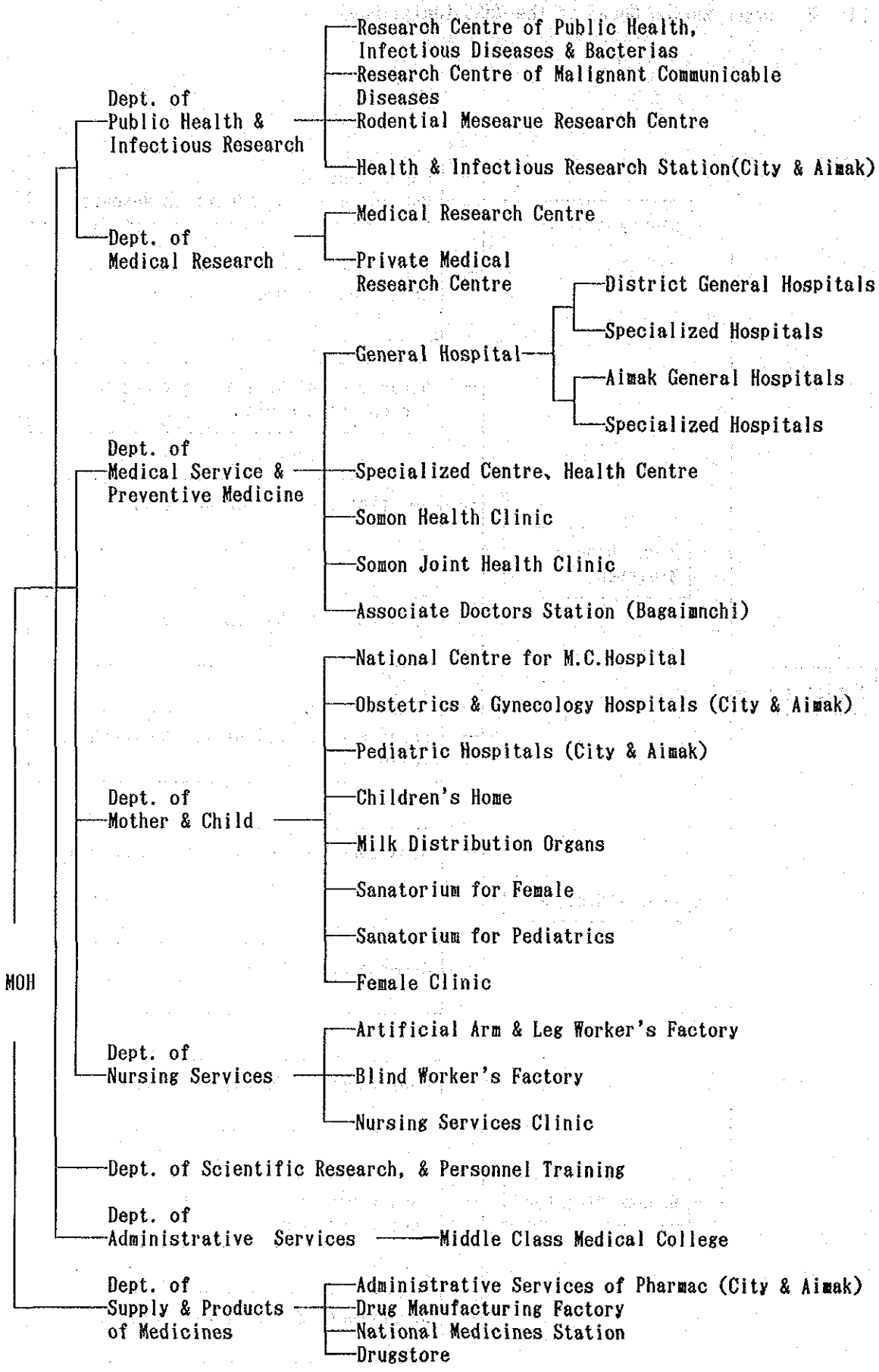


Fig. 4 Organization Chart of Health and Medical Services



The Budget for the MHSS is divided into two elements: one for the general operations of its organization and the other for investments. The general operation budget is for salaries, medicines, foods and its incidentals for operating the organization. The investment budget is for purchasing of the medical equipment, vehicles, medical furnitures, and repairs of the medical equipment and medical facilities.

Comparative Statement of the Ministry of Health (present:MHSS)

(unit: 100 Million Tug.)

Year	1980	1985	1986	1987	1988
Total Budget	299.9	376.0	394.9	411.0	475.5
Percentage Change	3.7%	0.4%	5.0%	4.1%	15.7%
Actual Increase	16.3	1.6	18.9	16.1	64.5
Breakdown of Budget					
· Salary	129.6	161.7	167.0	172.7	185.7
· Medicines	41.6	59.5	60.4	62.6	68.4
· Foods	41.5	50.3	51.2	51.7	53.3
· Others	86.6	104.4	116.2	123.9	133.4

Budget of Investment

(unit: 100 Million Tug.)

Year	1980	1985	1986	1987	1988
Total Budget	52.7	58.5	102.9	112.7	96.5
Percentage Change	-13.0%	-42.0%	75.9%	9.5%	16.8%
Breakdown of Budget					
· Medical Equipment		8.4	17.1	7.0	12.8
· Vehicles		6.6	6.5	7.1	7.1
· Medical Furniture		3.4	3.8	2.0	2.9
· Maintenance of Medical Equipment & Vehicles		0.75	0.76	1.1	1.1
· Maintenance of Building		2.5	6.0	6.8	7.1
· Construction		36.9	68.8	88.6	65.5

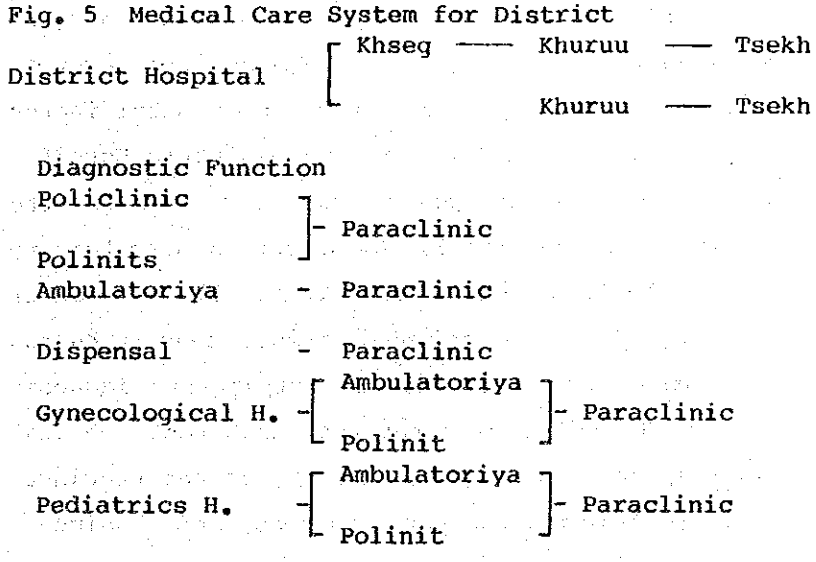
2-2-1 Medical Care System

MHSS is responsible for the setting up of Medical Care System (refer to Fig. 6 Medical Care System of the Mongolian People's Republic) in correspondence to the country's administrative divisions, as well as taking charge of the maintenance of the people's health, and ensure medical care for the city inhabitants as well as the innumberable widely spreaded sparsely populated Nomadic inhabitants in the provinces. And in the capital city of Ulan-Bator medical facilities aiming for an effectively high level medical care has been made available, such as the First Hospital, The 2nd Hospital, Oncological Centre, National Centre for M.C.H. and the Third Hospital. Besides, other than the above there are the National facilities in the city for diagnostic and treating of Infectious Diseases Segregation Hospital (malign and legal infectious diseases), Mental Sanatorium, Tuberculosis Sanatorium.

(1)Medical care System for cities

In the medical care system for cities, distric general hospitals (hereinafter called "District Hospital") in Ulan Bator City and City General Hospital in Darkhan and Erdenet play important roles. Ulan Bator is divided into 6 districts (as so called Sukhebattar, Nairamdal, October, Workers', Baganuur and Nalaikh). MHSS established a District General Hospital in each of the districts as a pivot and Khseg, Khuruu and Teskh as a subordinate organ to secure the maintenance of health and medical care of the distric inhabitants.

Fig. 5 Medical Care System for District



The district hospital as a core of medical system in cities are composed of Policlinic, Polinits, Ambulatoriya, Dispensal, Obstetrics & Gynecological Specialized Hospital (hereafter called " Maternity Hospital ") and Pediatrics Specialized Hospital (hereafter called " Pediatrics Hospital "). The Paraclinic is supplemented to those individual medical functions to support them, which is composed of X-ray Dept., Clinical Laboratory, Physiological Functional Diagnosis and Physiotherapy.

* Policlinic : Act as outpatients having more than 9 cabinets
* Polinits : Act as inpatients
* Ambulatoriya : Subordinate organs of district hospitals, specialized in outpatients, smaller than policlinic
* Dispensal : Medical clinic for outpatients affected with skin, infectious deceases and legal epidemic diseases
* Maternity Hospital : Clinic having independent facility, subordinated to the district hospitals (managing its own Ambulatoriya and Polinits which are not the same managed under the Policlinic)
* Pediatrics Hospital : Same as above
* Khseg : Assembly of Khuruu medical offices lower part of organizations of Policlinic and Ambulatoriya
* Khuruu : Outpatient diagnosis organs for Khuruu residents, as a minimal administarative organ of the Raion
* Teskh : Act as medical function providing only visiting medical service with non medical facility

After 1990the district hospital, of which the Policlinics were ranked up in the operations, has been managed by the system of Fig. 5 composed of Policlinic and Polinits. Each diagnosis organ are included as subordinates under their charge and operations. Maternity Hospital and Pediatric Hospital had been managed independently before 1989 and after 1990 it came under the jurisdiction of the Policlinic (District Hospital). Ambulatoriya of Maternity Hospital is not local agency of Poloclinic but an outpatient clinic organ of Maternity and Pediatric Hospital. Kheseg is defined as more than 3 Khuruu medical organs cominations. Khuruu medical organs (an outpatient diagnosis organs which is a subaltern of the Raion) looks after the inhabitants medical care of certain numbers of Khuruu, responded by one doctor for the precinct, and keeps Carte in order. Tsekh is visiting the patients home, and Bagaimchi (Semi-doctor) does visit.

Medical care system for the city dwellers, the patient who are able to go and to receive medical care must first receive a diagnosis and treatment at the Khuruu and Kheseg medical organs, and there receives a general doctor's diagnosis. The general doctor makes his diagnosis, and if the doctor believes that further specialized medical care is required, the patient transported to the cabinet's competent specialist doctor in the Policlinic of the district hospital. And if the result of the diagnosis judges that surgical operation or medical treatment in the hospital is required, the patient is sent to the Polinits for treatment.

Accordingly, the operational budget, which is in the charge of the City Health Bureau is handed over directly to the Policlinics. And from the Policlinics the operation budget is distributed to the district's competent medical organs. The substantial budget is still managed by the Budget Bureau of the city.

The Darkhan city and Erdenet city, although both cities have the same Medical Care System as the district hospitals in the Ulan-Bator city, the both of the former have the Dispensals as subordinate organizations, with Polinits independent from the city's Polinits, while the latter has only a Dispensal outpatient medical care organization. This is the point of difference between the former 2 cities and the district hospitals in the Ulan-Bator city.

(2) Medical Care System for the Provincial People

The medical care system for the inhabitant living a Nomadic style of life scattered sparsely throughout this wide area of land has built up a net work having Aimak General Hospital (herein after called Aimak Hospital) at the fountain head, and overflowing downward distributing to the various subordinate medical organs of Somon, such as Somon Health Institutions and Somon Joint Health Institutions, and there are some medical organs like a Brigad and Suuri sub-subordinates, which assists in strengthening of the Somon and the Somon Joint Health Institutions.

Fig. 6 Medical Care System of the Mongolian Pepole's Republic

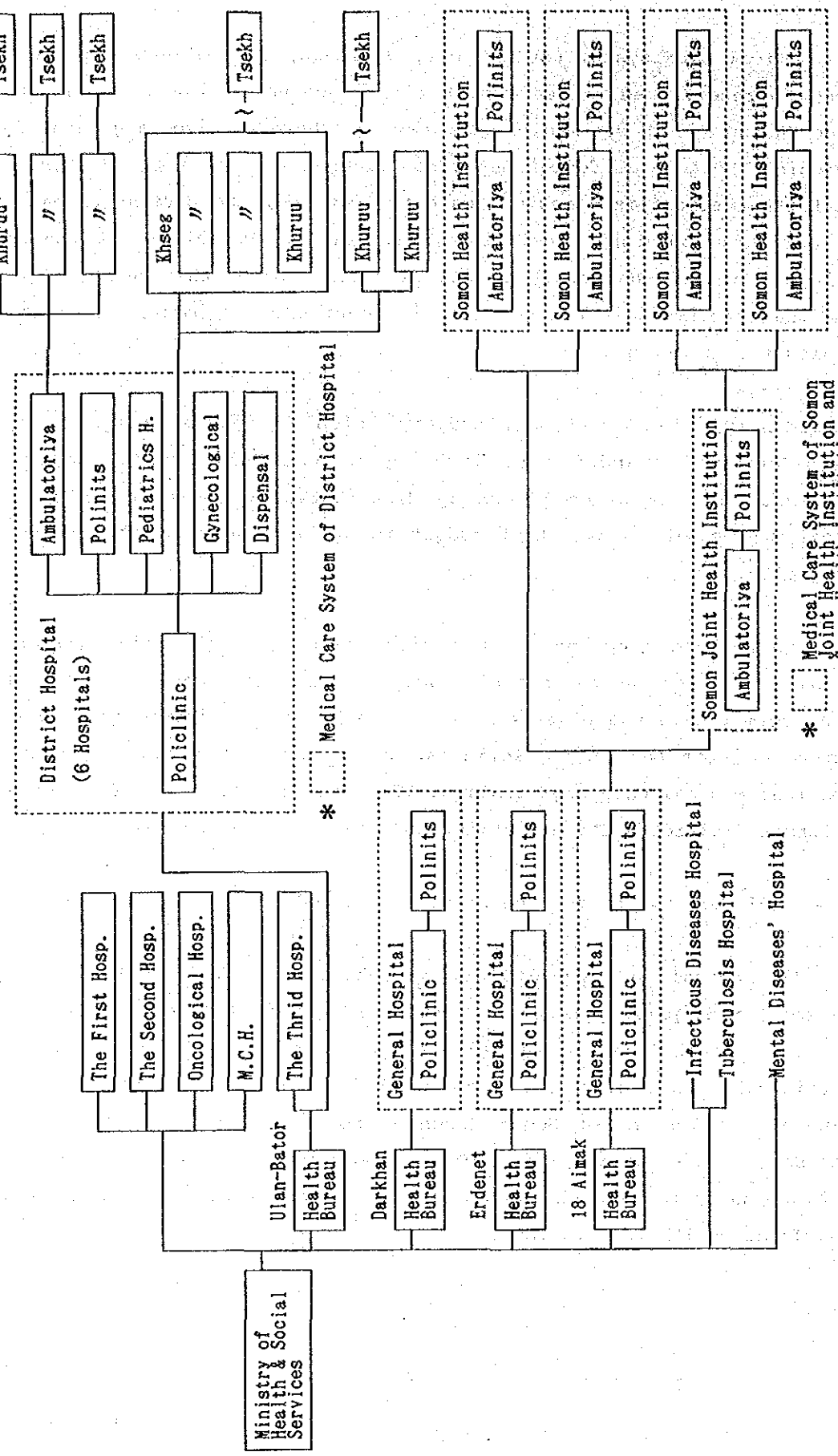
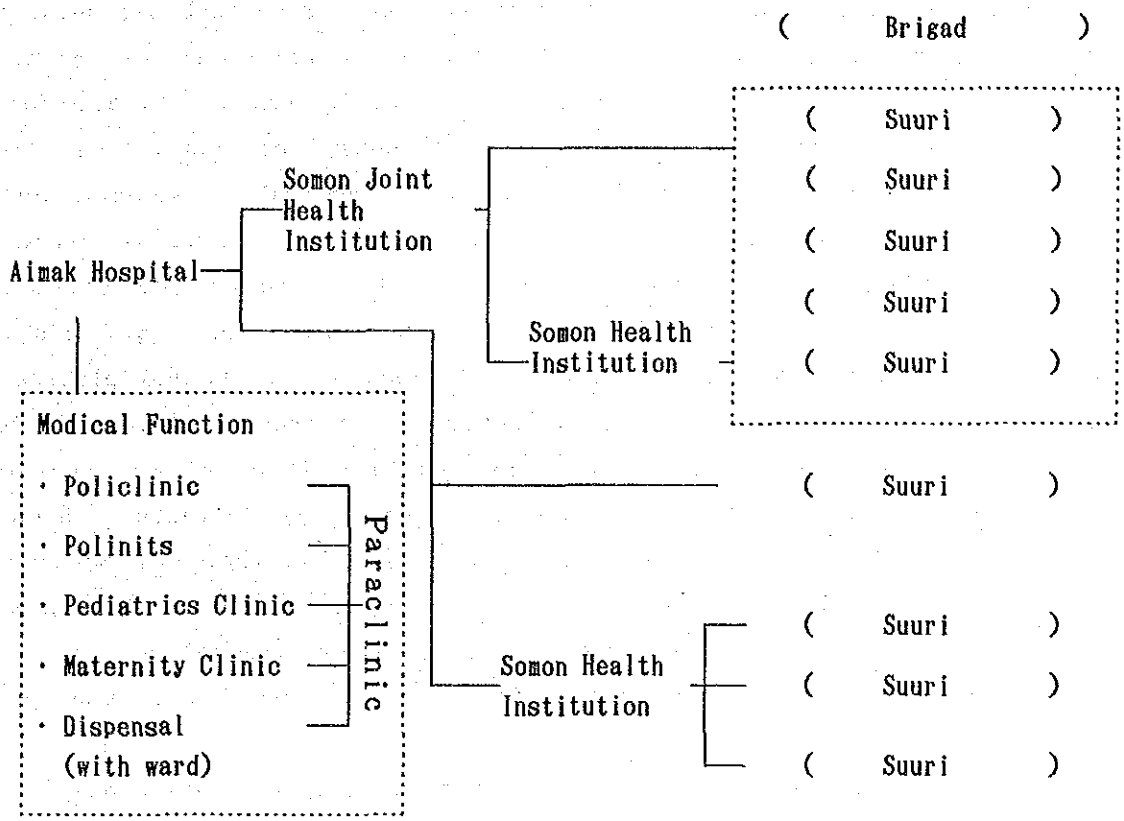


Fig. 7 Provincial Medical System



Aimak hospitals are composed of Policlinics, Polinits, Paraclinics, Maternity and Pediatrics hospitals together with an independent dispensal for in-house patients. The Policlinic is made up of 2 sections; one for the adult outpatient department, and the other is for pediatric outpatient. The former is provided for Internal Medicine (General and Lung), Neurology, Ophthalmology, Otolaryngology, Obstetrics and Gynecology, Physical Treatment, Dental Surgery, Mongolia Traditional Cares and specialized clinical cabinets (Oncological, Health Prevention, Provincial Inhabitants and Factories Workers). The latter is provided for Internal Medicine, Neurology, Ophthalmology, Otolaryngology. These are the general features of the Policlinics in Aimak. Paraclinic is composed of 3 cabinets, Radiotherapeutic (Diagnostic), Physiological Function Test, Clinical Examination (General Examination, Biochemistry, Physical treatment). General styles of the Polinits with wards facilities of medical organs are composed of such as Internal Medicine, Neurology, Surgery, Obstetrics and Pediatrics. In the case of Aimak hospitals, the Dispensal has an independent Polinits, and anatomical doctors (2 or 3 doctors) are in service, these are differences from the district hospital in Ulan-Bator city.

Somon Joint Health Institutions are quite far away from Aimak hospitals, and are looking after several Somon Health Institutions, and also cooperates in their medical technical phases. Supposing an emergency operation (Caesarean operation or any others) should arise at Somon Health Institution; doctors and surgical equipment are right away dispatched and/or supplied. Moreover, patients that Somon Health Institutions are not able to attend to the medical care, Somon Joint Health Institution takes over the patients. Somon Joint Health Institution normally has 4 doctors in Ambulatoriya, Polinits of 100 beds and maternity organs. Besides the doctors posted in the hospital, there are from Bagaimuchi (7 to 18), nurses (15 to 20), mid-wife (around 10) engaged in the medical care. Polinits are equipped only for those simple surgical operations, such as appendicitis operations, emergency Caesarean operations and of such scale types.

Somon Health Institution is made up of an Ambulatoriya that centers its operations in the field of Internal Medicine and Obstetrics and a Polinits having around 15 beds. At present, there are promoting plans to post 2 doctors at each of the Somon Health Institutions and in the future to schedule it to become on the same scale as that of the Somon Joint Health Institutions. The Somon Health Institutions, depending upon its scale and the size of the population differs in its compositions at present, but normally it has 1 doc-

tor, 3 Bagaimuchi, 3 nurses and 3 midwives.

Brigad (original meaning of this word is a relatively large village of tents within this Nomadic community, but in the Ministry of Health Medical Care defines it as a migrating medical care facility) and the Suuri (originally it means a small village, but in the medical care system it is defined as a small local village where medical care is carried out by the competent medical personnel's personal visits to the local village) are both being based under the care of a Somon Health Institution or a Somon Joint Health Institution. Whichever of the two types of facilities that takes care of these migrating Nomadic villages within their sphere of influence, that Institution shall have to set up a migrating medical care facility and or have health care instructors (Bagaimuchi dispatched) to take care of the health and medical care for these groups following a Nomadic life. The sphere of migration in search for verdant prairies these Nomadic peoples in a verdant prairie is around 30km, but for the barren lands it is about 100km in order to keep up their liveli-hood. Brigad and Suuri ride on horsebacks or motorcycles chasing after these migrating tents inhabitants to carry out their health and medical care. And there are some Bagaimuchi in the Brigad and Suuri, that move together with these migrating Nomads and have tents of their own and live with them in looking after the health and medical care. These Nomads are enjoying the benefits of Brigad and Suuri.

The patients that the Brigad is not capable to give treatment are transported to Somon Health Institution or Somon Health Joint Institution. Whichever hospital the Nomad patient and or those settled inhabitants are nearest to go and to receive the medical care as outpatient. But in case the necessity arises so that the patient needs in hospital treatment, the patient receives the treatment at the Polinits, and if the treatment requires a heavy serious surgical operation, the patient is sent to the Aimak Hospital and the receives of operation and placed under the hospital care.

(3) High Efficient Medical Care Facilities

The hospitals eligible to supply a high efficient medical care are 3 General Hospitals and 2 Specialized Hospitals, that are all concentrated in Ulan-Bator city. The 3 General Hospital are the Central Republican Clinical Hospital (herein after called "The First Hospital"), The Second National Hospital and Ulan-Bator City Central Clinical Hospital (herein after called

"The Third Hospital"). The specialized hospitals are the Republican Oncological Research Centre (herein after called Oncological Centre) and the National Centre for M.C.H.. The Second National Hospital is limited to the utilizations of the high government officials and the foreigners. The First Hospital and The Third Hospital are used for the general public benefits, being well equipped to give medical care of a high efficiency in each of its specialized Sections in the general hospitals. For instance, The First Hospital has strengthen its Internal Medicine, Ophthalmology, Ultrasound Diagnosis and on the treatment side are the Plastic Surgery, Blood Dialysis, ...etc. are outstanding. The Third Hospital is outstanding in its Cardiovascular, Neurosurgery and on the other hand it is well equipped with highly efficient diagnosis equipment for Angiography System and CT Scanner. In this respect, The First and Third Hospitals are mutually complementing each other diagnosis efficiencies.

The Oncological Centre is the only specialized hospital for cancer and has the functional efficiency to attend to the treatment of cancer patients throughout the whole of the country. And it has even installed at 24 places within the country diagnosis cabinets in pursuing the detection of cancer at the early stages.

National Centre for M.C.H. is made up of Obstetrics and Gynecology and Pediatrics. The former specializes in the medical care of Gynecological and Maternal, while the other is in the specialization of medical treatment of children from the 0 age to below the 16th age, and both are at the same time equipped to carry on as one organization for researches in the field of child and maternal protectional measures.

(4) The Activities of the Migrating Medical Care

In the fiscal year ending in 1988, the migrating medical care activities carried out by the health screening cars were 255 times in total for the people living within the various Somons, and the distances covered were 252,304km. This figure includes the 311 Somons, 759 Brigads, 1,276 Suuris inhabitants living in 16,414 tents. Moreover, this migrating medical care activities are provisional preparations to actuate the diagnosis and treatment and clinical examination objected to cover a sphere totaling 407,400 persons scattered in the central parts and its vicinities within the Somon administrative organizational zone 251,700 persons, and in the Brigads 94,800 persons,

as well as for the Suuri 60,900 persons. This roving examination activities is a different organizational system than that of the migrating medical organization in which the medical care is directly done by the Bagaimuchi and also the Brigad who resides and migrates with the Nomads.

In order to execute this roving examination activities 73 health screening cars (13 units of X-ray cars and the others for Internal Medicine, Surgery, Dental and Clinical Laboratory) are at present being equipped to carry out this mission.

(5) Medical Facilities

The following list is a comparison of the various medical facilities and the number of beds capacities in each facility.

Categories	Health Facilities	Bed Capacity
General Hospital	36	10,480
Specialized Hospital	23	6,095
Somon Joint Health Institutions	32	1,790
Somon Health Institutions	296	4,777
Doctor Station	36	232
Associate Doctor Station	1,328	401
Total	1,751	23,775

The present Medical Care conditions and environments are 24 doctors and 115 beds for 10,000 persons. Within the medical care facilities 2 Somon Joint Health Institutions and 7 Somon Health Institutions are in the cities, but the largest majority of medical care is being set up for the country areas. Hence, the distribution of the total Bagaimuchi force of 1,344 are posted 96 in the cities and 1,248 (approx.93%) scattered in the local areas. Thus the medical care in the country and local areas are extremely indebted to and completely dependent upon the Bagaimuchi.

2-2-2 Health Sanitation

The Ministry of Health in strengthening of its activities in the area of hygiene is continuing the promotion of Health Control Registry Plan. And, in addition in order to level up the health and sanitary efficiencies are to improve the livelihood standard so as to enjoy better health, to pursue a thorough public hygienic educational system and widely propagate standards for healthy life-style living, setting up of groups or stations in the provinces for hygienics and infectious and such adjustments, in providing criteria indexes or regulations upon sanitation and infections researches, that could be put into actual practices in the planning of ameliorating the peoples hygiene.

(1) Present State of Health Sanitations

1) Composition of population and average life (January 1989)

Composition of population

Male	1,020,100	(49.9%)
Female	1,024,200	(50.1%)
Total	2,043,400	
under 15 years	903,600	(44.2%)

Average life	64

2) Birthrate, Mortality Rate and Leading Causes of Mortality

Birthrate	36.7	(per 1000)
Mortality rate	8	(per 1000)

Leading causes of mortality

-1. Respiratory Diseases	35.6%	
-2. Digestive Disease	19.7%	
-3. Infectious & Parasitic Diseases	9.7%	
-4. Circulatory Diseases	8.9%	
-5. Ulcers	7.5%	
-6. Pregnancy Trouble	4.6%	(per 1000 delivery)

Infant mortality rate

under 3 years	64.9	(per 1000)
over 1 year but under 3 years	14.2	(per 1000)

Crude Infant mortality rate

under 1 year	29.3
over 1 year but under 3 years	12.3

Leading causes of mortality, Under 1 Year		Actual Numbers	%
(1)	Infectious, Parasitic Diseases	264	6.4
(2)	Ulcers	-	-
(3)	Endocrine Organs' Diseases	8	0.2
(4)	Hematogenous Organs' Diseases	22	0.5
(5)	Mental Diseases	2	0.05
(6)	Cerebralnerves' and Sense Organs' Diseases	150	3.7
	- Otitis Media	(37)	(24.7)
(7)	Circulatory Organs' Diseases	16	0.4
(8)	Respiratory Diseases	2,053	50.2
	- Accute Infection Diseases on Upper Bronchus	(231)	(11.3)
	- Pneumonia	(1,663)	(81.1)
	- Chronic Lung Diseases	(33)	(1.6)
(9)	Digestive Disease	896	21.9
	- Non-infectious Enteritis and Oolitis	(785)	(84.6)
(10)	Urinary and Genital Disease	3	0.07
(11)	Skin and Hypodermic Diseases	9	0.2
(12)	Bone, Articular and Muscular Diseases	2	0.05
(13)	Congenital Disorder	49	1.2
(14)	Trouble on Pregnancy Period and on Delivery	429	10.5
	- Delivery Trouble	(94)	(21.9)
(15)	Unspecified Syndrome	142	3.5
(16)	Disaster, Injury and Poisoning	46	1.1
	Total	4,091	100.0

(Source : Health White Paper,1988)

3) Composition of Diseases

· Mobidity Rate (10000), Compare Cities with Provinces (per 10000 sickness)

	Categories	Number	%	Cities	Provinces
1	Infectious, Parasitic Diseases	204.5	6.2	4,060.0	3,001.8
2	Ulcers	14.9	0.4	15.0	16.2
3	Endocrine Organs' Diseases	50.6	1.5	70.0	31.8
4	Hematogenous Organs' Diseases	15.6	0.5	11.1	16.9
5	Mental diseases	22.8	0.75	14.3	26.5
6	Cerebralnerves' & Sense Organs' Diseases	198.5	6.0	233.4	154.2
7	Circulatory Organs' Diseases	97.3	2.9	5.2	5.9
8	Respiratory Diseases	2,579.2	78.4	1,656.0	1,481.8
9	Digestive Disease	502.8	15.3	593.3	477.9
10	Urinary and Genital Disease	186.4	5.7	206.5	187.1
11	Pregnancy & Puerperium Diseases	112.2	3.4	143.5	155.0
12	Skin and Hypodermic Diseases	83.1	2.5	67.0	85.7
13	Bone, Articular Muscular Diseases	33.3	1.0	27.0	40.3
14	Congenital Disorder	1.5	0.04	4.7	4.1
15	Trouble on Pregnancy & Delivery Period	1.5	0.04	0.8	2.3
16	Unspecified Syndrome	3.7	0.1	3.5	5.4
17	Disaster, Injury and Poisoning	153.8	4.7	290.8	54.7
		3,288.8	100.0	7,402.1	5,747.6

· Compare Cities with Provinces

	Cities	Provinces
Birthrate (per 1000)	33.7	37.7
Mortality rate (per 1000)	5.7	8.4
Infant Mortality rate (under 1 year, per 1000)	5.7	8.4
Maternal Mortality rate	0.09%	0.16%
Birth rate in Hospitals	100.00%	99.80%

(Source : Ministry of Health (MHSS))

(2) Measures of Health Sanitation

1) Countermeasures of Tuberculosis in All its Forms

Long term policies up till 2005 year have been drafted for tuberculosis countermeasures, and based on this plan actual practices have been initiated, accordingly. The contents of this long term policies are:

-1. Revisions in the serving of medicine in specialized medical services.
-2. Institute regulations based upon the tuberculin tests to the amount and times vaccinations are to be given.
-3. Formation of a travelling clinic force for each Aimak, and for national support for the Aimaks having a high rate of these patients.
-4. Installing roentgen equipment in the Aimak and the City Health Care Centres.
-5. Improvements in the materials as well as the incidental foundations and promotion of an educational operation, public relations, etcs.

To this end, special note should be paid to the new born in the district, and Somons areas where vaccination measures had been strongly instituted for the past 4 years, which has decreased tubercolosis to 3 out of 10,000 persons.

2) Measures of Preventive Vaccinations

Contagious diseases preventive vaccinations are given to over 50,000 persons each year. The following preventive measures are planned, such as vaccinations for measles, scarlet fever, menigitis, tuberculosis, and triple vaccine for diptheria, tetanus and whooping cough, and double vaccine for diptheria and tetanus. The preventive measure plan is projected so as to increase the number of the times and the contents, each year.

The vaccinations results in the above mentioned infectious diseases have drastically decreased, but it has not been completely wiped out. For instance, out of the vaccinations for prevention of infectious diseases vaccinated during 1988, measles, meningitis, scarlet fever, diptheria, and brucelliasis can still be seen.

Actual Number of Infectious Diseases Patients Registrated in Preventive Vaccinations (1988)

a) Typhous	79
b) Infectious Infantile Paralysis	711
c) Measles	3,049
d) Brucelliasis	4
e) Diphtheria	24
f) Infectious Hepatitis	14,720
g) Infantile Paralysis	2
h) Tuberculosis, all forms	2,551

3) Population Trends

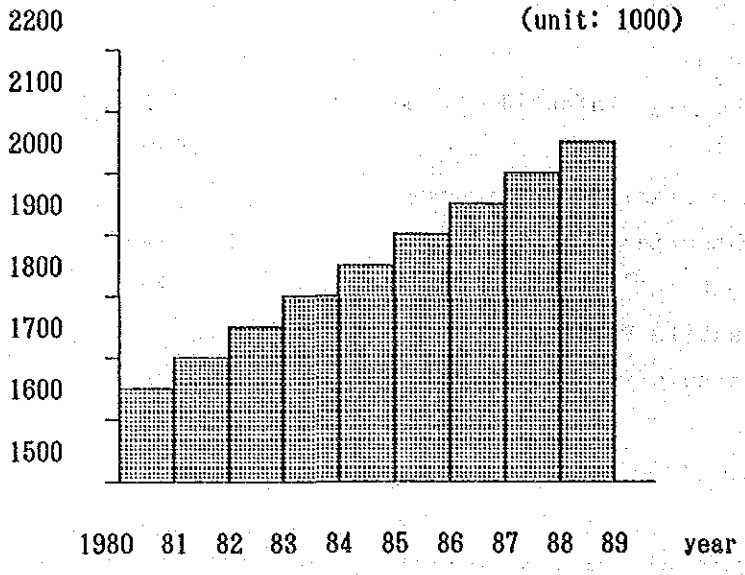
As a general rule, a country's Hygienics indexes are estimated according to the factors of population trends. The following table indicates the statistical figures, places 1960 as the starting point and for every 5 years span it shows the death rates, the birth rates and the population increase rates against 1,000 persons. The indexes for 1986 and 1987 are indicated on a single year bases.

Year	Birthrate	Mortality rate	Natural Increase rate
1960	43.2	10.5	32.7
1965	38.0	12.0	26.0
1970	40.2	12.3	27.9
1975	39.4	10.0	29.4
1980	37.9	10.4	27.5
1985	36.8	8.9	26.9
1986	37.0	8.5	28.5
1987	35.9	8.0	27.9

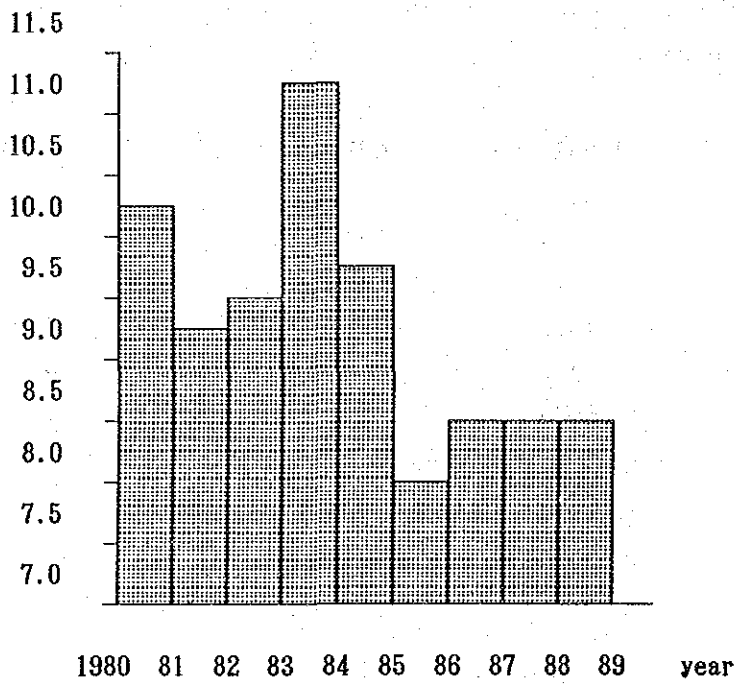
(source : Health White Paper, 1988)

Taking the successive figures for the past 28 years span, and compare the birth rate against the death rate relative to a span of 10 years period starting at 1960, which is at 24.3%, and in succession for 1970 at 30.5% and for 1980 at 27.4%, respectively. This indicates that the conditions have not been improvements. On the other hand, trends of population, and mortality rate during the past 10 years are as following charts.

· Trends of Population



· Trends of Mortality rate (per 1000)



(Source : Health White Paper, 1988)

From the preceding chart it shows the trends of the Mongolian population; using 1980 as the starting line and comparing this with the present population of 2,044,300 people, which is approximately 1.24 times, and the death ratio in 1989 is 10.9/1000 persons, and in 1987 it is 8.2/1000 persons, which shows a reduction of deaths rates. And on the side of population increases it has for the past 10 years grown up to 1.25 times. Moreover, out of the present population structure 42.2% is shared by youths under 15 years old. And if this share is compared with that of the 10 years ago; it indicates the tremendous improvements in the preservation of health during the span for these 10 years.

The Ministry of Health is at present aiming to reduce the health rates still further by placing emphasis in the health care objectives. The reduction of the death rates of new born babies under 1 year old are being on a high of 29.3% must among all others be first reduced, and to place its efforts to the suckling and babies death rates reductions. To this end increasing of doctors, paramedicals and also increasing the number of beds and in order to further level up the specialized knowledge required in this field, to educate the doctors. Besides this, to carry out improvements in operations by taking up the results of the latest medical researches and installing the latest technics. And through the execution of these plans it will further contribute to the leveling up of the health care programs.

2-2-3 Health Personnel

(1) Breakdown of the Health Personnels

Categories	Numbers	
Medicine	5,485	(Male 1,606, Female 3,879)
Bachelor of Pharmacy	421	
Others' Bachelor	480	
Paramedical	17,066	
Associate Medicine		3,979
Dental Technician		105
Laboratory Technician		1,126
X-ray Technician		301
Pharmacist		1,243
Nurse		9,734
Public Health Supervisor		474
Nursing Staff	6,436	

(2) Trends of the Medical Personnels (for 100,000 populations)

	Medicine	Paramedical
1960	9.7	47.4
1970	17.9	62.9
1980	21.2	74.5
1985	24.0	79.1
1986	25.0	79.9
1987	26.0	81.6
1988	26.4	83.6

(Source : From MHSS by hand writing)

2-2-4 Medical School and Its Related Education

(1) Medical Education

The medical education of Mongolia is carried out in two types of courses: one is the regular course for the National Medical University, and the other is a Junior Medical Technical Schools.

1) Medical University

The Mongol Medical University course is equivalent to Colleges and Universities in Japan. Upon graduation they are qualified to become medical doctors. The qualifications to enter the Medical University require an education of finishing an elementary and a middle school education adding up to 10 years, and/or graduating from a middle class medical technical school and for a certain period (over 4 years) of actual medical experiences. Furthermore, there is an age limit of 18 to 35 years old. The educational period at the University depends upon the type of medical education course taken. The following are the educational period for each type of medical department.

Medical Specialist Course	Years to Graduate
General Medical Doctor	6 years
Pediatrics Specialist	5 "
Dentist	5 "
Public Health Specialist	5 "

Numbers of those who obtain qualifications to become a General Medical Doctor from the graduates are on the average 400 every year. Out of this number about 50 are those from overseas, mainly from the Soviet Union and the Eastern Europe. Furthermore, the Mongol post graduate courses established are a 3 step course of specialized technical training course, specialized technical level up course, and Ortenatore course.

2) Post Graduate Education

Qualifications to participate in the Special Technical Training Course is, first, to graduate the Medical University and to obtain the qualifications of a General Doctor (Physician), with over a year actual practices, and to pass the examination required for this course. The term of the course differs

from 2 to 4 months, depending upon the special department the doctor wants to take. The students are around 300 yearly, and receive their lessons at the various City General Hospitals, Aimak Hospitals and at the various District Hospitals in the city of Ulan-Bator.

To enter the special technical level up course, the requirements are that after finishing the Special Technical Training Course and with more than 3 years of experiences, and after passing the qualifications examinations examinee are then accepted. The entrants are around 300 students yearly, and depending upon the speciality area the examinee wants, to study, the term is from 2 to 6 months.

Ortenatore Course is for those who are trying to get qualification to become Surgery Surgeons and/or Special Medical Doctors. To get into this course is limited to those who have finished the two previous courses with outstanding grades and experienced 1 to 2 years of actual practices and also have passed the examinations. The entrants are limited to only 30 students. The period depends upon the course from 1 to 2 years, a much longer time than the previous two courses. Those who graduate from this course are qualified surgery surgeons and special medical doctors. The graduates are classified into two groups, A and B, which reflects upon rewards. Furthermore, graduates of this course are qualified to further studies at a post graduate school.

(2) Education related to Medical Science

There are Junior Medical Technical School and Nurse Training Special School as educational facilities related to Medical Science.

Junior Medical Technical School has training courses for medical engineers and technicians such Bagaimuchi (Semi-Doctors), Sobirakuchi (Nurses). For each course the qualifications to enter this school are to have been graduated from a elementary and a middle school covering altogether 8 years or 10 years of schooling. Junior Medical Schools are located in Ulan Bator, Darkhan and the central part of Aimak administrative area of Gobi-altai, Arkhangai and Dornogovi.

Nurse Training Special School is established only Ulan-Bator City. The qualification to enter this school are to be a graduate of an elementary school and a middle school of 10 years schooling.

1) Junior Medical Technical School

a) Bagaimuchi Training Course

The qualifications to enter this school are to have been graduated from an elementary and a middle school covering 8 years of schooling, The term of this school is for 4 years. Since 1981 that educational system has been revised that a 10 year's schooling career in the elementary and middle school is required. The term of schooling was also shortened to 2 years and 8 months. Most of graduates of this course who got the qualification of associate doctor are engaged in the rural health care in Mongol. Accordingly in most cases they are posted to Som joint Hospital and Som hospitals. They go round Brigad and Suuri, to do give primary cares to patients prior to doctor's treatment and take preventive measures against diseases.

b) Sobirakuchi (Nursing) Training Course

This course is established in 4 Junior Medical Technical School except one on Ulan-Bator. The qualification to enter is to graduate the elementary school and the meddle school with 10 years schooling careers. The term of school is 2 years. Many of the graduates of these 4 schools who a nursing training are working for hospitals mainly in the Aimak area. 50 to 60 students are trained in the nursing training course of each school and about 250 graduateds are posted to rural hospitals.

c) Pharmacist Training Course

The qualification to enter this pharmacist training course of each Junior Medical Technical School is required to graduate the elementary school and the middle school covering 10 years schooling. The team of school is 2 years. About 20 to 50 graduates are working for phamacies where are located in cities or the central part of Aimak administrative area, making sales promotion and management of medicine to market. This middle-classes pharmacists are not qualified to work in hospitals at the moment.

d) Medical Technicians Training Course

This training course is available only in the Junior Medical Technical School in Ulan-Bator. Medical technicians are divided into two categories of

the X-ray technician and Laboratory technician. The qualifications to enter this are to be a graduate of an elementary school and a middle of 10 years schooling. Therm of schooling is 2 years. Every year about 30 graduates are been sent out to their posts in General Hospitals located in cities and Aimak. Now that the assignments to cities are finished, started to district hospital.

2) Nurse Training Special School

The nurse training special school is established only in Ulan-Bator. Though the other Junior Medical Technical Schools open registration from Aimak and the nearby Aimak, this special school admits 600 students nation widely every year and give them a nurse training. Special school is a 2 years school for turnings. After they receive the qualifications of nurse, many of them are obliged to work near their home towns. The contents of nurses consist of intensive care for patients, helping doctors for diagnosis and health administration. Physiotherapy treatment service is also included in their work. However to have the qualifications for a physiotherapist, the nurse who was graduated from Nurse Training Special School or Nurse Training Course, with 2 years working experiences, must further enter the Therapeuties Training Course for the requirement to learn the rehabilitation technics (it is equivalent to Rehabilitation Therapist in Japan).

(3) Senior Pharmacist Training

There is no specialized education system of training course for senior pharmacists. Such pharmaceutical training has carried our in only the special course of National Mongol Medical University but students are not registered to enter this course every year. Thus the Medical University recruits students every 4 or 5 years. Only 20 to 30 students enter this course for their term of 5 years schooling. About 5 students among these are sent to the Soviet Union or Eastern Europe for their study.

Those who receives the qualification of senior pharmacist in the special course can be worked at the Hospital engaging in the administration of medicine. There are quite few pharmacist, one or two persons works in the General Hospitals located in cities and Aimak are.

2-3 Outline of the Related Plan and Program of This Project

2-3-1 Health and Medical Development Plan

Ministry of Health (present: Ministry of Health & Social Services) has proceeded developping plans in the Health and Medical field through series of Five Year Plans and in the 7th 5-year Plan, implemented the developping plan which backbones are expansion of medical institutions, increment of hospital beds and training of manpower, consequently, 24 doctors, 79.3 middle-class paramedicals, 196 other paramedicals and 111 hospital beds (total hospital beds: 21,217 beds) were positioned as per 10,000 population.

The contents and the progress of 7th 5-year Plan in the Health and Medical field mentioned as follows;

The 7th 5-year Plan for Medical Field and Its Achieving Rates

Categories	Unit	No. of Plan	No. of Achievement	%
1. General Hospital	Number	38	37	97.4
2. Specialized Hospital	"	27	24	83.9
3. Hospital for Tuberculosis, Skin Diseases and Venereal Diseases	"	58	56	98.3
4. Somon Joint Health Institution	"	54	50	92.6
5. Doctor Station	"	302	312	108.3
6. Number of Bed for Inpatient	"	21,480	21,217	98.8
7. Associate Doctor Station	"	1,188	1,220	108.3
8. Children's Home	"	441	419	95.0
9. Drugstore	"	443	442	99.8
10. Research Centre of Malignant Communicable Diseases	"	11	13	116.2
11. Hospital for Outpatient	"	73	79	101.3

12. Ambulance Centre	"	30	30	100.0
13. Milk Distribution Organs	"	225	225	100.0
14. Research Centre of Infectious Diseases	"	28	34	121.4
15. Sanatorium for Pediatrics	"	379	396	104.5
16. Doctor	"	4,750	4,581	96.8
17. Pharmacist	"	308	349	115.2
18. Junior Medical Technician	"	15,495	15,105	97.5
19. No. of Diagnostic & Treatment for Outpatient	1,000	70,243	72,720	103.5
20. Preventive Vaccinations	"	4,856	4,857	100.0
21. No. of bed utilization	per month	31,679	39,200	123.7

(Source : From MHSS by hand writing)

In the 8th 5-year Plan, the security of 27 doctors per 10,000 population and 25,989 hoapital beds (121.5/10,000/ population) is planned to achieve by the final year and now it is the final stage of final year of this plan. Once the plan is achieved, the number of doctors will be placed in th 3rd largest among related countries to COMECON, which is same level to the Hungarian's. The yearly targets in each items the 8th 5-year plan are as follows.

Target of the 8th 5-year Plan in the Medical Field

Categories	1985	1990
1. Doctor	4,533.0	6,021.0
2. No. of Doctors against 10,000 pop.	24.0	28.1
3. Junior Medical Technician	15,145.0	18,262.0
4. No. of Junior Medical Technician against 10,000 pop.	80.0	85.3
5. No. of Bed	21,476.0	25,989.0
6. No. of Bed against 10,000 pop.	115.0	121.4
7. No. of Patient against 1 Doctor	416.0	355.0
8. No. of Diagnostic & treatment for outpatient (per year)	9.0	9.5

9. No. of Diagnostic & treatment in Outpatient hospital against 10,000 pop.	17.1	20.3
10. No. of Bed (Provincial area)	6,146.0	7,674.0
11. Progress rate for the above item compared to 1985		25.0
12. No. of Bed (Children's Home)	19,750.0	19,430.0
13. No. of Patient (Children's Home)	25,845.0	27,550.0
14. Ratio of children nursing in children's home against population of suuri	16.2	15.0
15. Pharmacist	340.0	481.0
16. No. of Pharmacist against 1,000 pop.	1.7	2.2
17. Drugstore	444.0	494.0
18. No. of Pharmacist against 1 drugstore	4,279.0	4,331.0
19. No. of Doctor Station which have more than 2 doctors	129.0	215.0
20. Ratio of the above mantioned No. against total No. of Doctor Station	40.0	75.0

(Source : From MHSS by hand writing)

2-3-2 Related Plan and Program concerning This Sector

The Eighth consecutive 5-year Plan relative to the Health and Medical care plan has stressed and laid its development basic policy for the items listed below, as well as in its actualization measures and problems to be resolved.

-1. Reinforcement of prevention measures operations and augmentation of Health management registry system operations
-2. Improvements and expansions of health care and preventative measures
-3. Improvements and expansions of child and maternal health care
-4. Rationalization (fair and proper) of Medical care personnels
-5. Application of the fruits obtained from scientific technology
-6. Ameliorations in medical supplies and expendables system

Moreover, in the pursuance of the Ministry of Health Ninth consecutive 5-year Plan (1991 to 1995) the measures of the course to be taken in the basic plan and problems lodge the following items to be taken up.

-1. Internal Medicine are not adequately being performed
-2. Kidney treatment facilities are not even meeting 1/3 of the demand

-3. Equipment for Neurological are not adequately equipped
-4. Clinical examination technics of laboratory are getting obsolete not up to schedule
-5. Even at Aimak level the medical care equipment are not adequate to meet serious emergency cases
-6. Discovery of cancer in the early stages and no countermeasures against child cancer
-7. Adequate dental and dentist equipment and supplies for treating the children are not in order
-8. *Shortages of Ophthalmologists*
-9. X-ray equipment are the old types that doctors and technical operators are doing their diagnosis under the exposures of X-rays radiation
-10. Even at Somon's level clinical examination equipment of the laboratory are insufficient, which makes it practically impossible to carry on the examination
-11. Even at the Capital's medical facilities, equipment of pathological anatomy for chronic diseases are not adequately furnished, which makes it impossible to carry out biochemistry

These items are a few of the problems that must be solved and continued to be drafted, and actualized as a long range program for the 5-year Plan, in the year 2005.

2-3-3 Positioning of This Project

As noted above 2-3-2, the Eight consecutive 5-year Plan item 2 and 3 the realization of adequately providing medical care to the inhabitants in Mongolia , widely, is of foremost urgency. And for the Nineth consecutive 5 year Plan the way the situation is heading for is indicated in the Health Care Policies item 1, 4, 5, 9 & 10. This Nineth consecutive 5-year Plan is a supplementary to assist the promotion of the Eighth Consecutive 5-year Plan. Hence, this plan is to adequately provide the medical care basic equipment to the numerous medical organizations under the National Health Care Network System. The Eighth Consecutive 5-year Plan indicated development basic policies and the Nineth consecutive 5-year Plan indications of the way the health care shall be heading for is indispensable in the actualization in solving the various administrational problems lodged, herein.

By the materialization of this plan starting from the city level sown to the Aimak and to even the Somon level organizations shall be provided with the medical care basic equipment. This will make it possible to draw up plans in levelling up a balanced diagnosis and medical treatment technics in the general medical care as well as and even extend to the expansion of the medical care of Somon's 40 hospitals, which shall also benedicially affect the Brigads and the Suuris medical care services to the Nomads.

2-4 Current Situation Concerning the Object Hospitals of this Project

2-4-1 Republican Hospitals

The object of this Project are the 3 Republican hospitals; Central Republican Clinical Hospital, National Centre for M.C.H. and Republican Oncological Research Centre. And as Republican Hospitals are located in Ulan-Bator city. These 3 hospitals are Referral hospitals of a higher levelled efficiency than that of the District Hospitals, Aimak Hospitals and its subalterns, which looks after the general inhabitants medical care and health, while they centre their activities to those afflicted with intractable diseases. Out of these 3 hospitals, the Central Republican Clinical Hospital functions are as a general hospital, but on a higher level than the District Hospitals and Aimak Hospitals in that it takes over those patients afflicted with intractable diseases that the above 2 hospitals would not be able to take care of. The other 2 hospitals are specialized hospital. Out of the remaining 2, the Oncological Research Centre is the only hospitals that cancer treatment is practiced, and it is doing counter measures to find the means and ways of discovering cancer at the early stages, as well as the hospital that does the researches concerning cancer. The remaining one is a M.C.H. The objects of this hospital are composed of 2 medical organs; one is the obstetrics and gynecology and the other the pediatrics for protection the mother and child, as well as to do researches in this sector. The research section of this hospital is carrying out important researches in protecting the newborn babies from the extremely high death rates newborn babies share within the country, and researches on the subject of hereditary transmissions coming from diseases, and the overall researches in its treatment.

(1) Central Republican Clinical Hospital (The First Hospital)

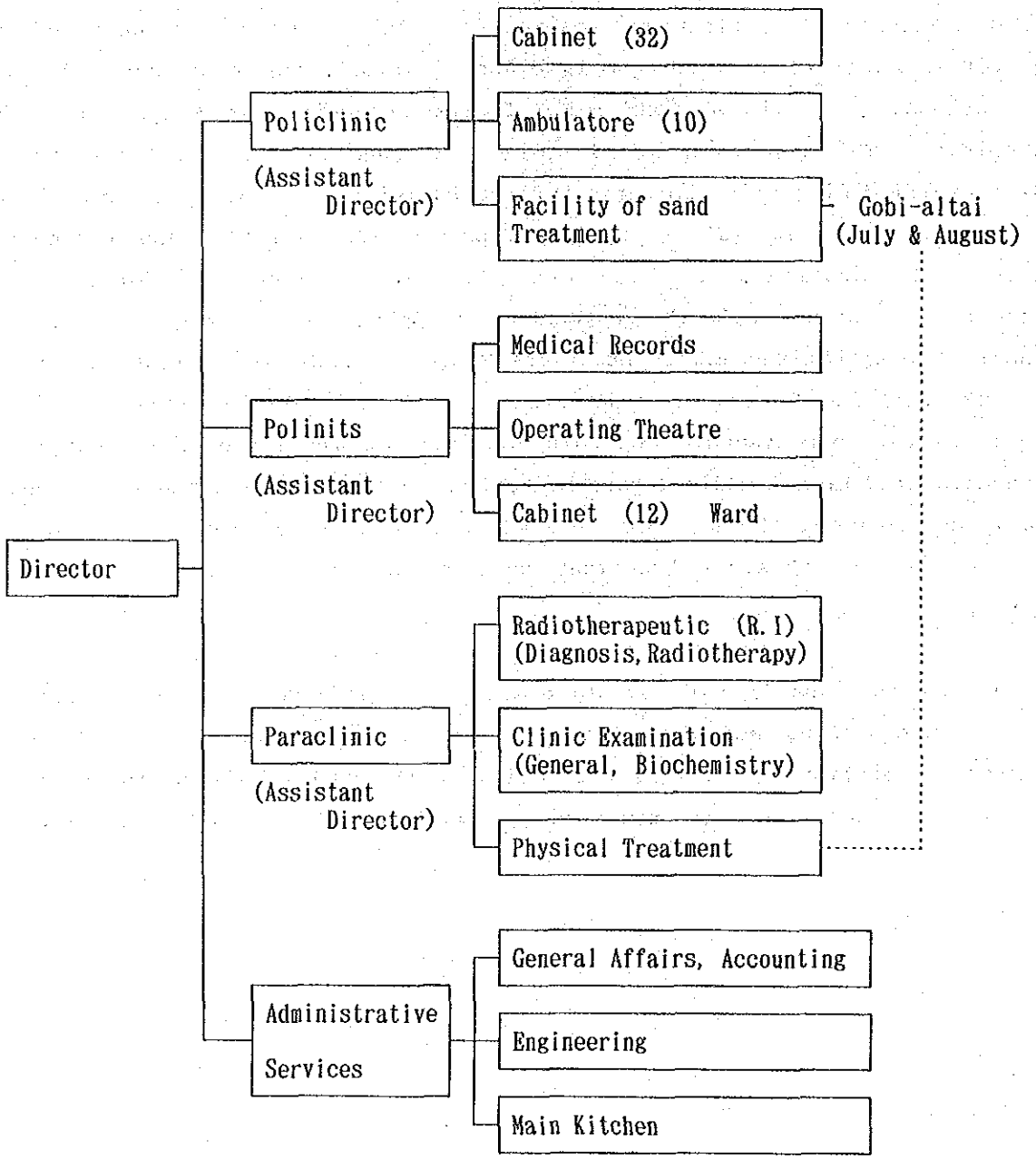
1) Outline

It is situated in the city in the district of Sukhebaatar neighboring the Mongol Medical University. It is a general hospital on a higher ranking than that of Sekhbaatar District Hospital, Nairamdal District Hospital are its subordinates. The hospital is organized into 4 departments, and its operations are operated and managed, accordingly. The departments are Policlinic (diagnosis of outpatients), Polinits (diagnosis and treatment of inpatients), Paraclinic and the Administrative Services. The diagnosis functions of this

hospital is a bit different from the Japanese practices. It is especially noticed in cases of outpatients. It is, probably, branched out into specialized diagnosis classifications (cabinets). As an example, Japanese general hospitals have around 16 diagnosis classifications; for which have 32 classifications. This is a distinctive feature practiced in Mongolian general hospitals. This general hospital's diagnosis functions are for the Policlinic 32 classified diagnosis cabinets, for the Polinits 13 classified cabinets, the Paraclinic are composed of Radiotherapeutic (Radiotherapy and Diagnosis), Clinical Examination of Laboratory and Physical Treatment. In addition, there are the traditional medical treatments, the Ambulatoriya, which is outside of the main hospital and mainly practices Mongolia Traditional Treatments (refer to Organization Chart of Medical Services) with 10 classified diagnosis cabinets for outpatients. And this hospital has facilities for treating the Mongolia traditional medical care by heated sand only during the summer season (July and August). This traditional medical care styles are operated in collaboration with physical treatment cabinets at the main hospital in Ulan-Bator.

On the other hand, administrative services have 3 departments; general affairs, engineering and main kitchen, and managing the administration and clerical operations of hospital, totally. In the case of the Engineering section, it manages the maintenance and repairs of buildings and equipment.

2) Organization Structure of The First Hospital



This is a mainstay hospital giving medical care to the inhabitants as a referral hospital, and especially, on the Blood Dialysis, Plastic Surgery and Endoscopic of Urology functioning as a National Centre. On the other hand, it is the medical educational institution of the Republican Mongolian Medical University. Simultaneously, it is the in-service-training hospital for the specialist in general. Its relation with the University in joint researches in the various departments and field of study, and the fruits of their researches are urgently needed for applications in the clinical examination field.

3) Organization Chart of the Medical Services

POLICLINIC

(32 Cabinets)

1. Lung, Respiratory Organs
2. Stomach, & Intestines
3. Pancreas
4. Gallbladder
5. Liver
6. Kidney
7. Heart
8. Cerebralnerves
9. Psychometry
10. Ophthalmology I
11. Ophthalmology II
12. Otolaryngology I
13. Otolaryngology II
14. Auditory Organs
15. Gynecology
16. Rectum, Anus
17. Urology
18. Urology Endoscopy
19. Trauma Surgery
20. Surgery of Internal Organs
21. Endoscopy I
22. Endsocopy II
23. Brain Wave Test
24. Injection
25 to 32. Dental Surgery

AMBULATORE

(10 Mongol Cabinets)

1 to 5. Acupuncture, Moxa
6. Massage
7. Yoga
8.
9. Osteopathy
10. General Diagnosis and Treatment

FACILITY OF SAND TREATMENT

(Gobi-Altai)

POLINITS

(14 Cabinets)

1. Lung, Respiratory Organs
2. Circulatory Organs
3. Pancreas, Bile-duct/Gallbladder
4. Kidney, Urology
5. Stomach, Intestines, Liver
6. Rectum, Anus
7. Psychometry
8. Ophthalmology
9. Otolaryngology
10. Plastic Surgery
11. Artficial Dialysis
12. ICU
13. Operating Room
14. Data Room for the patient past record

PARACLINIC

Physiology
(1) Pulmonary Function Test
(2) Electrocardiogram
(3) Electroencephalogram
(4) Ultrasound Diagnosis

Radiotherapeutic
(Diagnosis, Radiotherapy)

Clinical Test
(1) General Examination
(2) Biochemistry
(3) Bacteriology
(4) Cytology

Physical Treatment
(Non-drug Treatment)

4) Outline of the Main Departments

This hospital is a Referral hospital of a high caliber functioning medical care with the Sukhebaatar district hospital and Nairamdal district hospital as its subordinates. Therefore, it is equipped with diagnosis and treatment such as Radiotherapeutic, Endoscopic, Blood Dialysis, Urological Endoscopic, Ophthalmology, Physiological Function Test and Plastic Surgery that are not equipped in the district hospitals and even Aimak hospitals. It is a National Centre attends to the Hospital that the medical care not only to the inhabitants within the city, but as well as to the inhabitants living outside of the city.

a) Radiotherapy and Diagnosis Function of the Radiotherapeutic

This department is equipped with Gamma Camera (treatment), Gamma-Ray Measuring Apparatus and X-ray Therapy Apparatus. The Gamma Camera is made in Soviet Union (Gavamatic) and installed in 1970s and is a semiautomatic (non-computerized) type. The X-ray Therapy Apparatus is not being utilized at present. Gamma-Ray Measuring Apparatus is made in England.

The X-ray Diagnostic Equipment are;

1) one apparatus of Tomographic made by Siemens in the 1960s
2) one apparatus of Fluoroscopic is also of the '60s type
3) one apparatus of Radiographic equipment

These so called '60s types are during the diagnosis observing is exposed to X-rays and if it is continued for many years the possibility of being exposed to the amount of X-rays critical degree.

(b) Diagnosis and Treatment Function of Endoscopic

The endoscopic cabinets installed in this hospital ranks this hospital as the National Centre for endoscopic diagnosis and treatment,where examinations and diagnosis of the patients are conducted,and simultaneously function as an organ for training specialist (doctors) in learning the endoscopic technic aspects. At present 2 sets of upper gastrointestinal, 1 set of duodenum, 1 set of bronchial are installed. The endoscopic observations and biopsy examinations are conducted at the moment and the improvement on coagulation and polypectomy under endoscopic treatment is farther planned to be carried out.

c) Blood Dialysis

Concerning kidney trouble patients and its treatment Automatic Dialysis Unit, this is the only hospital that has installed this equipment. At present 2 sets of Automatic Dialysis Unit have been installed, and treatment of only 3 to 6 persons a day can be done. This main equipment was made in Czechoslovakia and Japan. Automatic Blood Dialysis Unit attached to the main equipment is known as the Keel type, which was developed in the 1930's years and is still in use. Western World and Japan this Keel type unit has around 10 years ago despaired from the market and since then, it is out of production. Nevertheless, the Dialyzer used is relatively inexpensive and the specialized doctor's technical ability being on a high level, it still is being competently used. But, in considerations of the Blood Dialysis Unit being placed out of production the procurement of the Dialyzer will be a problem in the near future and can create the causes of troubles. At present Keel type Blood Dialysis Unit the necessary tube connector has come to be hard to get and is a headache problem. Moreover, the shortage of the tools are shown up, such as Blood Circuit (connection for Blood Dialysis Unit to human body), indwelling needles and Blood-tube surgery instruments (to conduct AV shunt i,e, connecting artery to vein). The present situation being in such a condition the Blood Dialysis Unit is entering into a transitional period. For instance, the hospital changes over into the new types of Blood Dialysis Units, this Dialyzer being installed is a one-time throw away use type, which is used once for each person, the running costs for Dialyzer expendable item will increase can be presumed. On the other hand, the utilization of the present facilities will sooner or later give rise in the maintenance of the facilities, first of all, starting with obtaining of the Dialyzer as well as supply of other parts will be impossible. In this sense, the time has come in choosing one or the other, since there is no alternative the new for the old. On another point, the hospital makes and uses its own Dialysis solution which will to a certain extent lower the maintenance and control costs.

In regard to the instruments such as forceps and scissors, looking from the overall actual practices, specialized instruments are not in sufficient order. For example, instruments to make a cut in the vein, and the same can be said for Eye specialist and Ear, Nose and Throat surgeons operation instruments are being used just because the specialists do not have instruments specialized in their field. It is not easy to get the correct cuts the specialists would want with a general surgeon's instruments, but due to this

substituted instrument, the patient and the specialist are placed under unnecessary hardships.

d) Urological Endoscope

Urological Endoscope cabinets are already provided its contents are relatively in good shape. For instance, West Germany (Schiotz), Japan (Olympus) Urtera Renofiberscopes and Cystofiberscopes for examinations are provided. And also the surgery instruments are in sets and the Endoscopes are provided. The endoscope used for TUR (Prostatectomy) Electro Surgical Unit (for urological surgery) has been provided.

e) Ophthalmology

The Ophthalmology cabinet is divided into the diagnosis testing and treatment sections. The diagnosis equipment installed are equipped relatively substantially; the Goldman type Perimeter, Fundus Camera, Ophthalmoscope, Slit Lamp and Trial Lens Set. The Polinits is provided with a Ophthalmological Operating Microscopes (3 to 5X) for Ophthalmic as a Ophthalmology equipment.

f) Physiological Function Test

In this cabinets are provided Electroencephalograph 13-ch, Electrocardiograph 3 and 6-ch. All of the items are made in Soviet Union. Spirometer (measuring of the pulmonary functions) is the non-water Drum type, also made in Soviet Union. It has a large revolving drum and at present, is out of operation due to equipment troubles. It is out of production in Soviet Union because it is an out dated type which needs manual operation through all the process till measurement and even repairs are not possible.

g) Plastic Surgery

Plastic surgery is a surgical department such as harelipped and such other innate facial qualifications. As the nature of this surgery calls for a delicate operation, it is necessary to carry these operations with specialized instruments, otherwise it will leave scar marks of surgical operation if it is done with indelicate general instruments.

h) ICU

ICU (Intensive Care Unit) has been established, centrally, for the care of those serious patients after the surgery operations, Respirator and Bedside Monitor have been equipped. Patients monitoring is being done with elctrocardiogram, respiration, temperature and electroencepharogram, but, care in the area of post surgery requiring Low Pressure Continuous Suction Unit are not provided, causing much inconveniences.

i) Surgical Operating Section

There are two operation rooms, Operating Tables and Anesthesia Apparatus, which are at least sufficient. Except that the Operation Table is out of order in its up and down movements, and at the same time it is not possible to position the body to a lateral tilt that is required for an open heart surgery and also unable to set it to the Trendellenburg position. It is an old type. One set of Electro Surgical Unit made in Soviet Union type of the 1969 was installed, but it was equipped for blood coagulation only, and not for surgical operation incision purposes. And sets for were very few. In case of the central vacuum system should by chance be out of order, it would be impossible to carry on the surgical operations.

j) Clinical Laboratory

Clinical Laboratory is made up of a general examination, biochemical examinations, bacteriological examinations and cellular tissue examinations, and immunity examinations. The general examinations equipment are 3 sets of Monocular Microscopes, 1 set of Binocular Microscope, 2 sets of Centrifuges, 2 set of Refrigerators and 1 set of Drying Oven.

The equipment of biochemical examinations are 2 set of Colorimeters, 1 set of Spectrophotometer, 1 set of Centrifuge and 1 set of Balance. And the examination of this sections for blood and urine examinations are being tested with these 4 types of equipment. Urine examination is mainly to gather the total albumen, urea nitrogen, creatinine and uric acid, which is used to examine the kidney functions. The blood examination is done with a Centrifuge and take out the blood serum, urea, creatine, urea acid, GOT, GPT, cholesterols, mainly, to examine the kidney and liver functions. The reagents used for the examinations is formulated at this section.

Cellular tissues examination is not practiced at present. Nevertheless, equipment to this end are being rapidly provided for a woman doctor, who had completed studies on this subject in East Germany. For the present the object of examination shall be centered to the tissues taken out from biopsy and examined with screenings.

Immunity examination is done with the RIA System. The equipment was not in the hospital, but according to the attendant, it is installed and applied in the Research Centre. Moreover, the examination by RI (radio-isotopes used for immune reaction) is done by placing a supply request, when the necessity arises, to the Atomic Energy Committee, who is the caretaker of this item. The expenditures involved are taken care by the Committee's budget, hence the hospital have nothing to worry on this account. This system is also applicable to soda lime, which is necessary to absorb the carbonic acid within the respiration circuit of the Anesthesia Apparatus. the pharmaceutical Bureau of the Ministry of Health takes care of the expenditures for this soda lime.

(2) Republican Oncological Research Centre (Oncological Centre)

1) Outline

The Oncological Centre is the general medical facilities in Mongol that has full responsible for the treatment of cancer and in the development of the treatment, detection in the early stages and preventive measures of cancer as a part of the scale on a nation wide basis.

It is the axis of the consolidated measures against cancer, and deployed under this Centre in order to cooperate in fighting against cancer are 26 Cancer Diagnosis Cabinets. These 26 Cancer Cabinets are situated 6 in the district hospital of Ulan-Bator, Darkhan city General Hospital, Erdenet city General Hospital and 18 Aimak Hospitals, and are working on the detection of cancer in the early stages and its preventive measures. These cabinets operation, due to its organizational set up, are affiliated with each of the general hospital, and its activities are directly under the control of the Ministry of Health. Nevertheless, guidances and medical care services are carried out by this Centre.

The Oncological Centre is made up of Policlinic (specialized 10 cabinets), Polinits (specialized 5 cabinets), Paraclinic (specialized 3 cabinets), Brigad

and department of Administrative Services.

Policlinic is made up of 10 cabinets such as Surgery, Stomach & Intestines, Lung & Respiratory organs, Circulatory organs, Gynecology, Anesthesia, Endoscopic, Rediotherapeutic, Physical treatment, Ultrasound diagnostic.

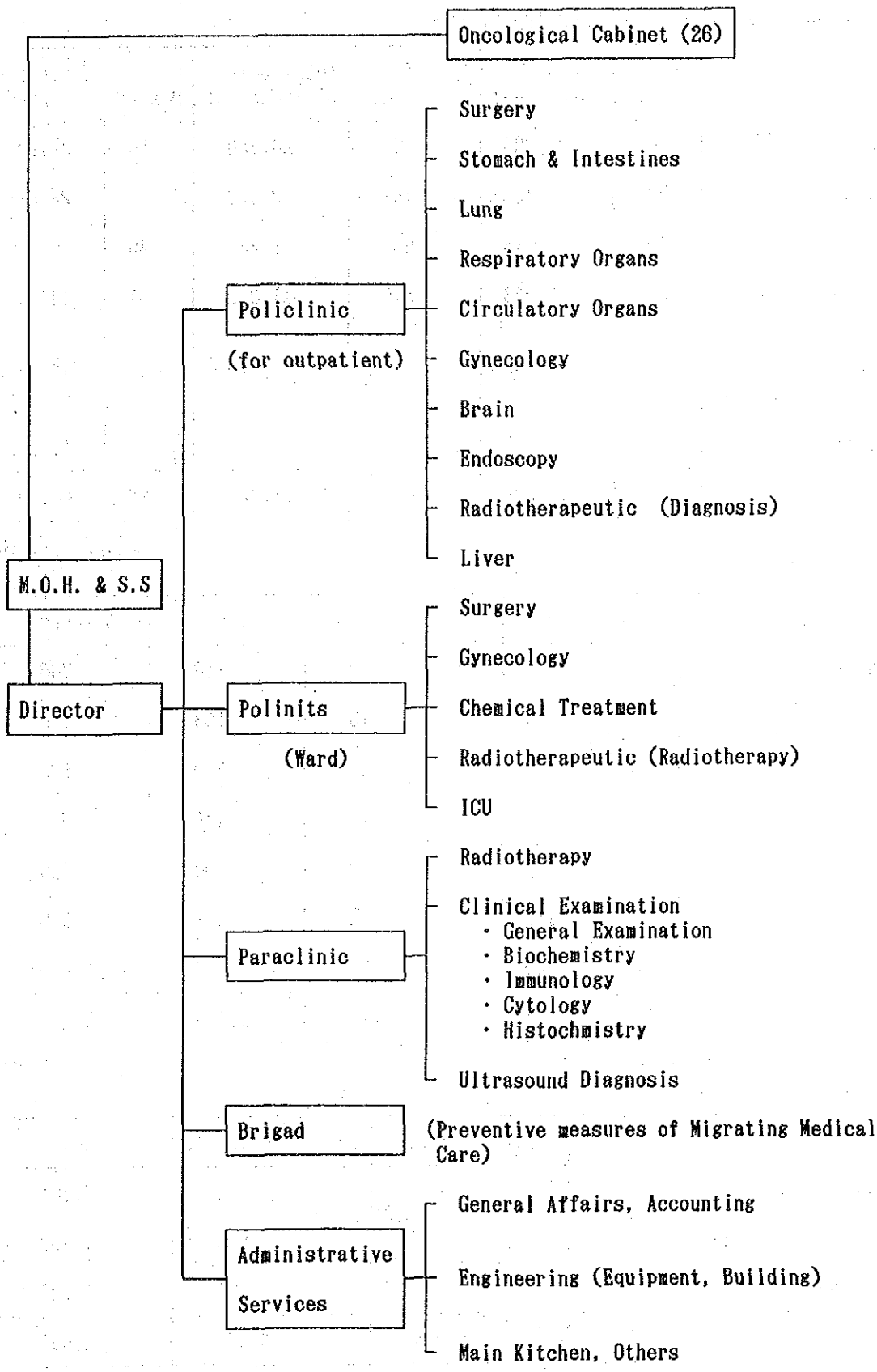
Polinits is made up of total 206 beds, Surgery 60 beds, Gynecology 70 beds, Physical treatment 40 beds, Radiotherapy 30 beds and ICU 60 beds.

Paraclinic is made up of 2 cabinets such as Radiotherapeutic (diagnosis) and Clinical Laboratories. Clinical Laboratories are made up of 5 specialized cabinets, such as General examination, Biochemistry, Immunology, Cytology and Histochemistry.

Brigad (touring examination unit) is made up of 5 specialist doctors such as Surgery, Gynecology, Radiotherapeutic, Histochemistry and Endoscopic, and 3 technical specialists such as Radiology, Clinical examination and Therapist, altogether composed by a total of 8 members. This Brigad makes the rounds to the various places in the Aimak and Khoto; especially for cancer examination of malignant neoplasms detection during the early stages.

The 26 places throughout the country; Aimak and Khoto general hospitals that are provided with cabinets have a cancer diagnosis doctor, Bagaimchi (Semi-doctors) and a Therapist (treatment specialist and 2 technical experts) totaling 3 members. The Brigad is organized for the purpose of detecting in the early stages of malignant neoplasms on the one hand, and on the other hand the cabinet is for the purpose of giving guidances in preventative measures relative to the early detections of cancer.

2) Organization Structure of the Oncological Centre



3) Clinical Activities of Oncological Centre

a) Number of Outpatients and Inpatients

	Bed Capa.	No. of Outpatient	No. of Inpatient	Total Date of Inpatient	No. of Deaths	Expenses /Bed
Surgery	70	28,000	806	20,580	56	22.89
Gynecology	70	20,400	741	19,153	7	24.49
Chemotherapy	40	4,613	661	22,232	39	
Radiotherapy	35	2,233	519	11,042	11	14.56
Serious Illness (ICU ?)	4	288	228	1,320	15	15.30
Others	-	32,280				(Tug.)
Total	220	74,805	3,015	73,384	128	64.50

(April, 1990)

b) Leading Causes of Outpatients

Categories	Male	Female	1 month	1 year	5 years
Esophagus	94	46	12	140	700
Stomach	114	40	13	158	790
Liver	198	122	26	320	1600
Lung	86	30	10	116	580
Cervical	-	108	9	108	540
Others	68	116	15	184	920
Relapse	321	800	93	1,121	5,605
Total	881	1,262	178	2,141	10,194

(April, 1990)

c) Diagnosis of Portrait

	Inpatient Dept.	Outpatient Dept.	Total
Radiotherapeutic	4,140	4,154	8,294
Ultrasound Diagnosis	682	1,086	1,768
Endoscopic	231	792	1,023
Total	5,053	6,032	11,085

(April, 1990)

d) Specimen Tests

Categories		Inpatient Dept.	Outpatient	Total
General Examination	Blood	6,618	2,881	9,499
	Urine	3,889	2,198	6,087
	Total	10,507	5,079	15,586
Biochemistry	Albumen	3,623	742	4,365
	Choles-terol	715	165	880
	Carbon & Hydrogen	227	75	302
	Electro-lyto	114	67	181
	Fe	816	231	1,047
	Hemoglobin	942	207	1,449
	Others	213	-	213
	Total	6,650	1,487	8,437
Others	Immunity	1,179	1,146	2,325
	Cell	9,460	9,472	18,932
	Tissue Biopsy	2,310	2,324	4,634
	Total	12,949	12,942	25,891

(April, 1990)

e) Others (Examination)

Categories	Inpatient Dept.	Outpatient	Total
R.I. Examination	319	638	958
Vector Electrocardiogram	2,601	776	3,377
Total	2,920	1,414	4,335

(April, 1990)

f) Radiotherapy

Categories	Inpatient Dept.	Outpatient	Total
Radiotherapy	988	-	988

(April, 1990)

4) Outline of the Main Departments

This Oncological Centre is the only organization in the country that is in charge of overall measures against cancer. Hence, it is substantially provided with Clinical Laboratory, Rediotherapeutic (radiotherapy and diagnosis), Surgery and Post Surgery Monitoring and Pathology. Treatment depends upon the conditions of the malignant neoplasms medical care practiced are rasion of a focus, radiotherapy, chemotherapy or in combinations with radiotherapy and chemothrapy. Concerning the clinical aspects as well as the basic researches for cancer and its overall countermeasures, the Centre and the competent universities are jointly exploring the answers and measures. Students from the medical universities and medical technical schools receive their education and training in the field of cancer at this Centre. In this respect it also is an educational institution for cancer orientations.

a) Radiotherapeutic (Radiotherapy and Diagnosis)

As radiodigiagnostic equipment, Fluoroscope, X-ray photography unit, Tomography unit, RI scanner for full length, Diagnosis unit for renal function and Diagnosis unit for thyloid gland function etc., one of each are installed in this department. 3 sets of Gamma photography unit for full length, 1 set of Body cavity therapeutic unit and 1 set of Therapeutic position unit are also installed. Those all equipment are provided by Soviet Union and East Germany. Notwithstanding that this Centre was completed in 1982, the facilities and equipment capabilities and functions are the similar situation in the '60s of Japan. In the near future, already ordered CT Scanner shall e delivered and installed in this Centre.

b) Surgical Operations, ICU Departments

Departments of the surgical operations Operating Tables, Anesthesia Apparatus, Operating Lights and Electro Surgical Unit are products of the Soviet Union. Anesthetic of whole body by Nitrous oxide and Halothane is still the main practice which is the method Japanese has been using for the past 15 years. Supply of oxygen and general suction system for the operating room are systematized central piping system as that of Japan. The Electro Surgical Unit is an old type and manufacturing of this equipment in West Europe has been closed.

The ICU installed is a Central Monitoring System (Hungary product) for patients. This equipment gauges the measuring of electrocardiogram, electroencepharogram and respirations. The Respirator is a Soviet Union product.

c) Clinical Laboratory

There are 5 sections in this clinical laboratory equipped to carry out examinations:

-1. The general examination section, it is equipped mainly with Monocular Microscopes, Blood Cell Counters, Centrifuges and Colorimeters.
-2. The biochemical examination section, it is equipped mainly with Spectrophotometers, Balances and Centrifuges.
-3. Immunity examination section, the equipment noted were Freezing Microtomes and Spectrophotometers. But for immunity examination equipment, Electrophresis Apparatus was the only one that was seen, and equipment such as Densitometer and RIA System could not be seen, which leads to infer that immunity measuring is practiced by placing the sample in test tubes and gauged by Spectro- photometers.
-4. Cytological and cellular tissues examination sections are equipped with Tissue Processor, but tissue embeddings are done by hand operations.

(3) National Centre for M.C.H.

1) Outline

This Centre is made up of 4 departments; Children General Clinic, Obstetrics & Gynecological Clinic, Research & Paraclinic and Administrative Services, and each department is managed by the Assistant Director. The First Assistant Director is also in charge of the research & paraclinic departments. The Centre as a whole is managed by the director of the Centre, who is assisted by the Science Committee and the Management Committee set up for this purpose. (refer to Organization Structure of M.C. Hospital)

The Children General Clinic is made up of 28 counsellings (outpatient treatment) cabinet type of Policlinic, and 720 beds (Wards) type of Polinits.

The Obstetrics & Gynecology Clinic is made up of 22 outpatient treatment cabinet type of Policlinic and Polinits with 80 beds.

M.C.H. is a National Centre Hospital and also operates as a referral hospital of the district obstetrics hospitals and pediatrics hospitals in the city of Ulan-Bator, and to all of the Aimak's obstetrics and pediatrics clinics.

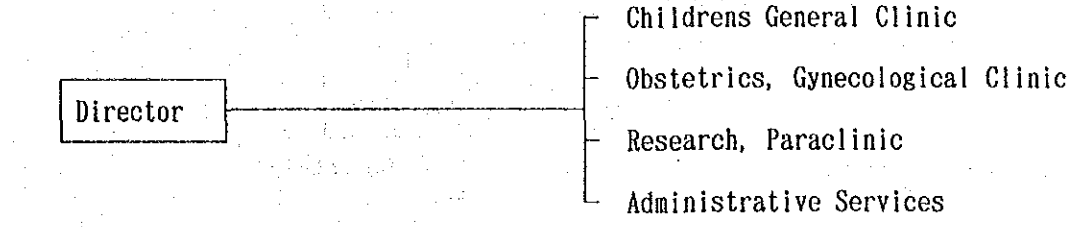
The Research & Paraclinic can be said to be widely classified into 3 fields;

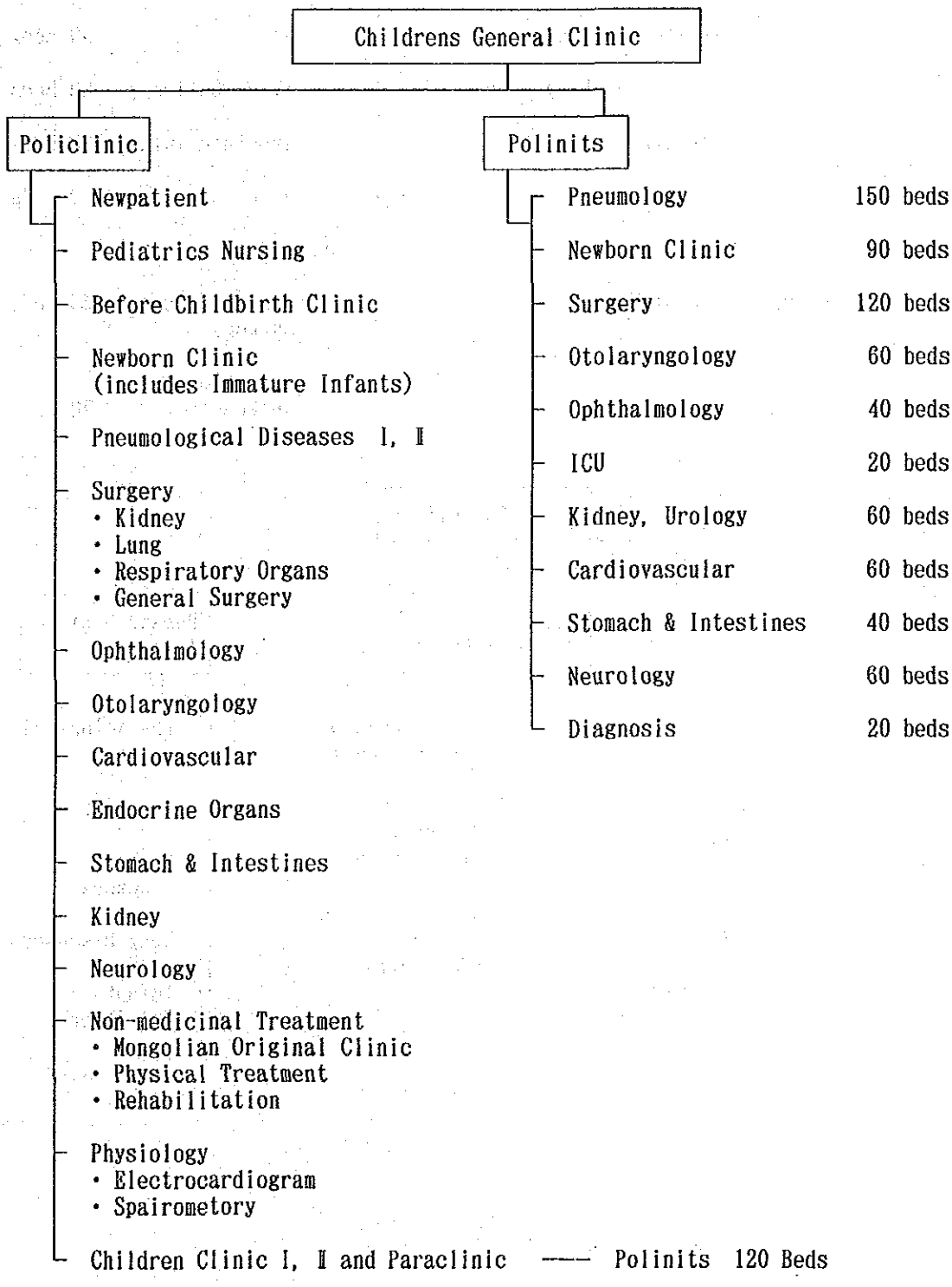
-1. Paraclinic for joint usages of the Children general clinic and obstetrics & gynecology clinic,
-2. Clinical joint research for mothers & Children and the research for pediatrics diseases,
-3. Paraclinic is a department that accommodates the joint and common usages in the fields of clinical laboratories, the physiological function tests, the rediotherapeutic and physical treatment.

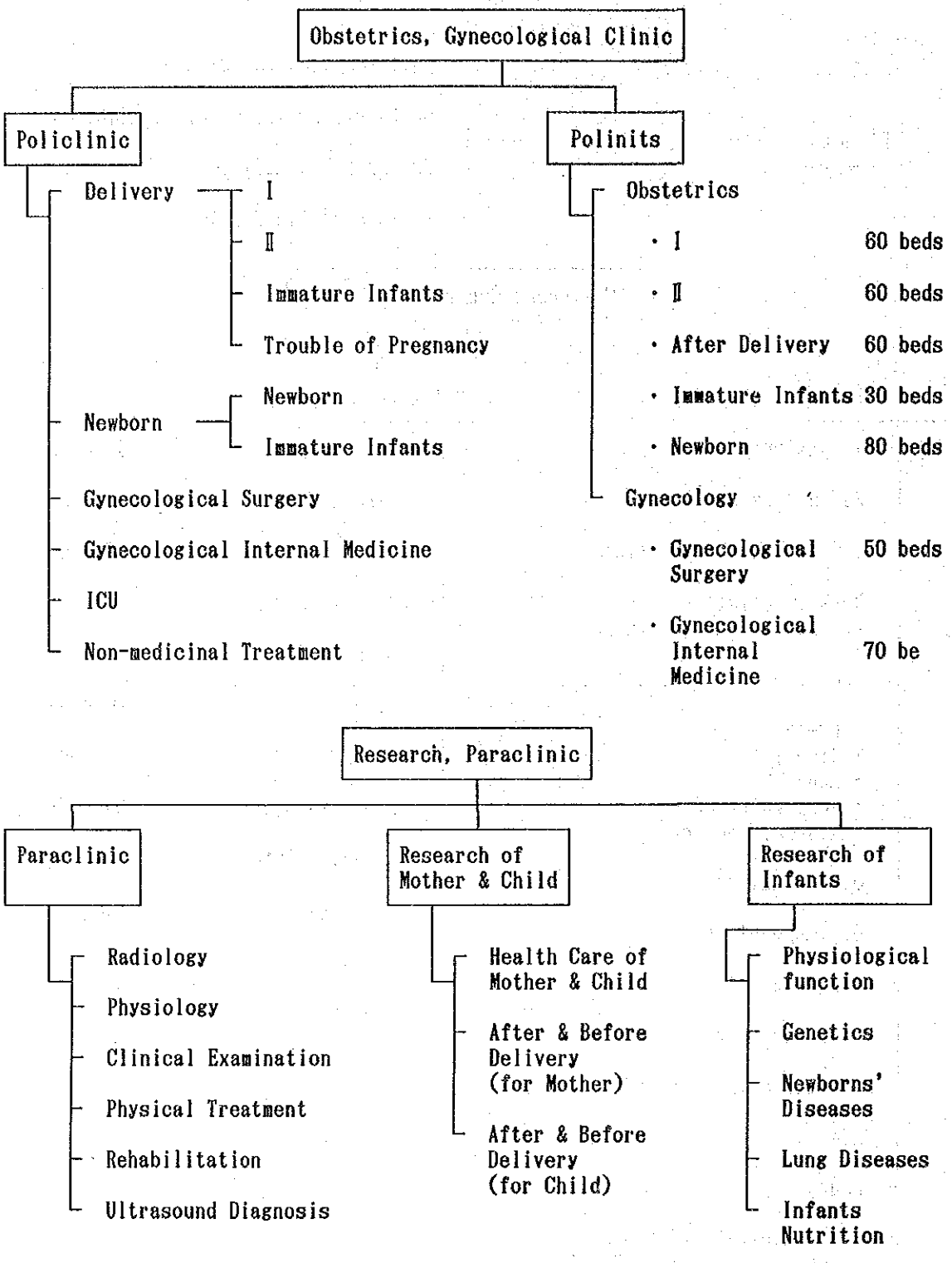
The departments of Administrative Services consists of the general affairs, services and engineering sections. The services section mainly takes care of the kitchen, laundry and materials supplies operations. The engineering section takes care of the maintenance of the medical equipment, as well as the maintenance of the buildings.

2) Organization Structure of M.C. Hospitals

Outline






Obstetrics, Gynecological Clinic
Policlinic
Delivery
I
II
Immature Infants
Trouble of Pregnancy
Newborn
Newborn
Immature Infants
Gynecological Surgery
Gynecological Internal Medicine
ICU
Non-medicinal Treatment
Polinits
Obstetrics
· I 60 beds
· II 60 beds
· After Delivery 60 beds
· Immature Infants 30 beds
· Newborn 80 beds
Gynecology
· Gynecological Surgery 50 beds
· Gynecological Internal Medicine 70 be
Research, Paraclinic
Paraclinic
Radiology
Physiology
Clinical Examination
Physical Treatment
Rehabilitation
Ultrasound Diagnosis
Research of Mother & Child
Health Care of Mother & Child
After & Before Delivery (for Mother)
After & Before Delivery (for Child)
Research of Infants
Physiological function
Genetics
Newborns' Diseases
Lung Diseases
Infants Nutrition

3) Clinical Activities of National Centre for M.C.H.

a) Number of Outpatients (Children Clinic, 1989)

Department	Month								
	1	2	3	4	5	6	7	8	9
Diagnosis	40	49	59	50	53	48	56	52	55
ICU	39	49	42	44	40	46	52	41	55
Newborn	105	126	137	181	155	150	90	94	119
Surgery	176	171	144	171	165	171	137	175	191
	97	86	65	99	87	109	85	96	78
Ophthalmology	46	42	40	45	61	66	48	57	58
Neurology	68	71	61	64	71	70	61	63	63
Lung (I)	126	131	154	143	97	73	49	49	67
Kidney	30	35	43	39	25	26	41	31	33
	62	60	65	53	45	61	54	60	49
Anesthesia	17	23	12	28	25	23	26	21	11
Newborn Resuscitation	35	51	46	45	40	30	39	29	35
Lung (II)	-	-	144	168	102	121	75	84	138

(April, 1990)

b) Obstetrics & Gynecological Clinic

Department	Month					Total
	8	9	10	11	12	
Obstetrics Clinic	403	603	492	519	555	2,645
Gynecological Clinic	418	442	450	443	427	2,188
Total	907	1,045	942	962	982	4,833

(April, 1990)

c) Number of Outpatients of Childrens Clinic

	1984	1985	1986	1987	1988
Diagnosis	305	361	507	503	291
ICU	2,229	1,825	2,281	2,031	1,207
Newborn	1,652	1,662	1,883	1,494	1,438
Surgery	1,558	1,651	1,591	1,622	2,115
Otolaryngology	1,147	1,051	1,041	984	1,053
Ophthalmology	-	-	-	56	456
Neurology	886	1,038	390	226	533
Lung	2,212	1,247	999	1,127	2,478
Kidney	584	618	380	149	364
Cardiovascular	791	726	685	726	777

(April, 1990)

d) Number of Operations (Childrens)

	1984	1985	1986	1987	1988
Ear, Nose and Throat	426	264	371	381	486
Lung, Abdominal Organs Others	1,094	1,172	1,271	1,247	1,344
Eye	-	-	-	-	203

(April, 1990)

e) Number of Operations (Obstetrics & Gynecological Clinic)

Department	1988
Obstetrics Clinic	62
Gynecological Clinic	103
Policlinic	42
Total	207

(April, 1990)

f) Mortality rate (Childrens Clinic)

	1984	1985	1986	1987	1988
Diagnosis	1.6	0.4	0.9	0.5	1.7
ICU	7.7	11.5	6.9	7.6	7.1
Newborn	9.9	10.3	7.5	8.5	5.0
Surgery	3.8	4.8	4.2	3.0	2.3
Otolaryngology	0.3	0.3	0.3	0.5	0.6
Ophthalmology	-	-	-	-	-
Neurology	1.7	1.2	2.0	-	1.6
Lung	1.1	2.6	1.9	2.1	1.6
Kidney	-	0.3	1.6	-	-
Cardiovascular	2.1	1.8	1.6	1.8	1.8

(April, 1990)

g) Mortality rate (Obstetrics & Gynecological Clinic)

	Number	1988
Obstetrics Clinic	5	0.33%
Gynecological Clinic	4	0.18
Newborn	12	0.89
Immature Infants	47	26.40
Stillbirth	24	1.50
Total	91	

(April, 1990)

h) Number of Clinical Examination

Cagegories	1984	1985	1986	1987	1988
Blood	32,986	22,174	23,495	21,370	39,808
Urine	14,352	11,000	13,322	11,879	20,893
Biochemistry	77,113	70,493	74,093	79,243	121,081
Radiotherapeutic (Fluoroscopy)	8,527	7,359	7,773	8,993	8,378
Radiotherapeutic (Photography)	4,397	5,413	9,494	8,438	11,028
Immunology	15,700	8,330	19,329	14,000	14,514
Electrocardiogram					1,120
Phonocardiogram					30
Blood Circulatory Function Test					32
Electroencphalogram					839
Endoscopic Test					382
Respiratory Function Test					82
Ultrasound Diagnosis					2,800

(April, 1990)

The average clinical examination for an inpatient is 3 times of Blood, 1 time of Urine, 1 time of Biochemistry and 0.5 times of Radiotherapeutic. The inpatients each year are in gross figures 11,000 patients, which adds up to 226,900 times of examinations. This means that the average examination for an inpatient is 20 times. In these figures considerations are applied for general examinations in the items requiring 3 to 6 tests, which are included within these two examinations figures.

4) Outline of the Main Departments

M.C.H. has divided its diagnosis into two specialized sections of pediatrics and that of obstetrics and gynecology. Both are carrying out their specialized duties. However, Radiotherapeutic and Clinical Examinations of the Paraclinic are commonly being used by both departments. And again, on the clinical phases, the new born babies, premature babies and difficult delivery and/or complicated births are done at the obstetrics and gynecology department, but the patient's medical care is looked after at the pediatrics general clinic's cabinet on a joint operational basis with the obstetrics and gynecology section. In this respect it is a joint-cooperative set up.

a) Clinical Laboratory

Clinical examination consists of a general examination, biochemical examination and bacteriological examination. The main kinds of equipment being used and notice were Florescence Microscope, Monocular and Binocular Microscope. Relative to the biochemistry were provided and also the Spectrophotometer, Refractometer, Colorimeter and Electrophresis Apparatus and the Balances for chemicals were in order. And sections of the biochemistry and bacteriology, the Water Distillation Apparatus were also provided. Although examination equipment were provided, all of the examinations were handled by hand work. In addition, each of the examination purposed equipment and supplies, especially the analysis types (Spectrophotometer) the majority were in the early '70s analog-type models. The reagent is formulated in accordance to the purpose of examinations. This is quite similar to the Japanese conditions during the '60s. In those days the biochemical examination items were quite limited in Japan.