BASIC DESIGN STUDY REPORT

ON

THE PROJECT

FOR

IMPROVEMENT OF MEDICAL EQUIPMENT

IN

THE REPUBLIC OF ARMENIA

January, 2002

JAPAN INTERNATIONAL COOPERATION AGENCY

INTERNATIONAL TECHNO CENTER CO., LTD.

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PREFACE

In response to a request from the Government of the Republic of Armenia, the Government of Japan 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 Armenia a study team from June 26 to July 27, 2001.

The team held discussions with the officials concerned of the Government of Armenia, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Armenia in order to discuss a draft basic design, and as this result, the present report was finalized.

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

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

January, 2002

Takao Kawakami
President
Japan International Cooperation Agency

January, 2002

Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Improvement of Medical Equipment in the Republic of Armenia.

This study was conducted by International Techno Center Co., Ltd., under a contract to JICA, during the period from June, 2001 to January, 2002. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Armenia and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

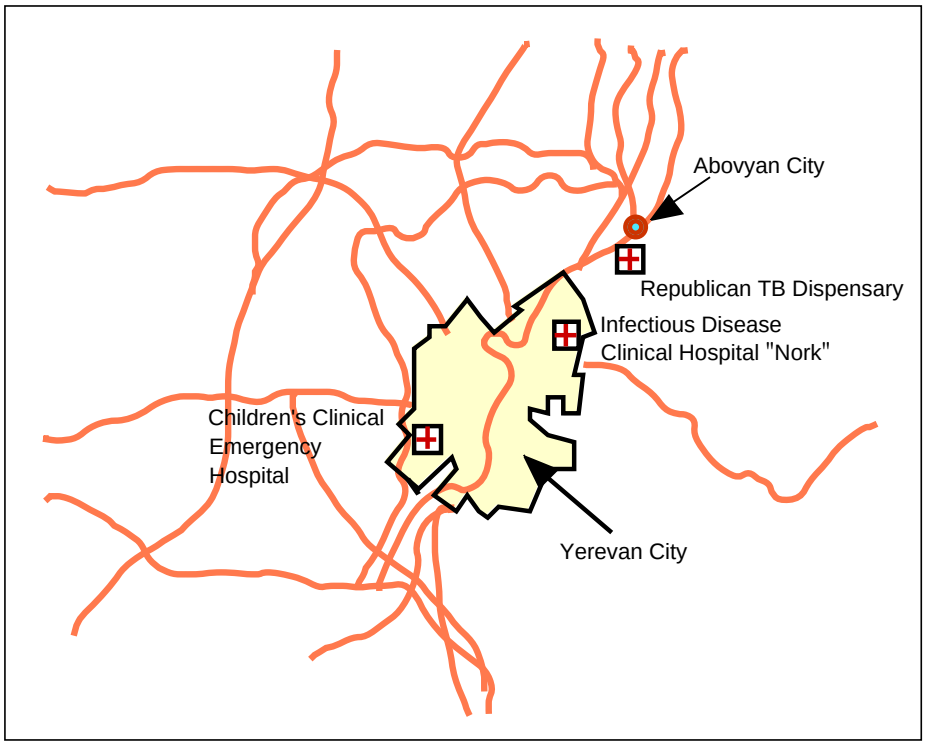
Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

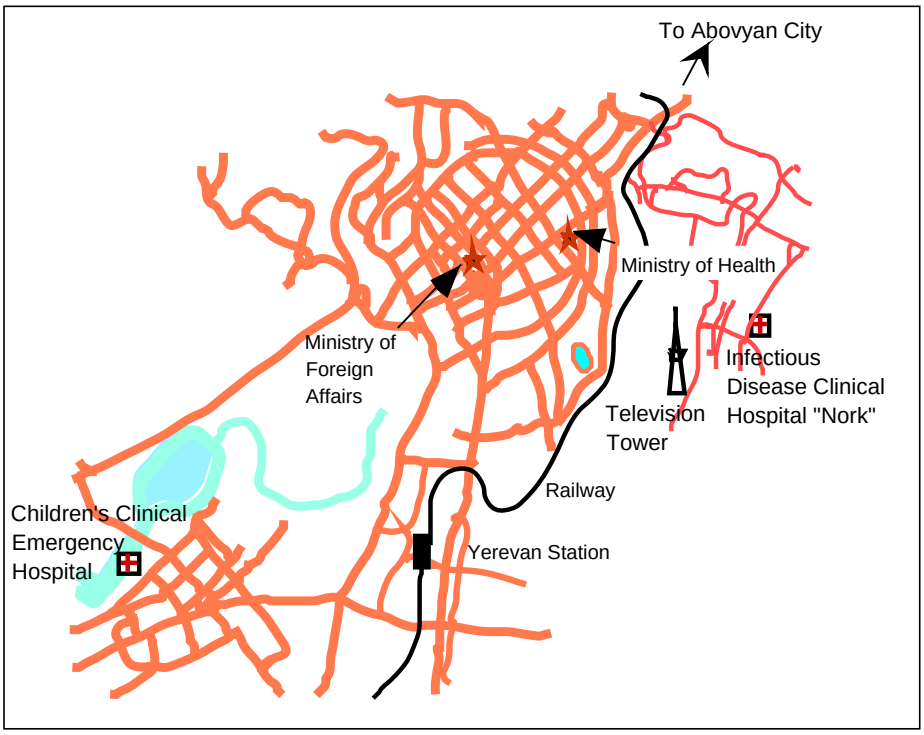
Chiharu Abe
Project Manager,
Basic design study team on the Project for
Improvement of Medical Equipment
International Techno Center Co., Ltd.

Location Map of Armenia

Location Map of the Project Sites



Location Map in the Yerevan City



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Abbreviations

A/P	Authorization to Pay
B/A	Banking Arrangement
BS	British Standard
CIDA	Canadian International Development Agency
CIS	Commonwealth of Independent States
DIN	Deutsches Institüt für Normung
DOTS	Directly Observed Treatment, Short-course
EU	European Union
GDP	Gross Domestic Product
ICU	Intensive Care Unit
IMR	Infant Mortality Rate
JIS	Japan Industrial Standards
MMR	Maternal Mortality Rate
MOH	Ministry of Health
NGO	Non Governmental Organization
NIH	National Institute of Health
NIS	New Independent States
PHC	Primary Health Care
SHA	State Health Agency
SMU	State Medical University
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WB	World Bank
WHO	World Health Organization

Summary

This project was a request from the Armenian government to provide the medical equipment for three hospitals under the Japanese grant aid for the purpose to raise the hospitals' service quality, aiming at improvement of pediatric care and strengthening of control of emerging and re-emerging infectious diseases. In response to the request the Japanese government dispatched a preliminary study team to Armenia in October 2000, and decided to conduct a basic design study based on the result of preliminary study. The Japan International Cooperation Agency, JICA sent to Armenia a basic design study team from June 26 to July 27, 2001. The further study was made after the team returned to Japan, and JICA sent the team again from October 9 to 25, 2001 for the explanation of draft report.

The study team examined the health situation of Armenia, the priorities of health policy, relevant assistance by other donors, as well as medical activities, facility conditions, and equipment conditions of the hospitals. The project was designed to provide the medical equipment to be used for diagnosis and treatment services at the hospitals based on the result of study.

The project will procure medical equipment for the each respective hospital, based on the hospital role and the general direction of the Health System Optimization Program, which is top priority in the Armenian health policy. The basic policies on equipment planning in this project are outlined below.

The Children's Clinical Emergency Hospital

The project will procure equipment for departments shown below, as the hospital provides a wide range of pediatric services and admits emergency patients.		
Wards	Neonatal Dept.	Infant incubator, Infant warmer, Infusion pump, O_2 concentrator
	Infant Dept.	Infant warmer, Ultrasound nebulizer
	General Surgery Dept.	Suction unit
	Thoracic Surgery Dept.	Suction unit
	Trauma/Orthopedic Dept.	Suction unit
	Neurosurgery Dept.	Suction unit, Opthalmoscope
Diagnostic Departments	X-ray Rm.	X-ray unit, Film processor, Film viewer, Protective apron
	Ultrasonography Rm.	Ultrasound scanner
	Functional Diagnostic Rm.	ECG, Spirometer
	EEG Rm.	EEG
	Endoscopy Rm.	Colonofiberscope, Gastrofiberscope, Disinfection set
	Central Laboratory	Autoclave, Blood gas analyzer, Coagulation analyzer
Special Treatment Rooms	Operation Rm.	Anesthesia apparatus, Artery tourniquet, Arthroscope
	ICU	Defibrillator, ECG, Infant incubator, Infusion pump, Patient monitor
Supporting Sections	Sterilization Rm.	Autoclave, Hot air sterilizer
	Blood Bank	Refrigerator, Plasma freezer
	Laundry	Washing machine with centrifuge, Ironing machine
	Reception	Suction unit, X-ray film viewer
	Mortuary	Mortuary refrigerator, Microtome, Paraffin bath, Tissue processor

The Infectious Diseases Clinical Hospital "Nork"

The project will procure equipment for departments shown below, regarding the diagnosis of common infectious diseases, medical treatment, and minor surgeries, such as incision for drainage.		
Wards	1st to 6th Ward	Infusion pump, Suction unit, Weighing scale, X-ray film viewer
	Diagnostic Word	Infusion pump, Ultrasound nebulizer, Weighing scale
Diagnostic Departments	X-ray Rm.	X-ray unit, Film processor, Protective apron
	Ultrasonography Rm.	Ultrasound scanner
	Central Laboratory	Analytical balance, Autoclave, Distiller, Refrigerator
Special Treatment Rooms	Minor Operation Rm.	Operating table, Operating lamp
	ICU	Patient monitor, Defibrillator
Supporting Sections	Sterilization Rm.	Autoclave, Hot air sterilizer
	Pharmacy	Analytical balance, Autoclave, Distiller, Refrigerator
	Laundry	Washing machine with centrifuge, Ironing machine
	Reception	X-ray film viewer, Weighing scale
	Mortuary	Mortuary refrigerator

The Republican Clinical TB Dispensary

The project will procure equipment for departments shown below, regarding accurate diagnosis of lung and extrapulmonary tuberculosis, as well as chemotherapy and surgical treatment.		
Wards	General TB Ward	Pleural puncture set, Sphygmomanometer, Stretcher, Suction unit
	Children's Ward	Examination lamp, Treatment table, Lumbar puncture set
	Extraplumonal TB Ward	Examination lamp, Gypsum cutter, Treatment table
Diagnostic Departments	X-ray Rm.	X-ray unit, Film processor, Protective apron
	Laboratories	Blood gas analyzer, Coagulation analyzer, Water bath, Microscope
	Endoscopy Rm.	Bronchofiberscope, Disinfection set, Instrument cabinet
Special Treatment Rooms	Operation Rm.	Operating Table, Anesthesia apparatus, Electrosurgical unit
	ICU	Defibrillator, Patient monitor
Supporting Sections	Sterilization Rm.	Autoclave, Instrument cabinet
	Pharmacy	Analytical balance, Autoclave, Distiller
	Laundry	Washing machine with centrifuge, Ironing machine

Requested dental equipment was excluded from the project. This is because the dental department of the Children's Clinical Emergency Hospital has yet to be opened, and the expected benefits from upgrading the dental departments of the other two hospitals are rather limited. An office equipment that was requested for the accounting department of the Infectious Diseases Clinical Hospital "Nork" was excluded from the project.

The effects shown below can be expected through the implementation of the project.

Direct
- The testing activities of the hospitals gain efficiency.
  The hospitals could not help but repeat a test for accurate diagnosis, because of their deteriorated testing apparatus. It has resulted in the waste of time and cost. Those apparatuses are replaced by the project, and the testing activities gain efficiency.

- The diagnosis and treatment abilities of the hospitals improve.
  Efficient testing enables the hospitals to make accurate diagnosis of patients without delay. Replacement of existing deteriorated equipment enables some surgical treatment again. The diagnosis and treatment abilities improve.

- The sanitary conditions of the hospitals improve.
  The sterilizing equipment, which frequently breaks and makes routine sterilizing unstable, will be replaced. The instruments for surgery and other treatments will be sterilized appropriately. The replacement of laundry equipment will make the greater cleanliness of sheets and medical wears for operation and others.

Indirect
- The hospitals gain more reliance.
  The service quality of the hospitals will improve. The patients will have more trust in their diagnosis and treatment. It increases the numbers of patients and referrals.
- The operation rate of the hospitals rises.
  Optimization of the number of beds and increase of patients and referrals will raise the bed occupancy rate of the hospitals. The hospitals enjoy the better operation.

The whole Armenian population can benefit of this project, considering the Armenian territory and population sizes. The three hospitals, being located in Yerevan and environs, are referral hospitals accepting patients from all over the state.

The project is expected to have the effects described above. It would be more effective when the following issues improve in the Armenian side.

Efficiency of Financing of Medical Care

The Ministry of Health takes the view that to establish a guideline or criteria for the health facilities to apply for the contract with the State Health Agency, SHA to ensure the quality of health care service by the state budget. The health care reform policy puts an emphasis on licensing of health care facilities and personnel. When the relevant standards and guidelines are developed regarding organization and management of health care facilities, selective contract with only facilities that can provide better service would be available. At that stage, there should be considerable improvement of health care quality even with the limited state budget.

Hospital Improvement and PHC Strengthening

The optimization program is in the direction to shift the health care system from one in which inpatient care at hospitals and outpatient care at policlinics are separated to one with hierarchy from PHC services to secondary and tertiary services. It is preferable that the active linkage between tertiary, secondary and primary health care services. The three hospitals have the linkage with local facilities or PHC levels to some extent at present. It is desirable in terms of enhancement of the service network of health care in Armenia that they further develop their relations with the secondary and primary level respectively to provide the appropriate

feedback of patient care to family physicians in good connection, the back support to PHC regarding prevention and control of infectious diseases, or the technical guidance for quality control of laboratory services.

Practical Training in Medical Education

In Armenia medical education is accomplished at the National Medical University, SMU and the National Institute of Health, NIH. The students take their practical training at the public health care facilities entrusted by SMU or NIH. Renewal of medical education system is one of the prioritized issues in the health reform policy of Armenia. The most serious problem in medical education is insufficient practical training. Most of the practical training of pediatrics, emergency care and tuberculosis and other infectious diseases takes place at the three hospitals covered by this project. It is desirable that the hospitals collaborate with medical colleges to improve the quality of education, when the hospital service activities are improved by the project.

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1. Member List of the Study Team
2. Study Schedule
3. List of Parties Concerned in the Recipient Country
4. Minutes of Discussions
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Chapter 1 Background of the Project

Chapter 1 Background of the Project

In 1999, the Armenian government made a request for the Japanese grant aid project to improve the pediatric health care and strengthen the control of infectious diseases with the top priority in their health care reform. The concept of the project was to procure the medical equipment for the hospitals; the Children's Clinical Emergency Hospital, the Children's Neurological Hospital, the Infectious Diseases Clinical Hospital "Nork", and the Republican Clinical TB Dispensary.

In response to the request, the Japanese government dispatched a preliminary study team to Armenia to confirm and discuss the background of the request and the present status of health care reform in Armenia. Out of the said four hospitals, the Children's Neurological Hospital was in very low operation, so that there was some doubt of project effect or effective utilization of procured equipment at that hospital.

Around that time, the Armenian side made a baseline survey in advance to develop the Health System Optimization Program, and the situation of all the health care facilities was reviewed. As a result, it was decided that the Children's Neurological Hospital would be consolidated into the Children's Clinical Emergency Hospital.

The Health System Optimization Program adopted in 2001 is the most important in the health care reform policy of the Armenian government. It is strongly required to improve the service quality and the access for children and vulnerable population of the state, and to enhance the control of emerging and re-emerging infectious diseases.

The Health System Optimization Program determined to reserve and improve the three health care facilities to be included in the project, the Children's Clinical Emergency Hospital, the Infectious Diseases Clinical Hospital "Nork," and the Republican Clinical TB Dispensary. These hospitals carry out the significant roles on the pediatric health care and the control of emerging and re-emerging infectious diseases. The final request from the Armenian side is the improvement of the medical equipment to be used in the medical departments and/or wards, diagnostic departments, operation rooms and ICUs, and supporting sections of these three hospitals.

Chapter 2 Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

The Armenian health sector stands at a crossroad. The health care reform is indispensable, as the drastic change of social systems under transition. Accordingly the importance of optimizing the excessive supply of health care service is beyond dispute. However, if the optimization only ends in quantitative downsizing, the quality of health care would not be improved and the people's health would be ruined. In fact, the health conditions of the vulnerable population, mothers and children, who are easily affected when the living environment gets worse, are likely to be deteriorated. The optimization of health care service must be carried out keeping or improving the quality and access of essential service for them.

The three hospitals to be included in the project play important roles in providing pediatric care and controlling emerging and re-emerging infectious diseases, which are prioritized in the public health care service sector of Armenia. The Optimization Program has determined that these hospitals should be maintained, and their medical services need to be strengthened. Each of three hospitals takes the great responsibility in the tertiary hospital services and reliable health care for the younger generation and the vulnerable groups of population.

The Children's Clinical Emergency Hospital is a multi-profile hospital that provides the most comprehensive services among the pediatric hospitals in Armenia. It is the only hospital in the country that has pediatric neurosurgery and pediatric thoracic surgery departments and thus takes on heavy responsibilities as the referral hospital in the pediatrics sector. Also, the hospital accepts emergency patients on a 24-hour/day basis. The Infectious Diseases Clinical Hospital "Nork" is the only special hospital of infectious diseases, and takes the leadership in the prevention and control of infectious diseases in Armenia. It provides not only clinical service but also technical support to the local health facilities, regarding the quick diagnosis and adequate treatment. The Republican Clinical TB Dispensary leads the prevention and control program of tuberculosis in Armenia. It has the function of reference laboratory of TB control throughout the country. Given these outlines of three hospitals, the improvement of service quality of them is great necessity in the Armenian health reform.

The three hospitals are trying to optimize the number of beds following the Optimization Program, recognizing the magnitude of the problem; excess of service supply, decline of service quality, and patients' trend not to receive health care. The project objective is to improve the medical service of these hospitals, having an overall goal as to improve the pediatrics care and control of infectious diseases in Armenia.

Procurement of essential medical equipment, strengthening of the equipment maintenance system, and capacity building of hospital management are necessary to achieve the above objectives. The medical equipment will be procured by the grant aid of the Japanese government. The hospitals are requested to improve their maintenance method with introducing daily check-up sheets and maintenance record, as well as to activate their management system having in-house conference at each clinical department or job category.

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Scope of the Project

This project will procure medical equipment for the each respective hospital, based on the hospital role and the general direction of the Health System Optimization Program. The basic policies on equipment planning in this project are outlined below.

The Children's Clinical Emergency Hospital

The project will procure equipment for departments shown below, as the hospital provides a wide range of pediatric services and admits emergency patients.

Wards	Neonatal Department, Infant Department, General Surgery Department, Thoracic Surgery Department, Trauma/Orthopedic Department, Neurosurgery Departments
Diagnostic Departments	X-ray Room, Ultrasonography Room, Functional Diagnostic Room, EEG Room, Endoscopy Room, Central Laboratory
Special Treatment Rooms	Operation Room, ICU
Supporting Sections	Sterilization Room, Blood Bank, Laundry, Reception, Mortuary

The Infectious Diseases Clinical Hospital "Nork"

The project will procure equipment for departments shown below, regarding the diagnosis of common infectious diseases, medical treatment, and minor surgeries, such as incision for drainage.

Wards	1st to 6th Ward, Diagnostic Word
Diagnostic Departments	X-ray Room, Ultrasonography Room, Central Laboratory
Special Treatment Rooms	Operation Room, and ICU
Supporting Sections	Sterilization Room, Laundry, Reception, Mortuary

The Republican Clinical TB Dispensary

The project will procure equipment for departments shown below, regarding accurate diagnosis of lung and extrapulmonary tuberculosis, as well as chemotherapy and surgical treatment.

Wards	General TB Ward, Children's Ward, and Extraplumonal TB Ward
Diagnostic Departments	X-ray Room, Laboratories(General/Microbiology/Biochemistry), Endoscopy Room
Special Treatment Rooms	Operation Room, ICU
Supporting Sections	Sterilization Room, Pharmacy, and Laundry

Requested dental equipment was excluded from the project. This is because the dental department of the Children's Clinical Emergency Hospital has yet to be opened, and the expected benefits from upgrading the dental departments of the other two hospitals are rather limited. An office equipment that was requested for the accounting department of the Infectious Diseases Clinical Hospital "Nork" was excluded from the project.

(2) Criteria on Selecting Equipment

Each equipment item requested by the hospitals has been closely examined to be included in the project or not with the principles shown below.

Criteria for Deletion

a. Equipment for which an extremely large amount of maintenance cost is necessary
b. Equipment for which consumables are extremely difficult to obtain
c. Equipment which is inappropriate for the medical activities and levels of the hospital
d. Equipment which is inappropriate for the roles of the hospital
e. Equipment which brings limited benefits
f. Equipment of which the purpose of use in the request is inappropriate
g. Equipment for which the facilities condition is insufficient

Criteria for Priority

h. Daily used equipment which is extremely superannuated and to be replaced
i. Daily used equipment which is quantitatively insufficient and to be supplemented
j. Essential equipment for the Hospital's department to maintain their medical service

Some of the requested items are planned to be included in another item when the said item is rather a component of equipment. The mark "A "or "B" affixed to the equipment name on the list indicates difference of the specification.

(3) Quantity of Equipment

The quantity of each equipment item to be procured by this project was determined based on the quantity of existing ones, the frequency in use, and the numbers of patients, treatments, examinations, and/or operations.

(4) Specification and Grade of Equipment

The specification of equipment shall be adequate from the viewpoint on the current technical standard of the hospitals. Analyzing apparatuses and others that require a constant supply of consumables shall be the models with smaller operating costs.

(5) Local Agents

A product of manufacturer whose agent is located in Armenia or neighboring countries needs to be selected regarding equipment item that requires technical service by the manufacturer and/or its agent, or constant supply of consumables. For this reason, the study team conducted the situation survey on market of medical equipment.

(6) Physical Works by the Recipient Side

The physical works by the recipient side; i) to remove existing equipment, ii) to secure enough space for delivery and installation, iii) to install primary facilities (electricity, water, sewage, etc.), and iv) to prepare the installation sites shall be done prior to the installation of the equipment. Details are described under Section 2-3 Obligations of Recipient Country.

2-2-2 Basic Plan

(1) Planning for each Hospital

The Children's Clinical Emergency Hospital

Wards:

The finally requested equipment consists of 12 items; ten items of pediatric equipment to be used in the Neonatal Department (20 beds) and the Infant Department (20 of 50 beds of the General Medical Department), a suction unit that is indispensable to each ward, and an opthalmoscope for the Neurosurgery Department. The Neonatal and Infant Departments accommodated 260 and 450 patients respectively in 2000 at the bed occupancy rate of around 45%. Although they are equipped with infant warmers, incubators, and other basic equipment, hardly any of it is functioning properly. The items to be procured and their quantities were determined to mainly replace or supplement deteriorated existing equipment, in order that the Neonatal and Infant Departments would have one room for each where they can provide proper care with sufficient equipment, and one suction unit will be procured for each ward.

Equipment for Wards

CE01. Neonatal Department
CE02. Infant Department
CE03. General Surgery Department
CE04. Thoracic Surgery Department
CE05. Trauma/Orthopedic Department
CE06. Neurosurgery Department

		Request						Plan					
No.	Equipment	CE01	CE02	CE03	CE04	CE05	CE06	CE01	CE02	CE03	CE04	CE05	CE06
40	Infant incubator	4						4					
41	Infant warmer	2	2					2	2				
42	Infusion pump	2						2					
62	O_2 concentrator	2						2					

No.	Equipment	Request						Plan					
		CE01	CE02	CE03	CE04	CE05	CE06	CE01	CE02	CE03	CE04	CE05	CE06
72	Patient monitor	1						1					
74	Phototherapy unit	1						1					
77	Pulse oximeter	2						2					
88	Syringe pump	2						2					
91	Ultrasound nebulizer		1						1				
100	Weighing scale, neonatal	2	1					2	1				
86	Suction unit	1	1	1	1	1	1	1	1	1	1	1	1
70	Ophthalmoscope						1						1

Diagnostic Departments:

An X-ray unit, a ultrasound scanner, an ECG, an EEG, a colonofiberscope, a gastrofiberscope and others were requested. The existing equipment for image, functional, and endoscopic diagnosis do not function properly, often break down and thus need to be replaced. The project will procure one each of diagnostic equipment considering the current numbers of examinations, 15 X-ray pictures per day, 1,500 thoracic/abdominal ultrasound diagnoses annually, and about 1,000 patients of endoscopic examinations each year. The necessary peripherals; an X-ray protective apron, endoscope sterilization unit will be procured too. A simple-type automatic film developer will be also procured, to produce more precise images. A dental X-ray unit is not included, as the Dental Department was excluded from this project.

Equipment for Examination Rooms -1

CE07. X-ray Room
CE08. Ultrasonography Room
CE09. Functional Diagnostic Room
CE10. EEG Room
CE11. Endoscopy Room

No.	Equipment	Request					Plan					
		CE07	CE08	CE09	CE10	CE11	CE07	CE08	CE09	CE10	CE11	
105-A	X-ray unit	1					1					
102	X-ray film processor	1					1					
103-A	X-ray film viewer A	3					2					
104	X-ray protective apron	5					4					
93	Ultrasound scanner, doppler		1					1				
26	ECG			1					1			
27	EEG				1					1		
84	Spirometer			1					1			
18	Colonfiberscope					1					1	
33	Gastrofiberscope					1					1	
23	Disinfection set					1					1	
	Suction unit for fiberscope					1	Included in Colonfiberscope					
	Dental X-ray unit	1					Out of project scope					

The hospital is on the process of changing the layout of laboratory rooms that have been scattered on the second and third floors of the Diagnostic Ward, in order to make the Central Laboratory function more efficiently. Cost effectiveness of testing activities also needs to be considered in terms of sustainable service. All the 16 items requested by the recipient side are necessary for testing activities, however, the equipment for bacteriological, biochemical, hepatitis, and immunological analyses are deemed inappropriate. Those analyses should be conducted with simple apparatuses for cost performance, given the sample size at present. It

was decided to use spectrophotometer, refractmeter, micropipette set, and other simple instruments for them, after discussing the matter with the hospital staff. The hospital requested one each of blood gas analyzer and electrolyte analyzer, as such analyses are essential for the diagnostic activities of the hospital. There are products that can analyze both blood gases and electrolytes, and the examination cost is less expensive than using one blood gas analyzer and one electrolyte analyzer separately. The project will procure a blood gas analyzer that can measure blood gases (oxygen partial pressure, CO_2 partial pressure, and pH) and electrolytes (sodium, potassium, and chloride). The electrolyte analyzer does not show up on the equipment list.

Equipment for Examination Rooms - 2 CE12. Central Laboratory

No.	Equipment	Request	Plan
10	Blood gas analyzer	1	1
81	Spectrophotometer	2	2
9	Blood cell counter, manual	2	2
57	Microscope, binocular	3	3
16	Coagulation analyzer	1	1
8	Bilirubin meter	2	2
36	Hematocrit centrifuge	2	2
78	Refractometer	1	1
39	Incubator	3	3
1	Analytical balance	2	2
56	Micro pipette set	4	4
14	Centrifuge	5	5
97	Water bath	1	1
7	Autoclave, vertical	1	1
37	Hot air sterilizer	5	5
79-A	Refrigerator A	3	3
	Electrolyte analyzer	1	Included in Blood gas analyzer
	Equipment for bacteriological analysis	1	Simple instruments could be used
	Equipment for biochemical analysis	2	ditto
	Equipment for hepatitis analysis	1	ditto
	Equipment for immunological analysis	1	ditto

Operation Rooms and ICU:

There are four operation rooms, three of which are currently in use for general, orthopedic, and neurosurgical operations. The hospital was to convert the fourth room (Minor Operating Room) into an Endoscopic Surgery Room. However, given the fact that only about 1,800 operations are performed annually in this hospital, three rooms will be sufficient even after taking into account the number of emergency operations and the level of cleanliness that is required for neurosurgery. Therefore, the project will procure one each of operating table, operating lamp, anesthesia apparatus, and electrosurgical unit for each of the three operating rooms and exclude the portable operating lamp requested for the fourth room. As for various surgical instruments for different types of operations, one set each of neurosurgery microscope and surgical endoscopes (bronchoscope, arthroscope, laparoscope, and

thoracoscope), as well as two sets each of other surgical instruments that need to take into account the time of sterilization, will be procured. The ultrasonic surgical aspirator was excluded, as it was deemed inappropriate to the technical level of the hospital. The project will procure one each of C-arm X-ray unit and defibrillator, as they can be shared among the three operating rooms. While one each of laparoscope and thoracoscope was requested, the project will procure one endoscope that can perform both laparoscopy and thoracoscopy.

Equipment for Operation Rooms

CE13. Operation Room

No.	Equipment	Request	Plan
67	Operating table for general surgery	1	1
68	Operating table for neurosurgery surgery	1	1
69-A	Operating table for orthopedic surgery A	1	1
63	Operating lamp	3	3
	Operating lamp, mobile	1	Excluded
2	Anesthesia apparatus with ventilator	4	3
28	Electrosurgical unit	3	3
72	Patient monitor	3	3
86	Suction unit	3	3
	Ultrasound surgical aspirator	1	Inappropriate
45	Instrument set for general surgery	2	2
48	Instrument set for neurosurgery	2	2
49	Instrument set for orthopedic surgery	2	2
50	Instrument set for plastic surgery	2	2
44	Instrument set for bronchiole and lung suture	2	2
12	Bronchofiberscope	2	1
13	Bronchoscope	1	1
4	Arthroscope	1	1
54	Laparoscope, Thoracoscope set	1	1
	Laparoscope set	1	Included in Thoracoscope set
23	Disinfection set	1	1
66	Operating microscope	1	1
22	Defibrillator	1	1
106	X-ray unit, C-arm	1	1
104	X-ray protective apron	5	5
103-A	X-ray film viewer A	3	2
3	Artery tourniquet, electric	1	1
29	Endotracheal set	0	1
35	Heating mattress	2	1
88	Syringe pump	2	2

The main sections of the ICU are situated on the second floor, while the Postoperative Observation Room, Treatment Room, and NICU are located on the fourth floor. The entire unit has a total of 12 beds, excluding incubators, at the annual bed occupancy rate of around 50%. The project will procure six each of bedside patient monitors, ventilators, suction units, and infusion pumps, as well as two each of incubators and infant warmers necessary for the intensive care of neonates, on the assumption of the required amount for the ICU with six beds. Four of the six units will be placed in the Treatment Rooms (4 beds) on the second floor and two in the Postoperative Observation Room on the fourth floor. One each of incubator and infant warmer will be placed in the Neonate Room on the second floor and the NICU on

the fourth floor. Two of the six ventilators will be of a model type for neonates, as the amount of ventilation, respiration rate differ between infants and neonates. One each of ECG, defibrillator, and mobile X-ray unit will be procured, as they can be shared by the whole unit, given the number of patients and the current floor layout. The anesthesia apparatus requested for the Treatment Room was excluded from the project, as the procedures performed in this room do not require this apparatus. A heating mattress for the surgery and the treatment of neonates was also excluded, as it is not necessary for intensive care.

Equipment for ICU

CE14. ICU

No.	Equipment	Request	Plan
72	Patient monitor	6	6
42	Infusion pump	6	6
86	Suction unit	6	6
94	Ventilator	4	4
95	Ventilator for neonatal	2	2
88	Syringe pump	2	2
40	Infant incubator	2	2
41	Infant warmer	2	2
107	X-ray unit, mobile	1	1
22	Defibrillator	1	1
26	ECG	1	1
29	Endotracheal set	1	1
	Heating mattress	1	Not necessary
100	Weighing scale, neonatal	2	2
	Anesthesia apparatus	1	Not necessary

Supporting Sections:

The following equipment items will be procured for the Sterilization Room, Blood Bank, Laundry, Reception, and Mortuary that support the medical activities of the hospital.

Equipment for Supporting Sections

	No.	Equipment	Request	Plan
CE15. Sterilization Room	5	Autoclave	3	3
	37	Hot air sterilizer	2	2
CE16. Blood Bank	80	Refrigerator, blood bank	1	1
	75	Plasma freezer	1	1
CE17. Laundry	96	Washing machine with centrifuge	2	2
	53	Ironing machine	2	1
CE18. Reception	86	Suction unit	1	1
	103-B	X-ray film viewer B	1	1
CE19. Mortuary	60	Mortuary refrigerator	1	1
	59	Microtome	1	1
	71	Paraffin bath	1	1
	89	Tissue processor	1	1
	57	Microscope, binocular	1	1
		Instrument for histopathology	1	To be procured by hospital

The Infectious Disease Hospital "Nork"

Wards:

This hospital has a total of 260 beds (excluding ICU) in several separate wards, each accommodating patients with different types of diseases. It is comprised of 1st Ward (40 beds) for infectious diseases of the digestive system, 2nd Ward (40 beds) for sepsis and neonate infectious diseases, 3rd Ward (35 beds) for hepatitis, 4th Ward (35 beds) for dysentery, 5th Ward (25 beds) for adult infectious diseases, 6th Ward (60 beds) for malaria and AIDS, and the Diagnostic Department (20 beds). Most of the requested items are quite essential for hospital wards. Patient beds were excluded from the project, as the recipient side could procure them at its own account. A stretcher that was requested for the 6th Ward was also excluded, as its use is inappropriate to the ward, which was a complex of one-storied small buildings. Incubators that were requested for the 1st Ward (digestive system infections) and the 2nd Ward (sepsis and neonate infections) will be procured only for the 2nd Ward. This is because most of the infants treated in the 1st Ward suffer from diarrhea, and using incubators is not appropriate for treating such patients. For the same reason, procurement of a suction unit for the 1st Ward was cancelled.

Equipment for Wards

IF01. 1st Ward
IF02. 2nd Ward
IF03. 3rd Ward
IF04. 4th Ward
IF05. 5th Ward
IF06. 6th Ward
IF07. Isolation Ward

		Requested							Plan						
No.	Equipment	IF01	IF02	IF03	IF04	IF05	IF06	IF07	IF01	IF02	IF03	IF04	IF05	IF06	IF07
103-A	X-ray film viewer A	1	1	1	1	1		1	1	1	1	1	1		1
86	Suction unit	2	2	2	2	1	2	2		2	1	1	1	1	2
87	Suction unit, low pressure					1							1		
26	ECG							1							1
98	Weighing scale, adult			1	2	1	2	1			1	2	1	1	1
99	Weighing scale, infant	2	2	1					2	2	1				
100	Weighing scale, neonatal							1							1
91	Ultrasound nebulizer							3							2
40	Infant incubator	2	1							3					
42	Infusion pump	2	2			2		3	2	2			2		3
101	Wheel chair					1							1		
	Stretcher						1		Inappropriate use at 6th Ward						
	Patient bed, child							3	To be procured by hospital						
	Patient bed, adult					4		1	ditto						

Diagnostic Departments:

About 17,000 bacterial culture tests, about 18,500 blood tests (general, sedimentation rate, coagulation, etc.), and about 7,000 biochemical tests (bilirubin, trans-amylase, C-reactive protein) are performed annually. All the existing testing apparatus have expired their service lives and need to be replaced immediately. The project will procure a blood gas analyzer, spectrophotometer, coagulation analyzer, and other testing apparatus as listed below. As was

the case with the Children's Emergency Hospital, the blood gas analyzer will be of a model type that can analyze electrolytes, and thus the electrolyte analyzer does not show up on the list. The hospital has renovated the first floor of main building to consolidate various examination rooms and laboratories, which have been located in scattered one-storied buildings, into the Central Laboratory Department. Therefore, the quantities of analytical balance, vertical autoclave, and refrigerator were determined on the assumption that the entire department will share these instruments. A glassware washing machine and a computer were requested but excluded from the project, as they were determined unnecessary based on the sample number of the hospital.

Equipment for Examination Rooms - 1

IF10. Laboratory Department
IF11. Lab/General
IF12. Lab/Microbiology
IF13. Lab/Serology
IF14. Lab/Biochemistry

		Requested					Plan				
No.	Equipment	IF10	IF11	IF12	IF13	IF14	IF10	IF11	IF12	IF13	IF14
10	Blood gas analyzer					1					1
	Electrolyte analyzer					1	Included in Blood gas analyzer				
81	Spectrophotometer					1					1
16	Coagulation analyzer		1					1			
57	Microscope, binocular		2	2	2	2		2	2	1	
19	Colorimeter		1			1		1			1
9	Blood cell counter, manual		1					1			
36	Hematocrit centrifuge		1					1			
56	Micro pipette set				1	1				1	1
14	Centrifuge		1	1	1			1	1	1	
39	Incubator			2	1	1			2	1	1
15	CO2 Incubator			1					1		
97	Water bath				1					1	
25	Draft chamber			1					1		
24	Distiller	1		1			1		1		
37	Hot air sterilizer		1	1				1	1		
1	Analytical balance	1					1				
7	Autoclave, vertical	2					2				
79-B	Refrigerator B	1					1				
	Glass ware washing machine	1					Not necessary				
	Computer with printer	1					ditto				

As for X-ray examination, about 1,500 photos of the abdomen, chest, joints, and other parts are taken annually with an X-ray unit, which is more than 20 years old with its spare parts being no longer on the market. About 2,500 ultrasonic examinations are conducted annually to check the presence of ascites and goiter with a similarly aged apparatus. The project will procure one each of X-ray machine and ultrasound scanner. A dental X-ray unit and a portable ultrasonic scanner were requested but will be excluded from the project. An X-ray machine procured for this hospital will be of a model type that uses an X-ray tube and a table that can be used for both general X-ray and fluoroscopy, considering the space for installation and the annual number of X-ray diagnoses. This model type is distinguished from the other type by naming it "X-ray Unit B" on the equipment list.

Equipment for Examination Rooms - 2

No.	Equipment	Request IF08	Request IF09	Plan IF08	Plan IF09	
105-B	X-ray unit B	1		1		
102	X-ray film processor	1		1		
104	X-ray protective apron	3		2		
	Dental X-ray unit	1		Out of project scope		
92	Ultrasound scanner		1		1	
	Ultrasound scanner, portable		1	Not necessary		

Minor Operation Room and ICU:

The Minor Operation Room of the hospital is far from being adequately equipped and is using a wooden bench covered with a waterproof sheet as an operating table, although this hospital performs only minor surgical procedures, such as incision for drainage. The project will replace the operating table and the operating lamp. An anesthesia machine was requested but was excluded, as it was deemed unnecessary for performing minor surgeries. The ICU is set up to treat patients in acute shock from severe dehydration, sepsis, meningitis, etc. Most of the existing equipment is secondhand articles donated by humanitarian aids in the past and superannuated beyond repair. The project will provide minimum essentials for the ICU. The laryngoscope will be provided as part of the endotracheal set, and beds will be procured by the recipient side. A wheelchair was excluded, as it was inappropriate for ICU.

Equipment for Minor Operating Room and ICU

No.	Equipment	Request IF15	Request IF16	Plan IF15	Plan IF16	
67	Operating table for general surgery	1		1		
64	Operating lamp, single	1		1		
	Anesthesia apparatus	1		Unnecessary		
72	Patient monitor		3		3	
86	Suction unit		3		3	
87	Suction unit, low pressure		1		1	
94	Ventilator		2		2	
30	Examination lamp		2		2	
88	Syringe pump		2		2	
42	Infusion pump		4		4	
41	Infant warmer		2		2	
40	Infant incubator		1		1	
90	Treatment table		1		1	
22	Defibrillator		1		1	
26	ECG		1		1	
29	Endotracheal set		1		1	
62	O_2 concentrator		1		1	
85	Stretcher		1		1	
99	Weighing scale, infant		4		4	
103-A	X-ray film viewer A		1		1	
	Laryngoscope, child		1	Included in the Endotracheal set		
	Patient bed, adult		1	Procured by hospital side		
	Patient bed, child		5	ditto		
	Wheel chair		1	Inappropriate at ICU		

Supporting Sections:

The following equipment items will be procured for the Sterilization Room, Pharmacy, Laundry, Reception, and Mortuary.

Equipment for Supporting Section

	No.	Equipment	Request	Plan
IF17. Sterilization Room	5	Autoclave	1	1
	37	Hot air sterilizer	1	1
IF18. Pharmacy	1	Analytical balance	1	1
	6	Autoclave, pharmacy	1	1
	24	Distiller	2	1
	79-B	Refrigerator B	1	1
IF19. Laundry	96	Washing machine with centrifuge	2	2
	53	Ironing machine	1	1
		Drying machine	2	Not necessary
IF20. Reception	30	Examination lamp	1	1
	98	Weighing scale, adult	1	1
		Ambulance	1	Not necessary
		Height scale	1	To be procured by hospital
IF21. Mortuary	60	Mortuary refrigerator	1	1
		Lift, mortuary	1	Not necessary
		Operating lamp, mobile	1	Facility conditions insufficient
		Autopsy table	1	ditto
		Instrument for histopathology	1	ditto

Dissecting instruments were requested but excluded from the project, as the Mortuary is not adequately set up to perform dissection. An ambulance car that was requested for dispatching experts in case of an outbreak was also excluded, as general automobiles could sufficiently serve the purpose.

The Republican Clinical TB Dispensary

Wards:

This hospital has already reduced beds close to the optimum level. The Project will procure basic equipment for the General TB Ward, Children's Ward, Surgery Ward, and Extrapulmonary TB Ward. Examination tables, examination lights, puncture instruments, stretchers, and other items will be procured for daily treatment at the wards. Basic equipment needed for treating patients will be provided for the Surgery, Orthopedics, Urology, and Gynecology Departments. The requested resectoscope will be provided as a component of the cystoscope, and the laryngoscope and the resuscitation bag will be included in the endotracheal set. The use of requested flexible cystoscope for examining the kidney requires a certain skill, though the hospital has no experience, and the demand for it is not so high. Therefore, this type of cystoscope was excluded from the project.

Equipment for Wards

TB01. General TB Ward
TB02. Children's Ward
TB03. Surgery Department
TB04. Orthopedics Department
TB05. Urological Department
TB06. Gynecology Room

No.	Equipment	TB01	TB02	TB03	TB04	TB05	TB06	TB01	TB02	TB03	TB04	TB05	TB06
31	Examination table		1						1				
90	Treatment table			1	1					1	1		
32	Examination table, gynecology						1						1
30	Examination lamp		1	1	1				1	1	1		
65	Operating lamp, mobile			1	1					1	1		
103-A	X-ray film viewer A			1	1					1	1		
76	Pleural puncture set	15	5	10				15	5	10			
55	Lumbar puncture set		2						2				
20	Colposcope						1						1
17	Coagulator						1						1
34	Gypsum cutter				1						1		
21	Cystoscope, rigid					1						1	
	Resectoscope					1		Included in the Cystoscope					
	Cystoscope, flexible					1		Out of project scope					
86	Suction unit			1	1		1			1	1		1
87	Suction unit, low pressure	3	1					3	1				
82	Sphygmomanometer	4		1	1	1		3		1	1	1	
83	Sphygmomanometer, child		2						2				
29	Endotracheal set			1	1					1	1		
	Laryngoscope				1			Included in the Endotracheal set					
	Resuscitation bag			1	1			ditto					
85	Stretcher	4	1	1	1			3	1	1	1		
101	Wheel chair	4		1	1			3		1	1		
43	Instrument cabinet			1	1	1				1	1	1	
	Volume incentive spirometer			1				Excluded					

Diagnostic Departments:

The project will procure equipment for the X-ray Room, Laboratories and Endoscopy Room. The Clinical and the Biochemical Laboratories are situated in the Diagnostic Ward. For the Bacteriological Laboratory, a new building (the Microbiology Laboratory Ward) was constructed within the premises of the hospital in September 2001 through the assistance of the International Red Cross. The three items of requested equipment (draft chamber, binocular microscope, and centrifuge) have already been donated by the Red Cross. Thus, the project will exclude these items, as well as the water bath, which was deemed inappropriate for the laboratory.

Equipment for Examination Rooms - 1

TB10. Bacteriological Laboratory

No.	Equipment	Request	Plan
58	Microscope, fluorescent	1	1
39	Incubator	4	4
73	pH meter	1	1
7	Autoclave, vertical	2	2
37	Hot air sterilizer	1	1
79-A	Refrigerator A	1	1
	Microscope, binocular	3	Provided by Red Cross
	Centrifuge	3	ditto
	Draft chamber	1	ditto
	Water bath	1	Not necessary

In the Clinical and Biochemical Laboratories, about 18,000 blood tests (WBC, RBC, Ht, Hb, WBC) and about 10,000 biochemical tests are conducted annually using mostly manual-type analyzing apparatuses that are severely antiquated. The project will procure minimum equipment for the Clinical and Biochemical Laboratories. Although a pH meter was requested for the Biochemical Laboratory, it was excluded from the project, as it can be substituted for the blood gas analyzer of the Clinical Laboratory.

Equipment for Examination Rooms - 2 TB09. Clinical LaboratoryTB11. Biochemical Laboratory

No.	Equipment	Request TB09	Request TB11	Plan TB09	Plan TB11	
10	Blood gas analyzer	1		1		
	pH meter		1	Blood gas analyzer shall be used		
81	Spectrophotometer		1		1	
16	Coagulation analyzer	1		1		
9	Blood cell counter, manual	1		1		
57	Microscope, binocular	3		3		
36	Hematocrit centrifuge	1		1		
39	Incubator	1	1	1	1	
56	Micro pipette set	1		1		
1	Analytical balance	1	1		1	
97	Water bath	1	1	1	1	
14	Centrifuge	2	2	2	1	
37	Hot air sterilizer	1	1	1	1	
79-A	Refrigerator A	1	1	1	1	

X-ray examinations are essential to checking the patient before and after surgery or when disseminated or miliary tuberculosis is suspected. The X-ray apparatus of the hospital is antiquated and needs to be renewed also. The requested dental X-ray and the developing machine were excluded from the project. As for endoscopy, the existing bronchoscopes, which are used for transbronchial biopsy and broncho alveolar lavege (BAL), are secondhand and cannot be used continuously. Thus, the project will replace these. Although bronchoscopes for children and adults were requested separately, the project will procure one bronchoscope, as one can examine both children and adults. The suction unit for the bronchoscope will be provided as a component of the bronchoscope.

Equipment for Examination Rooms - 3 TB07. X-ray Room TB08. Endoscopy Room

No.	Equipment	Request TB07	Request TB08	Plan TB07	Plan TB08	
105-A	X-ray unit A	1		1		
102	X-ray film processor	1		1		
104	X-ray protective apron	4		2		
	X-ray film processor for dental	1		Out of project scope		
	Dental X-ray unit	1		ditto		
12	Bronchofiberscope		1		1	
	Bronchofiberscope, child		1	Bronchofiberscope can be used for child and adult		
	Suction unit for fiberscope		1	Included in Bronchoscope		
23	Disinfection set		1		1	
43	Instrument cabinet		1		1	

Operation Rooms and ICU:

Operation rooms are situated on the second floor, where extrapulmonary TB (orthopedic, urology, and gynecology) surgeries are performed, and on the third floor, where operations of lung TB are conducted. A total of about 100 operations are performed annually. Considering the small number of operations, one surgical instrument kit will be provided for each specialty department. A C-arm X-ray unit was requested for the Operation Room, but was excluded from the project, as the frequency of using it in the hospital is extremely low. The pneumonorrahaphy set was also excluded, as it would require expendable stapler-type needles, the supply of which is not constantly ensured.

Equipment for Operation Rooms

TB12. Operation room

No.	Equipment	Request	Plan
67	Operating table for general surgery	1	1
69-B	Operating table for orthopedic surgery B	1	1
63	Operating lamp	2	2
2	Anesthesia apparatus with ventilator	2	2
28	Electrosurgical unit	2	2
72	Patient monitor	2	2
45	Instrument set for general surgery	2	1
51	Instrument set for thoracic surgery	2	1
52	Instrument set for urology	2	1
49	Instrument set for orthopedic surgery	2	1
48	Instrument set for neurosurgery	2	1
46	Instrument set for gynecological surgery	2	1
47	Instrument set for minor surgery	2	1
54	Laparoscope, thoracoscope set	1	1
11	Bone drill	1	1
22	Defibrillator	2	2
29	Endotracheal set	2	2
61	Needle biopsy set	2	2
85	Stretcher	2	2
86	Suction unit	2	2
87	Suction unit, low pressure	1	1
	Suture set for lung	1	excluded
	X-ray unit, C-arm	1	excluded
	X-ray protective apron	1	excluded
37	Hot air sterilizer	2	2
43	Instrument cabinet	2	2

Intensive care is provided for patients in critical conditions (4 beds), and post-operative patients are monitored (2 beds, for about 7 days) at the ICU. The project will procure one each of defibrillator, pulse oximeter, endotracheal set, and a few other instruments in minimum quantities appropriate for the number of surgical procedures performed in the hospital.

Equipment for ICU

TB13. ICU

No.	Equipment	Request	Plan
22	Defibrillator	1	1
29	Endotracheal set	2	1
38	Bed	4	4

72	Patient monitor	2	2
77	Pulse oximeter	1	1
82	Sphygmomanometer	5	2
86	Suction unit	2	1
87	Suction unit, low pressure	1	1
94	Ventilator	2	2

Supporting Sections:

The following equipment items will be procured for the Sterilization Room, Pharmacy, and Laundry.

Equipment for Supporting Section

	No.	Equipment	Request	Plan
TB14. Sterilization Room	5	Autoclave	2	2
	43	Instrument cabinet	2	2
TB15. Pharmacy	1	Analytical balance	1	1
	6	Autoclave, pharmacy	1	1
	24	Distiller	1	1
TB16. Laundry	53	Ironing machine	1	1
	96	Washing machine with centrifuge	2	2

(2) Overall Plan

Most of the equipment to be procured will be installed in the main buildings of the hospitals that are currently in use. Table 2-1 and 2-2 show the buildings and the location of departments/rooms of the hospitals. The X-ray apparatus to be procured for the Infectious Diseases Clinical Hospital “Nork” will be installed at the basement of the Building-B, which will be prepared as the X-ray Room, as the current Radiology Ward is extremely deteriorated. Although most sections of the main buildings have sufficient utility facilities, it would be necessary to renovate the facilities of electricity, water or sewage in the X-ray rooms, sterilization rooms, laundries, and operation rooms when removing the existing equipment. See Section 2-3 Obligations of the Recipient Country.

Table 2-1: Main Buildings of Hospitals

Hospital	Building	Space	Stories
Children's Clinical Emergency Hospital	Medical Bldg.	2,500m^2	5
	Ward Bldg.	9,000m^2	9
	Laundry Bldg.	600m^2	1
	Kitchen Bldg.	800m^2	1
	Auditorium	600m^2	1
Infectious Diseases Clinical Hospital "Nork"	Bldg. A	5,220m^2	4
	Billg. B	2,500m^2	2
	Laundry Bldg.	375m^2	1
	Mortuary Bldg.	90m^2	1
	Radiology Bldg.	185m^2	1
Republican Clinical TB Dispensary	Diagnostic and Ward Bldg.	4,000m^2	3
	Bacteriology Lab. Bldg.	900m^2	1
	Administration Bldg.	1,500m^2	2
	Machinery and Garage Bldg.	1,000m^2	2
	Mortuary Bldg.	100m^2	1

Table 2-2: Location of Departments/Rooms Where Equipment to be Installed

Children's Clinical Emergency Hospital

Department / Rooms		Location
Wards	Neonatal Department	Ward Bldg.
	Infant Department	
	General Surgery Department	
	Thoracic Surgery Department	
	Trauma/Orthopedic Department	
	Neurosurgery Department	
Diagnostic Departments	X-ray Room	Medical Bldg.
	Ultrasonography Room	
	Functional Diagnostic Room	
	EEG Room	
	Endoscopy Room	
	Central Laboratory	
Special Treatment Rooms	Operation Room	Medical Bldg.
	ICU	
Supporting Sections	Sterilization Room	
	Reception	
	Blood Bank	Side bldg. of Ward bldg.
	Laundry	Laundry bldg.
	Mortuary	Mortuary bldg.

Infectious Diseases Clinical Hospital "Nork"

Department / Rooms		Location
Wards	1st Ward	Bldg. A
	2nd Ward	
	3rd Ward	Bldg. B
	4th Ward	
	5th Ward	Bldg. A
	6th Ward	Complex of one-storied bldgs.
	Isolation Ward	Bldg. A
Diagnostic Departments	X-ray Room	Bldg. B
	Ultrasonography Room	
	Laboratory Department	Bldg. A
Special Treatment Rooms	Minor Operation Room	Bldg. B
	ICU	
Supporting Sections	Sterilization Room	
	Pharmacy	One-storied bldg.
	Laundry	Laundry Bldg.
	Reception	Bldg. B
	Mortuary	Mortuary Bldg.

Republican Clinical TB Dispensary

Department / Rooms		Location
Wards	General TB Ward	Diagnostic and Ward Bldg.
	Children’s Ward	
	extrapulmonary TB Ward	
Diagnostic Departments	X-ray Room	
	Laboratory (Clinical And Biochemical Laboratory)	
	(Bacteriological Laboratory)	Bacteriology lab. Bldg.
	Endoscopy Room	Diagnostic and Ward Bldg.
Special Treatment Rooms	Operation Room	
	ICU	
Supporting Sections	Sterilization Room	
	Pharmacy	
	Laundry	Laundry Bldg.

(3) Equipment Plan

The main items of equipment to be procured by the project, as well as the quantity of each item for each hospital, are shown in Table 2-3 and Table 2-4.

Table 2-3: Main Equipment Items

No.	Equipment	Specifications	Q'ty
2	Anesthesia apparatus with ventilator	Gas supply: Gas cylinder Vaporizer: Halothane Flowmeter: For 2 gases, O_2 and N_2O Ventilator equipped	5
4	Arthroscope	Composition: Arthroscope 0 degree (short and long 1 each) Arthroscope 30 degree (short and long 1each) Instruments	1
5	Autoclave	Composition: Autoclave, microprocessor, electric steam generator Capacity: More than 130L	6
6	Autoclave, pharmacy	Composition: Autoclave (single door) Electric steam generator, Microprocessor Capacity : More than 225L	2
10	Blood gas analyzer	Table top type, with printer Measuring parameter: pH/pCO_2 /pO_2 and electrolyte Calculated parameter: :20 items	3
12	Bronchofiberscope	Composition: Adult and child 1 each Instruments	2
13	Bronchoscope	Composition: Bronchoscope for adult (0 degree, 30 degree 1 each) Bronchscope for child (30 degree) Biopsy forceps, grasping forceps, etc	1
18	Colonofiberscope	Composition: Colonofiberscope, biopsy forceps, injector	1
21	Cystoscope, rigid	Composition: Cystoscope, rigid (12 degree, 70 degree 1each) Light source, Instruments	1
22	Defibrillator	Output energy: 0-200J Paddle: Adult and child Parameter: ECG and HR Monitor: 5 inch	6
25	Draft chamber	Ventilation fun, duct, gas cock Fluorescent lamp	1
26	ECG	ECG lead : E12 leads Number of wave form channel:6 channels	4
27	EEG	Number of channels: at least 32 channels CMMR: More than 100db Composition: CRT, printer Stimulation: Manual	1
28	Electrosurgical unit	Output mode: Cutting, coagulation and bipolar Composition: Monopolar electrode(10 kinds) Bipolar electrode (2 kinds) Patient plate, Foot switch	5
33	Gastrofiberscope	Composition: Gastrofiberscope (adult and child 1each) Light source, Video system Monitor, Instruments	1
37	Hot air sterilizer	Capacity: 150L Inner materials: Stainless steel Control method: Microprocessor Temp. range: 40 to 250C degree	15
39	Incubator	Capacity: 150L Temp. range: 5 to 60 C degree. Alarm function provided	13
40	Infant incubator	Temp. control: Servo and manual Access port: 6 ports Chamber humidity equipped Oxygen monitor equipped	10
41	Infant warmer	Type: Open type Heater: Infrared heater Temp. control: Servo and manual Alarm function equipped	8

No.	Equipment	Specifications	Q'ty
42	Syringe pump	Pump mechanism: Peristaltic pump Flow rate range: 3 to 300ml/h at least Battery built-in, Alarm function equipped	21
44	Instrument set for bronchiole and lung suture	Operation forceps and scissors for bronchiole and lung suture Knives, Needle holder, etc.	2
45	Instrument set for general surgery	Forceps, Knife, Needle holder, Retractor for open surgery, etc	3
53	Ironing machine	Application: Ironing for sheet or similar garments Working width: 2,000mm at least Heating system: Electrical heating Capacity: 35kg/hr	3
54	Laparoscope, thoracoscope set	Composition: Laparoscope/ Thoracoscope (0, 30 degree 1 each) Light source, Instruments, Irrigation set, etc	2
57	Microscope, binocular	Light source: Halogen Eyepiece magnification: 10X Objective lens magnification:4 kinds	12
58	Microscope, fluorescent	For TB examination Revolver for nosepiece: Sextuple Objective lens magnification: 4X, 10X, 20X, 40X,100X Light source: Halogen or mercury lamp	1
60	Mortuary refrigerator	Type: 2 bodies, end side opening type, with body tray Material: Stainless steel Chamber temp control equipped	2
63	Operating lamp	Composition: Main light and satellite light type Intensity: Main light: 125,000 lux at least Satellite light: 90,000 lux at least Lamp: Halogen	5
65	Operating lamp, mobile	Type: Mobile Lamp: Halogen Intensity: 88,000 lux at least	2
66	Operating microscope	Application: Plastic and orthopedics surgery, stand type Eyepieces: 12.5X Light source: Halogen	1
67	Operating table for general surgery	Type: Oil hydraulic system Composition: Screen frame, Arm rest, Shoulder supports, Body support, Knee crutches, Cassette tray for X-ray etc.	3
68	Operating table for neurosurgery	Type: Oil hydraulic system Composition: Screen frame, Arm rest, Shoulder supports, Body support, Knee crutches, Head support Cassette tray for X-ray etc.	1
69-A	Operating table for orthopedic surgery	Type: Oil hydraulic system Composition: Screen frame, Arm rest, Shoulder supports, Body support, Knee crutches, Cassette tray for X-ray etc. (applicable for C-arm X-ray)	1
69-B	Operating table for orthopedic surgery	Type: Oil hydraulic system Composition: Screen frame, Arm rest, Shoulder supports, Body support, Knee crutches, Cassette tray for X-ray etc.	1
72	Patient monitor	Measuring parameter: ECG, R, P, BP etc. Display size : 6 inch at least AC/DC, Printer equipped	17
81	Spectrophotometer	Type: Flow-cell and cuvette or flow-cell type Wavelength: Selectable between 340 to 630nm Reagent: Open system	4
86	Suction unit	Type : Mobile Suction pressure: -690 mmHg at least Suction bottle: Total 6,000ml, 2 bottles type	33

No.	Equipment	Specifications	Q'ty
88	Syringe pump	Syringe type: 20 and 50ml Flow rate: 0.1 to 150.0ml/h	8
89	Tissue processor	Type: Rotating, upward and downward movement Timer: Equipped	1
92	Ultrasound scanner	Scanning method: Electronic convex and electronic linear Display format: B, B/B, B/M and M Monitor, Printer, Foot switch, Convex/Linear probes	1
93	Ultrasound scanner, doppler	Scanning method: Electronic convex, electronic linear and electronic sector Display format: B,B/B, B/M, M Monitor, Printer, Foot switch, Convex/Linear/Sector probes Color doppler, Cine memory function, MO disk drive	1
94	Ventilator	Mode: CMV, IMV, SIMV, CPAP Tidal volume: 0 to 3,999ml Air compressor, Humidifier equipped (Applicable for child and adult)	8
95	Ventilator for neonate	Mode: CMV, IMV, SIMV, CPAP Tidal volume: 20 to 995 ml Humidifier equipped (Applicable for neonate)	2
105-A	X-ray unit A	Composition: X-ray tubes for general x-ray and fluoroscopy, Bucky table /stand, Fluoroscopy table, TV monitor with cart, TV camera, X-ray generator	2
105-B	X-ray unit B	Composition: X-ray tube for fluoroscopy, Fluoroscopy table, TV monitor with cart, X-ray generator Control unit	1
106	X-ray unit, C-arm	Composition: X-ray generator, C-arm, TV camera 9"Image intensifier Tube voltage: Up to 110kV at least Monitor size: 17 inch at least	1
107	X-ray unit, mobile	X-ray generator: Inverter Tube voltage: 125 kV at least Drive system: Motor drive type AC/DC (AC mains and rechargeable battery)	1

Table 2-4: List of Equipment

CE Children's clinical Emergency Hospital
IF Infectious Diseases Clinical Hospital "NorK"
TB Republican Clinical TB Dispensary

Item No.	Equipment	CE	IF	TB	Total
1	Analytical balance	2	2	2	6
2	Anesthesia apparatus with ventilator	3		2	5
3	Artery tourniquet, electric	1			1
4	Arthroscope	1			1
5	Autoclave	3	1	2	6
6	Autoclave, pharmacy		1	1	2
7	Autoclave, vertical	1	2	2	5
8	Bilirubin meter	2			2
9	Blood cell counter, manual	2	1	1	4
10	Blood gas analyzer	1	1	1	3
11	Bone drill			1	1
12	Bronchofiberscope	1		1	2

Item No.	Equipment	CE	IF	TB	Total
13	Bronchoscope	1			1
14	Centrifuge	5	3	3	11
15	CO_2 Incubator		1		1
16	Coagulation analyzer	1	1	1	3
17	Coagulator			1	1
18	Colonofiberscope	1			1
19	Colorimeter		2		2
20	Colposcope			1	1
21	Cystoscope, rigid			1	1
22	Defibrillator	2	1	3	6
23	Disinfection set	2		1	3
24	Distiller		3	1	4
25	Draft chamber		1		1
26	ECG	2	2		4
27	EEG	1			1
28	Electrosurgical unit	3		2	5
29	Endotracheal set	2	1	5	8
30	Examination lamp		3	3	6
31	Examination table			1	1
32	Examination table, gynecology			1	1
33	Gastrofiberscope	1			1
34	Gypsum cutter			1	1
35	Heating mattress	1			1
36	Hematocrit centrifuge	2	1	1	4
37	Hot air sterilizer	7	3	5	15
38	ICU Bed			4	4
39	Incubator	3	4	6	13
40	Infant incubator	6	4		10
41	Infant warmer	6	2		8
42	Infusion pump	8	13		21
43	Instrument cabinet			8	8
44	Instrument set for bronchiole and lung suture	2			2
45	Instrument set for general surgery	2		1	3
46	Instrument set for gynecological surgery			1	1
47	Instrument set for minor surgery			1	1
48	Instrument set for neurosurgery	2		1	3
49	Instrument set for orthopedic surgery	2		1	3
50	Instrument set for plastic surgery	2			2
51	Instrument set for thoracic surgery			1	1
52	Instrument set for urology			1	1
53	Ironing machine	1	1	1	3
54	Laparoscope, thoracoscope set	1		1	2
55	Lumbar puncture set			2	2
56	Micro pipette set	4	2	1	7
57	Microscope, binocular	4	5	3	12
58	Microscope, fluorescent			1	1
59	Microtome	1			1
60	Mortuary refrigerator	1	1		2
61	Needle biopsy set			2	2
62	O_2 concentrator	2	1		3
63	Operating lamp	3		2	5
64	Operating lamp, single		1		1

Item No.	Equipment	CE	IF	TB	Total
65	Operating lamp, mobile			2	2
66	Operating microscope	1			1
67	Operating table for general surgery	1	1	1	3
68	Operating table for neurosurgery	1			1
69-A	Operating table for orthopedic surgery A	1			1
69-B	Operating table for orthopedic surgery B			1	1
70	Ophthalmoscope	1			1
71	Paraffin bath	1			1
72	Patient monitor	10	3	4	17
73	pH meter			1	1
74	Phototherapy unit	1			1
75	Plasma freezer	1			1
76	Pleural puncture set			30	30
77	Pulse oximeter	2		1	3
78	Refractometer	1			1
79-A	Refrigerator A	3		3	6
79-B	Refrigerator B		2		2
80	Refrigerator, blood bank	1			1
81	Spectrophotometer	2	1	1	4
82	Sphygmomanometer			8	8
83	Sphygmomanometer, child			2	2
84	Spirometer	1			1
85	Stretcher		1	8	9
86	Suction unit	16	11	6	33
87	Suction unit, low pressure		2	6	8
88	Syringe pump	6	2		8
89	Tissue processor	1			1
90	Treatment table		1	2	3
91	Ultrasound nebulizer	1	2		3
92	Ultrasound scanner		1		1
93	Ultrasound scanner, doppler	1			1
94	Ventilator	4	2	2	8
95	Ventilator for neonate	2			2
96	Washing machine with centrifuge	2	2	2	6
97	Water bath	1	1	2	4
98	Weighing scale, adult		7		7
99	Weighing scale, infant		9		9
100	Weighing scale, neonatal	5	1		6
101	Wheel chair		1	5	6
102	X-ray film processor	1	1	1	3
103-A	X-ray film viewer A	4	7	2	13
103-B	X-ray film viewer B	1			1
104	X-ray protective apron	9	2	2	13
105-A	X-ray unit A	1		1	2
105-B	X-ray unit B		1		1
106	X-ray unit, C-arm	1			1
107	X-ray unit, mobile	1			1

2-2-3 Basic Design Drawings

The cross section and floor layouts of each building of the hospitals, where the equipment will be installed are shown below.

The Children's Clinical Emergency Hospital

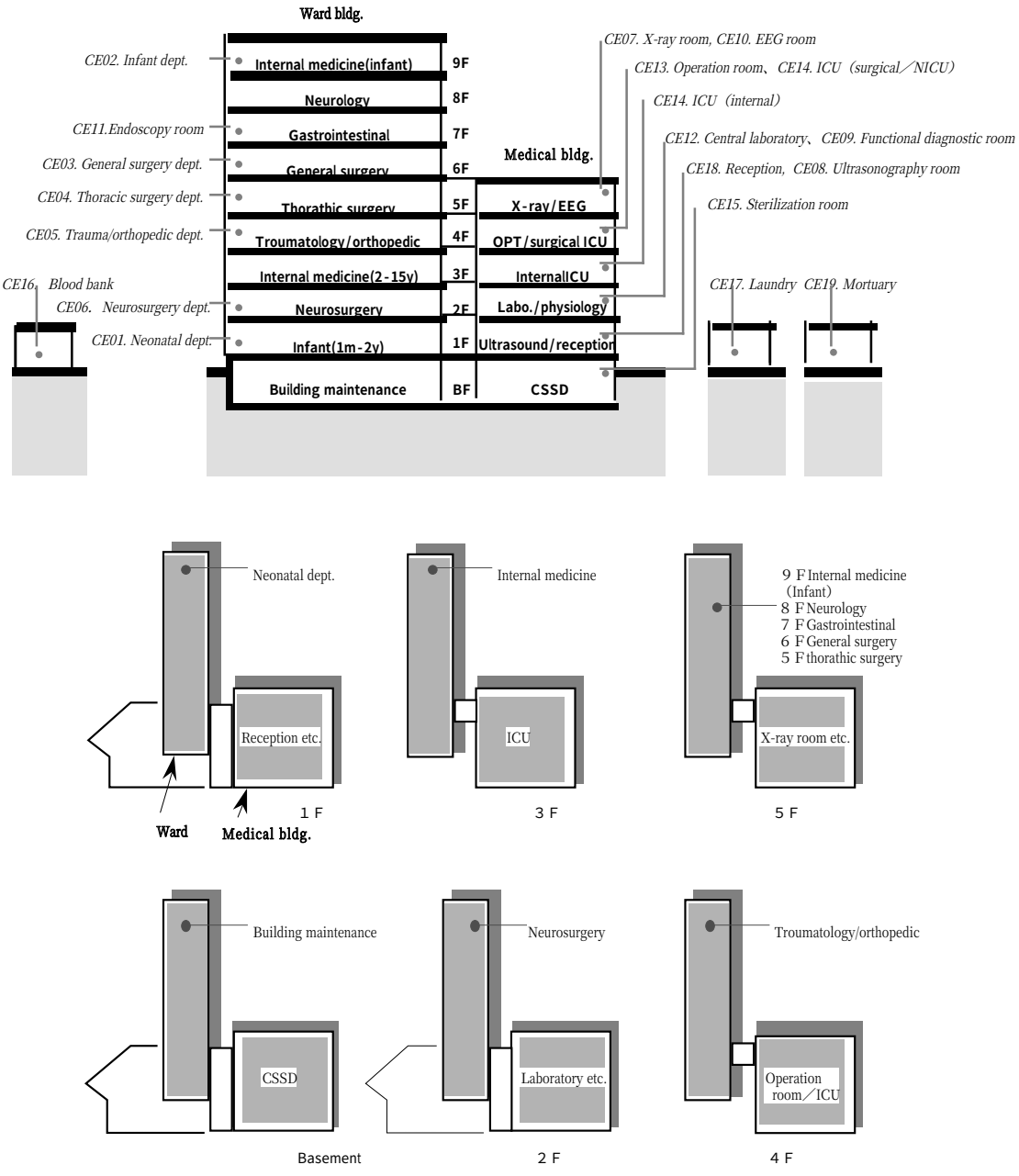


Figure 2-1: Overview of Main Buildings of Children's Clinical Emergency Hospital

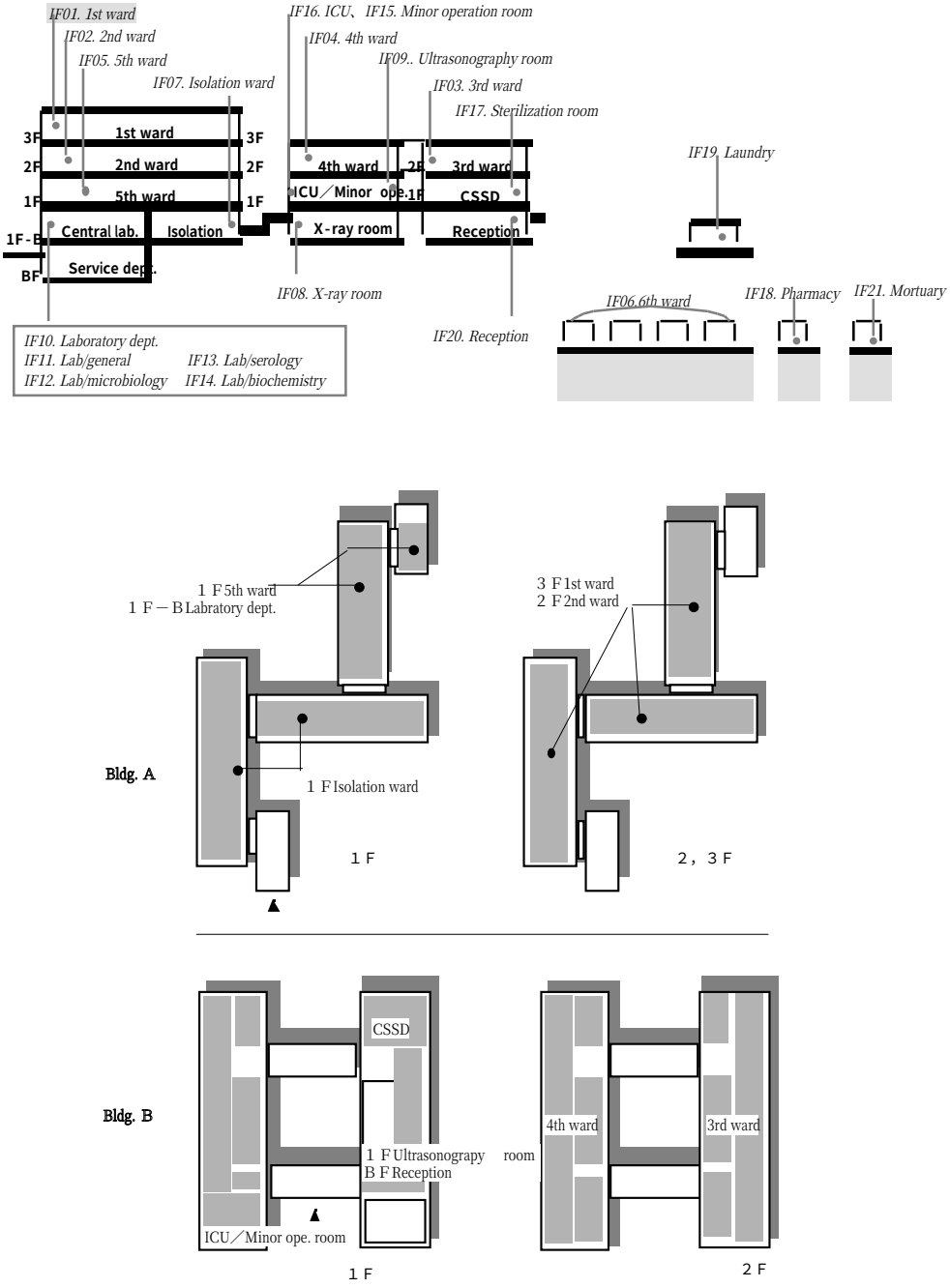
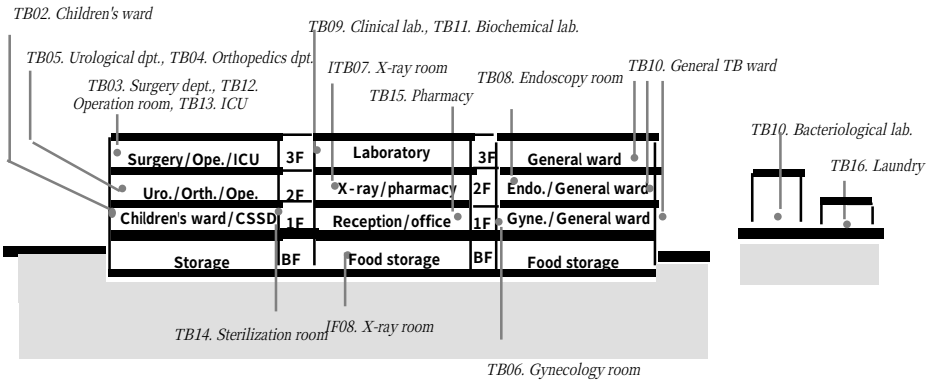
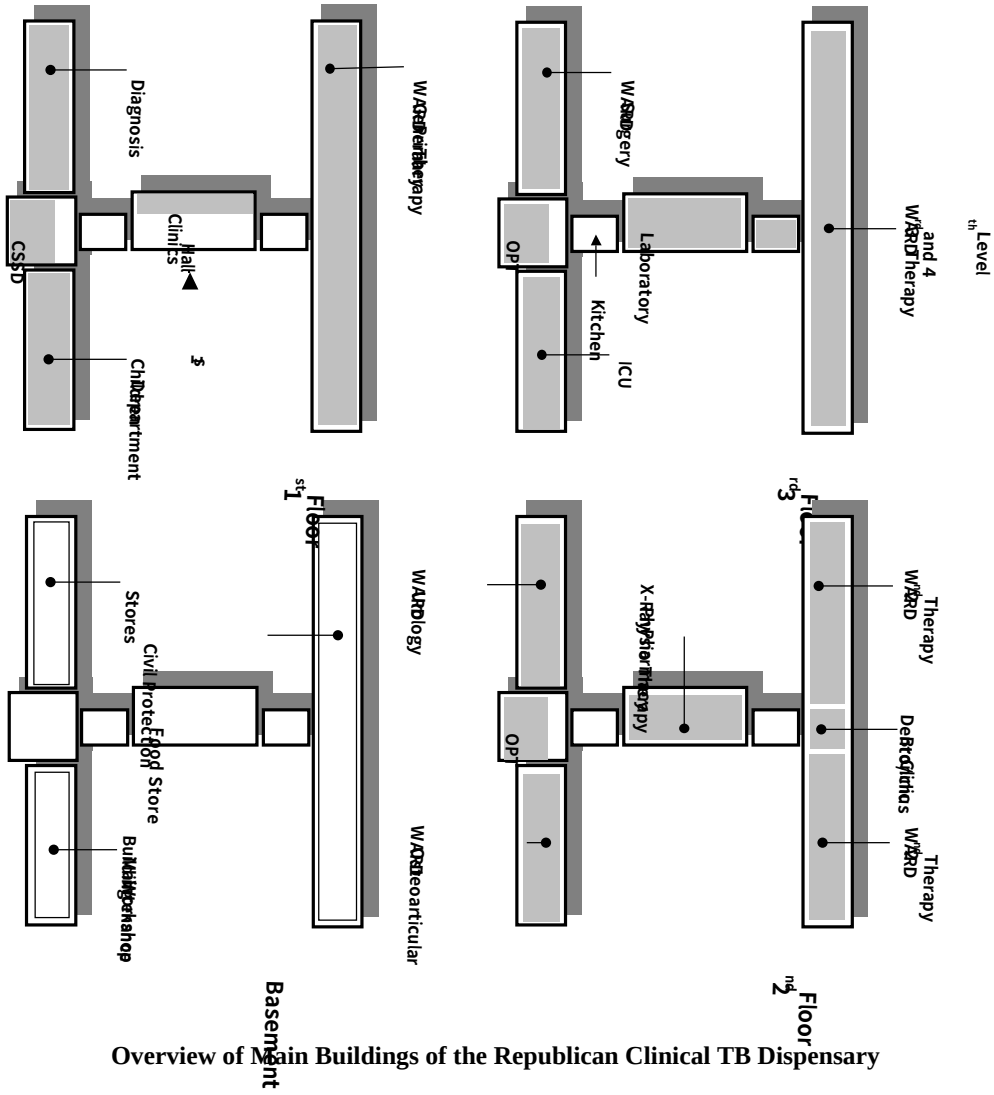


Figure 2-2: Overview of Main Buildings of the Infectious Diseases Clinical Hospital “Nork”

The Republican Clinical TB Dispensary





Overview of Main Buildings of the Republican Clinical TB Dispensary

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

This project will be officially implemented in accordance with the grant aid framework of the Japanese government, after the Japanese cabinet has approved the project, and an Exchange of Notes (E/N) has been concluded between the Japanese government and the Armenian government. After an E/N has been concluded, a Japanese consultant firm recommended by the Japan International Cooperation Agency, JICA shall, in accordance with the grant aid framework of the Japanese government, conclude a consultant agreement with the Ministry of Health of Armenia. This agreement will come into effect on verification by the Japanese government, and on the basis of this agreement the consultant shall carry out the work relating to tenders and supervision. Procurement of equipment shall be undertaken by a Japanese supplier chosen by tender who will conclude contracts with the Ministry of Health of Armenia. This contract also shall come into effect on verification by the Japanese government. The supplier shall undertake the procurement, transportation and installation of the necessary equipment, and shall also carry out operational training of each item of equipment, in addition to preparing a list of manufacturers and/or agents as well as manuals and other technical materials needed for maintenance after procurement.

2-2-4-2 Implementation Condition

Unloading of ocean cargoes takes place at Poti Port of Georgia, since Armenia is a landlocked country. The previous grant aid project also used Poti as the port of discharge successfully, and no problem has been reported in connection with using this port for importing general goods to Armenia.

2-2-4-3 Scope of Works

(1) Expenses to be born by the Japanese Government

- Costs related to the procurement of equipment for the project
- Costs related to transportation overseas and overland to each of the hospitals
- Costs related to the installation and setting up of equipment
- Costs related to the test operation and the technical explanation of operation and maintenance

(2) Responsibilities of the Armenian Side

- Provision of information and materials necessary for transportation, installation and set-up
- Obtainment of necessary permission for importing the medical equipment
- Cleaning and preparing the rooms where the equipment is installed
- Securing of enough space for unloading the equipment.

- Securing of adequate space where the equipment can be stored prior to installation.
- Securing of physical condition with regard to the carrying-in and installation of the equipment.
- Preparation of primary facilities (electricity, water, sewage)

2-2-4-4 Consultant Supervision

The consultant will supervise the equipment procurement and other works after carrying out tender to select the supplier of the equipment, to ensure the smooth implementation of the project. The consultant supervision includes to confirm that the equipment procured by the supplier is consistent with the descriptions laid down in the contract, to inspect the equipment and packaging in advance to shipment, to examine the situation of transportation and customs clearance, and to conduct final inspection of the equipment at the project site. The consultant entrusts a third-party inspecting organization to inspect the entire cargo and packaging at the pre-shipment inspection, and examine there are no discrepancies between the actual contents and those stipulated in the contracts. The consultant endeavors to have a constant grasp of the situation at the work, and provides proper advice and instruction to the executing agency in the Armenian side and the supplier

2-2-4-5 Quality Control Plan

The equipment items to be procured under this project will be selected from ready-made models that have been successfully delivered to medical institutions in various countries. To ensure safety for patients, Japanese equipment shall comply with JIS, and European equipment or US shall comply with BS or DIN standards. The equipment that needs consumables or reagents will be chosen the models with open architecture so that those consumables can be obtain easily at the hospitals.

2-2-4-6 Procurement Plan

(1) Procurement of Third-Country Products

Some items of the equipment shall be procured from third countries, judging from trends in the medical equipment market in Armenia and the result of survey of manufacturers and agents. An item shall be procured form third countries when it is not manufactured in Japan. An item which needs technical service or consumables supply from local agents can be procured from third countries when only few Japanese manufacturers have local agents in and nearby Armenia. In fact, out of 111 items, 53 items are produced by few Japanese manufacturers, and 6 items are not manufactured in Japan. Table 2-5 shows the items to be procured from third countries.

Table 2-5: Equipment Items to be Procured from Third Countries

To be procured from Japan or third countries

No.	Equipment	Q'ty
1	Analytical balance	6
2	Anesthesia apparatus with ventilator	5
3	Artery tourniquet, electric	1
4	Arthroscope	1
5	Autoclave	6
6	Autoclave, pharmacy	2
11	Bone drill	1
12	Bronchofiberscope	2
16	Coagulation analyzer	3
17	Coagulator	1
18	Colonofiberscope	1
20	Colposcope	1
21	Cystoscope, rigid	1
22	Defibrillator	6
23	Disinfection set	3
24	Distiller	4
26	ECG	4
27	EEG	1
28	Electrosurgical unit	5
30	Examination lamp	6
32	Examination table, gynecology	1
33	Gastrofiberscope	1
34	Gypsum cutter	1
35	Heating mattress	1
38	ICU Bed	4
40	Infant incubator	10
41	Infant warmer	8
42	Infusion pump	21
54	Laparoscope, thoracoscope set	2
57	Microscope, binocular	12
58	Microscope, fluorescent	1
63	Operating lamp	5
64	Operating lamp, single	1
65	Operating lamp, mobile	2
66	Operating microscope	1
72	Patient monitor	17
73	pH meter	1
75	Plasma freezer	1
77	Pulse oximeter	3
79-A	Refrigerator A	6
79-B	Refrigerator B	2
80	Refrigerator, blood bank	1
81	Spectrophotometer	4
88	Syringe pump	8
94	Ventilator	8
95	Ventilator for neonate	2
105-A	X-ray unit A	2
105-B	X-ray unit B	1
106	X-ray unit, C-arm	1
107	X-ray unit, mobile	1
70	Ophthalmoscope	1
84	Spirometer	1
89	Tissue processor	1

53 items

To be procured from third countries

No.	Description	Q'ty
10	Blood gas analyzer	3
13	Bronchoscope	1
53	Ironing machine	3
62	O2 concentrator	3
90	Treatment table	3
96	Washing machine with centrifuge	6

6 items

(2) Necessity of Local Agents

37 items shown below need technical service and supply of consumables and/or spare parts from the manufacturers or their agents. Those items shall be selected from the products of the manufacturers that have local agents in and nearby Armenia.

Table 2-6: Equipment Items for which Local Agents are Required

No.	Description	Q'ty
2	Anesthesia apparatus with ventilator	5
5	Autoclave	6
6	Autoclave, pharmacy	2
10	Blood gas analyzer	3
12	Bronchofiberscope	2
16	Coagulation analyzer	3
18	Colonofiberscope	1
20	Colposcope	1
22	Defibrillator	6
66	Operating microscope	1
72	Patient monitor	17
74	Phototherapy unit	1
77	Pulse oximeter	3
81	Spectrophotometer	4
84	Spirometer	1
86	Suction unit	33
87	Suction unit, low pressure	8
88	Syringe pump	8

26	ECG	4
27	EEG	1
28	Electrosurgical unit	5
33	Gastrofiberscope	1
40	Infant incubator	10
41	Infant warmer	8
42	Infusion pump	21
63	Operating lamp	5
64	Operating lamp, single	1
65	Operating lamp, mobile	2

91	Ultrasound nebulizer	3
92	Ultrasound scanner	1
93	Ultrasound scanner, doppler	1
94	Ventilator	8
95	Ventilator for neonate	2
105-A	X-ray unit A	2
105-B	X-ray unit B	1
106	X-ray unit, C-arm	1
107	X-ray unit, mobile	1

37 items

2-2-4-7 Implementation Schedule

The implementation process of this project consists of two phases: tendering procedure and equipment procurement/installation. Figure 2-4 shows the implementation schedule from the signing of the E/N to the completion of the project.

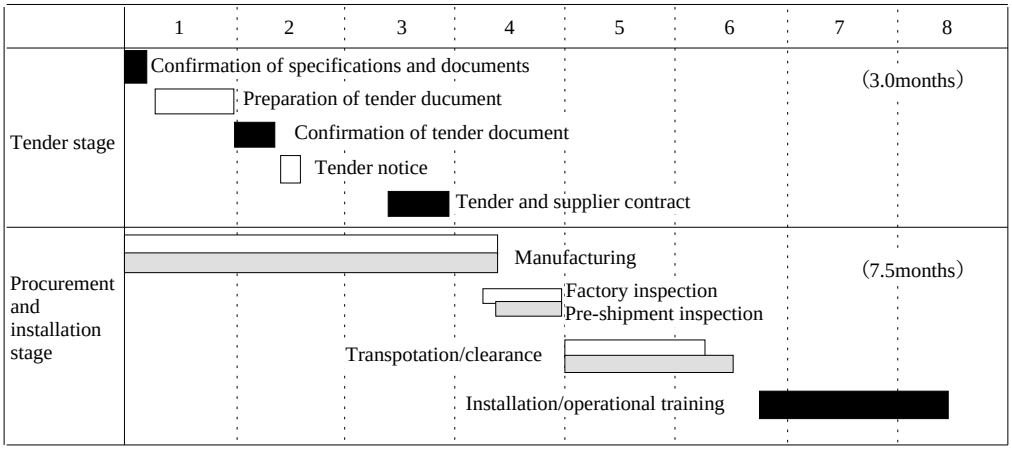


Figure 2-4: Implementation Schedule

2-3 Obligations of the Recipient Country

Works to be done by the Armenian side for this project is described in Section 2-2-4-3 Scope of Works. Some parts of walls, windows, and/or partition screens will need to be taken down when new equipment is carried into respective rooms and put up again after installation, regarding large equipment such as X-ray unit, autoclave, and washing machine. The foundation and flooring of the Laundry need to be repaired after removing the existing equipment. Listed below are specific works to be done at each hospital.

Table 2-7: Works to be done by the Armenian Side

Section Equipment	Types of Work: 1. Removal before delivery and put up afterward 2. Removal/repair of existing equipment 3. Repair/renovation of the room 4. Repair/renovation of primary facilities	Need for Construction Work (● indicates a need for construction work) Children's Clinical Emergency Hospital	 Infectious Diseases Clinical Hospital "Nork"	 Republican Clinical TB Dispensary
Sterilization Room Autoclave	1. Existing glass windows on 1st floor Corrugated glass screens in storage section Iron-barred door in storage section Windows and wainscoting 2. Removal/repair of existing equipment 3. Installation of indoor ventilation fan 4. Electrical facilities Water service pipes	● ● ● ● ● ●	 ● ● ● ●	 ● ● ●
Laundry Washing machine with centrifuge Ironing machine	1. Windows 2. Removal/repair of existing equipment 3. Reinforcement of floor foundation Repair of flooring 4. Electrical facilities Water service pipes Drainpipes	 ● ● ● ● ●	● ● ● ● ● 	● ● ● ● ● ● ●
Operation room Operating lamp	2. Removal/repair of existing equipment 3. Repair of fastening bolts Repair of ceilings, installation of frames 4. Electrical facilities	● ● ●	● ● ●	● ●
X-ray room X-ray unit	1. Windows 2. Removal/repair of existing equipment 3. Renovation of Preparation Room, 1st floor Relocating the control room's door/window Repair of flooring 4. Electrical facilities Water supply/drainage facilities	● ● ● ●	 ● ● ● ●	● ● ● ●
Mortuary Refrigerator	1. Iron-barred door at the entrance 2. Renovation of the Autopsy Ward 4. Electrical facilities Water supply/drainage facilities	● ● 	 ● ● ●	
Laboratory Draft chamber	3. Installation of exhaust sleeves on the wall Wiring of exclusive power source Plumbing work for water supply/drainage	 	● ● ●	

The kinds of materials and the amounts of work differ from room to room depending on the respective hospitals' condition. During the site survey, the basic design study team checked the condition of each room in the presence of the personnel in charge of each facility, projected the specific contents of the renovation work, and estimated the cost for each facility based on the going rates of labor and material costs. Table 2-8 below summarizes the estimation.

Table 2-8: Cost Estimation for Works to be done by the Armenian Side
The Children's Clinical Emergency Hospital

Room	Equipment	Cost(US$)
Sterilization room	Autoclave	505
Laundry	Washing machine with centrifuge	360
	Ironing machine	100
Operation room	Operating lamp	240
X-ray room	X-ray unit	1,910
Mortuary	Mortuary refrigerator	180
Total		3,295

The Infectious Diseases Hospital "Nork"

Room	Equipment	Cost(US$)
Sterilization Room	Autoclave	645
Laundry	Washing machine with centrifuge	235
	Ironing machine	550
Operation room	Operating lamp	80
X-ray room	X-ray unit	3,225
Mortuary	Mortuary refrigerator	1,950
Laboratory	Draft chamber	190
Total (Mortuary excluded)		4,925

The Republican Clinical TB Dispensary

Room	Equipment	Cost(US$)
Sterilization Room	Autoclave	260
Laundry	Washing machine with centrifuge	700
	Ironing machine	550
Operation Room	Operating lamp	270
X-ray Room	X-ray unit	910
Total		2,690

Grand Total	10,920

2-4 Project Operation Plan

The three hospitals have enough personnel to use the equipment to be procured by the project from medical and technical viewpoints. The hospitals also have enough staff of build and repairs. Buildings, as well as electricity, water, and sewage facilities are properly maintained. Generally, the maintenance of medical equipment requires both daily check-up by users and technical service by the manufacturers and/or agents. For the former, each hospital is requested to renew the procedures, according to which the hospital staff will carry out daily check-up to be recorded adequately. As for technical service by the manufacturers and/or their agents, each hospital has a yearly contract with medical equipment service enterprises, which used to be public corporations during the Soviet era. All the manufactures must designate these public corporations as their agents to sell their equipment during the Soviet era. Consequently, the service contracts between the agents and hospitals covered the maintenance of all the equipment. Nowadays, some foreign manufacturers locate their agents in Moscow to cover the CIS nations. However, as the market size of Armenia is so small that hardly any Western or Japanese manufactures locate their agents in Armenia. The hospitals will be able to receive maintenance services from Armenian medical equipment service companies or agents in neighboring countries, because the project will procure the equipment items with the conditions on existence of local agents in and around Armenia. In case local agents are situated in Moscow, they can use Armenian medical equipment service companies as contact points. In any case, not all the costs for spare parts are included in the contract fees so that each hospital should draft a sound budgetary plan from a long-term viewpoint.

Chapter 3 Project Evaluation and Recommendations

Chapter 3 Project Evaluation and Recommendations

3-1 Effects of the Project

The three hospitals included in the project are the most important facilities in terms of health care reform policy. These hospitals, being located in Yerevan and environs, are referral hospitals accepting patients from all over the state. The whole Armenian population can benefit of this project, considering the Armenian territory and population sizes.

Table 3-1 Effects of Project Implementation and Extent of Improvement of the Present Situation

Present situation and problems	Relevant measures to be taken in the project (work covered by the grant)	Project effect and extent of improvement
The Optimization Program has determined to maintain and improve the three hospitals. The hospitals are trying to optimize the number of beds and others following the Optimization Program. However, it is quite difficult to replace or supplement the deteriorated and insufficient medical equipment by the Armenian side own, and it hinders the hospitals from providing adequate medical services as important public facilities.	Providing the medical equipment necessary for the medical service of the three hospitals. 111 items used in wards, diagnostic departments, operation rooms, ICUs and supporting sections	Improvement of the essential medical equipment will raise the efficiency of examination, ability of diagnosis and treatment, and sanitary conditions of the hospitals, so that the hospitals' service quality improves.

(1) Expected Effects of the Project

Direct - The testing activities of the hospitals gain efficiency.

The hospitals could not help but repeat a test for accurate diagnosis, because of their deteriorated testing apparatus. It has resulted in the waste of time and cost. Those apparatuses are replaced by the project, and the testing activities gain efficiency.

- The diagnosis and treatment abilities of the hospitals improve.

Efficient testing enables the hospitals to make accurate diagnosis of patients without delay. Replacement of existing deteriorated equipment enables some surgical treatment again. The diagnosis and treatment abilities improve.

- The sanitary conditions of the hospitals improve.

The sterilizing equipment, which frequently breaks and makes routine sterilizing unstable, will be replaced. The instruments for surgery and other treatments will be sterilized appropriately. The replacement of laundry equipment will make the greater cleanliness of sheets and medical wears for operation and others.

Indirect - The hospitals gain more reliance.

The service quality of the hospitals will improve. The patients will have more trust in their diagnosis and treatment. It increases the numbers of patients and referrals.

- The operation rate of the hospitals rises.
  Optimization of the number of beds and increase of patients and referrals will raise the bed occupancy rate of the hospitals. The hospitals enjoy the better operation.

Influence on diagnostic ability is the most serious problem caused by deterioration and insufficient quantity of the existing equipment in the hospitals at present. When their equipment is replaced with new ones, the testing accuracy rises in their clinical tests, image diagnosis, and other examinations. It enables the appropriate diagnosis without delay. In fact, the hospitals, at present, avoid misdiagnosis by repeating a same test, because the existing apparatuses sometimes show inaccurate result. The average number of days of new patients before their diagnoses proves this problem, and it would be shortened when their diagnostic abilities improve.

It has been pointed out that less reliance of medical services, which make patients not to receive health care, is a significant factor of low operating rate of health care facilities in Armenia. The Armenian Medical Center, where improvement of medical equipment has already been accomplished, has experienced a 25% increase in the number of patients over a 6-month period on the Center's record. Half a year is too short to clarify it as the indication of rise in trust, though it can be taken as the fact showing the patients desire on improvement of the health care in general. Given this mood of public, reliance on better diagnostic and treatment service of the hospitals would increase the number of patients and referrals, and increase of medical fee paid by patients can be expected as well.

The operation rate of the hospitals is an extremely important aspect from the viewpoint of health care reform and optimization program in Armenia. Average stay would become shorter regarding beds for new patients as mentioned above, on the other hand it might be longer at certain wards when the hospital accepts more seriously ill patients as a result of more referrals from primary and secondary facilities. The three hospitals already optimized their number of beds, and they have to pay careful attention to the number of patients, the average hospital stay, and the bed occupancy rate for their each ward respectively, in order that the hospitals can realize the better operation as whole.

The in-house training has been quite difficult in practice, because of the problems on the existing equipment in the hospitals. The replacement of medical equipment with new ones would re-activate the training for clinical application. When the hospitals carry out the in-house training with new equipment, the skills of hospital staff would be raised.

(2) Selection of Indices

The indices on achievement of overall goal, project objective, and expected effects are shown below.

Table 3-2 Summary of Indices

Outline of project	Indices	Source of data on indices
Overall goal Pediatrics care and control of infectious diseases will be strengthened.	- Child mortality - Death from infectious diseases	Health statistics of Armenia
Objectives of project Medical services of the hospitals improve.	- Average stay of Diagnosis Dept. - Number of patients - Number of operations - Number of clinical test - Rate of smear-positive treated successfully	Medical statistics of the hospitals
Effects of grant aid project Medical equipment needed by the three hospitals will be improved	- Items and quantities of the equipment	Inventory and maintenance report of the 3 hospitals
Other effects	- Number of referrals - Bed occupancy rate of the hospitals	Statistics of the hospitals

Overall goal: Pediatric care and control of infectious diseases will be strengthened.

It is expected pediatric care and control of infectious diseases in Armenia will be strengthened as the result of the improvement of medical services of the hospitals with their roles in the health sector of Armenia.

Improvement of the Children's Clinical Emergency Hospital contributes the reform of pediatric service network with the reliable tertiary hospital where the pediatric serious cases can be diagnosed and treated. Improvement of the Republican Clinical TB Dispensary and the Infectious Diseases Clinical Hospital "Nork" will lead to enhancement of capacity to provide guidance to TB dispensaries and local hospitals throughout the country and to strengthening of the fight against infectious diseases.

The child mortality rate and the rate of death from infectious diseases indicate improvement of pediatrics care and strengthening of control of infectious diseases.

- The child mortality rate will not get worse.
- The rate of infectious diseases among causes of death will not increase.

Objectives of project: Medical services of the hospitals improve.

The average stay of diagnostic department, the number of patients, clinical tests, operations, and the rate of smear-positive treated successfully will indicate the achievement of project

objective, as shown below for the respective hospitals based on their character.

- The average stay of diagnostic department will be shortened at; the Infectious Diseases Clinical Hospital “Nork”, and the Republican Clinical TB Dispensary.
- The number of patients will increase at; the Children’s Clinical Emergency Hospital, and the Infectious Diseases Clinical Hospital “Nork”.
- The number of operations will increase at the Children’s Clinical Emergency Hospital.
- The number of clinical tests will increase. Bacteriological test at the Infectious Diseases Clinical Hospital “Nork” Sputum test at the Republican Clinical TB Dispensary Blood cell test at the Children’s Clinical Emergency Hospital
- The rate of smear-positive treated successfully rises at the Republican Clinical TB Dispensary

The data in 2000 of above statistics are shown below.

The average stay of diagnostic departments	11.5 days at the Infectious Diseases Clinical Hospital “Nork” 17.0 days at the Republican Clinical TB Dispensary.
The number of patients	3, 749 inpatients at the Children’s Clinical Emergency Hospital 3,421 inpatients at the Infectious Diseases Clinical Hospital “Nork”.
The number of clinical tests	17,000 bacteriological tests at the Infectious Diseases Clinical Hospital “Nork” 13,500 sputum smear tests at the Republican Clinical TB Dispensary 960 blood cell test at the Children’s Clinical Emergency Hospital

Project Effects: Medical equipment needed by the three hospitals will be improved

The project improves the equipment shown below at the hospitals.

	Wards	Diagnostic Departments	Operation Room / ICU	Supporting Sections
The Children’s Clinical Emergency Hospital	12 items	27 items	40 items	13 items
The Infectious Diseases Clinical Hospital “Nork”	10 items	22 items	19 items	11 items
The Republican Clinical TB Dispensary	20 items	25 items	33 items	7 items

The current status of operation rate and the number of patients of the hospitals are shown in figure 3-1 and 3-2.

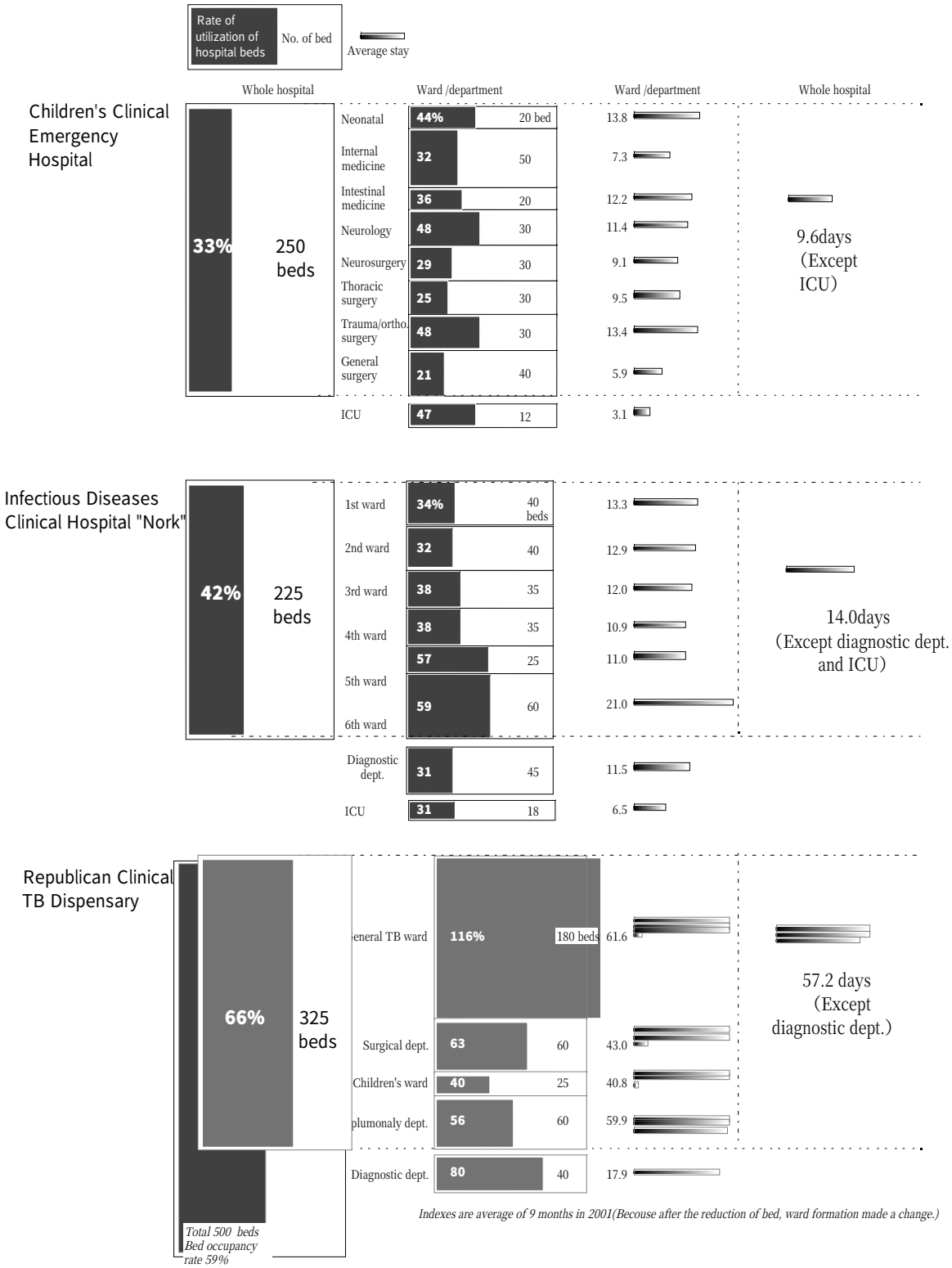


Figure 3-1 Operation Rate of Hospitals

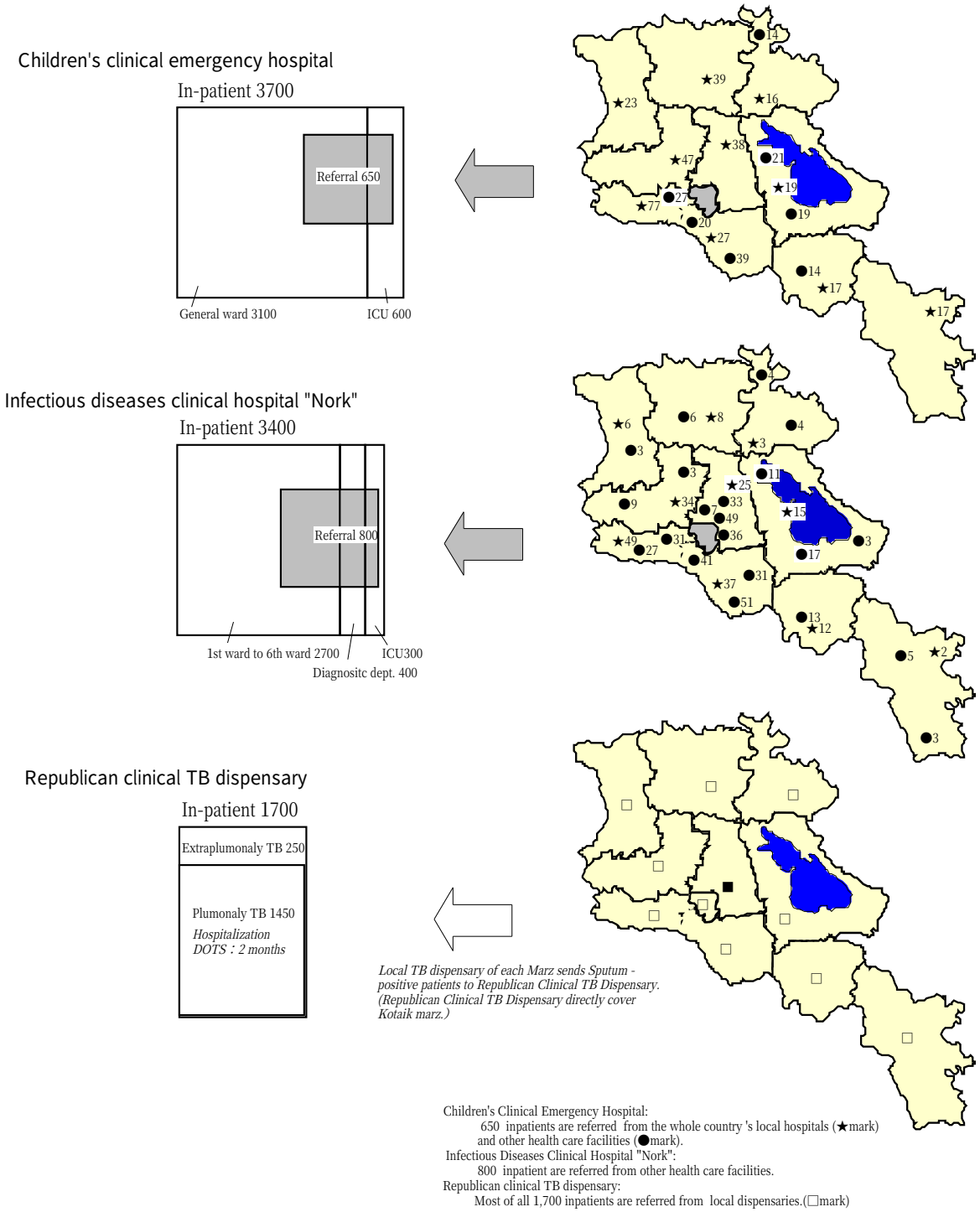


Figure 3-2 Trend of Inpatients of Hospitals

3-2 Recommendations

The project is expected to have the effects described above. It would be more effective when the following issues improve in the Armenian side.

(1) Efficiency of Financing of Medical Care

The health care facilities contract with the State Health Agency, SHA every year regarding the health care covered by the state budget. The Global Budget is defined on this contract, and each facility receives payment on the basis of invoicing of the SHA for each case. Regardless of service ability or operating situation, any health facility in Armenia has a right to conclude a contract with the SHA under the current system. It is questionable from viewpoint of efficiency of the health care budget, which is insufficient in total at present. Although the SHA occasionally inspects the health care facilities, they can not do much more than consider whether or not invoices received for particular cases are justified in the present legal framework. It can be suggested to establish a guideline or criteria for the health facilities to apply for the contract with the SHA to ensure the quality of health care service by the state budget. The health care reform policy puts an emphasis on licensing of health care facilities and personnel. When the relevant standards and guidelines are developed regarding organization and management of health care facilities, it may be possible that SHA selectively contracts with only facilities that can provide better service, and there should be considerable improvement of health care quality even with the limited state budget. The Armenian health care reform has just taken initial steps. It is recommended to make continuous effort to increase the efficiency of health care budget.

(2) Hospital Reform and PHC Strengthening

The optimization program is in the direction to shift the health care system from one in which inpatient care at hospitals and outpatient care at policlinics are separated to one with hierarchy from PHC services to secondary and tertiary services. The hospitals, that have concentrated on inpatient treatment in the past, are requested not only to start offering specialized outpatient care services but also to have active linkage with the PHC level. The three hospitals have the linkage with local facilities or PHC levels to some extent at present, and it is desirable that they further develop their relations with the secondary and primary level to enhance the service network of health care in Armenia.

The Republican Clinical TB Dispensary already has linkage with local dispensaries through the National TB program with DOTS strategy. It is desirable the Republican Clinical TB Dispensary would provide the back support to PHC and enhancement of quality control of sputum smear testing at local dispensaries. The Children’s Clinical Emergency Hospital and

the Infectious Diseases Clinical Hospital "Nork," already have their specialized outpatient care services and are visited by approximately 2,700 outpatients a year. About 10% of the outpatients of the Children's Clinical Emergency Hospital are referred form polyclinics in 2000, and the demand will increase as the family medicine, which is being introduced into PHC, expands. It is desirable the Children's Clinical Emergency Hospital would be in good connection with family physicians providing appropriate feedback to them. The Infectious Diseases Clinical Hospital "Nork" has close relations with local hospitals because they often send their specialists at outbreaks of infectious diseases. At present the physicians from the hospital accomplish diagnosis and treatment of patients where they are sent. It is desirable that the Infectious Diseases Clinical Hospital "Nork" further develop the relation with the local facilities, and provide technical guidance to local staff including PHC level on laboratory control and specifying cause of infection.

(3) Practical Training in Medical Education

In Armenia medical education is accomplished at the National Medical University, SMU and the National Institute of Health, NIH. They send their students to the health care facilities for their practical training. Renewal of medical education system is one of the prioritized issues in the health care reform policy of Armenia. The most serious problem in medical education at present is insufficient practical training. This is partly due to the emphasis traditionally placed on lectures. However, it is the fact the students can not being able to come in contact with enough cases during their training because the hospitals' operating rate is low. Another fact is the hospitals are not positively involved in planning and managing the training courses and curricula under control of medical colleges. Most of the practical training of pediatrics, emergency care and tuberculosis and other infectious diseases takes place at the three hospitals covered by this project. It is desirable that the hospitals collaborate with medical colleges to improve the quality of education, when the hospital service activities are improved by the project.

Appendices

1. Member List of the Study Team

(1) Basic Design Study

Toru YOSHIDA Team Leader	Grant Aid Division Economic Cooperation Bureau Ministry of Foreign Affairs
Shuzo KANAGAWA, M.D. Technical Advisor	First Expert Service Division Bureau of International Cooperation International Medical Center of Japan Ministry of Health, Labour and Welfare
Takeshi NAGATA Grant Aid Programme	Second Project Management Division Grant Aid Management Department Japan International Cooperation Agency (JICA)
Chiharu ABE Project Manager/Hospital Management	International Techno Center Co., Ltd.
Shigetaka TOJO Equipment Planner-1	International Techno Center Co., Ltd.
Yumi ISHIKAWA Equipment Planner-2	International Techno Center Co., Ltd.
Taizo SHISHIDO Facilities and Utilities Planner	Matsuda Consultants Co., Ltd.
Shuichi MURASHITA Procurement and Cost Planner	International Techno Center Co., Ltd.
Hiromi WATANABE Interpreter	Translation Center Pioneer

(2) Explanation of Draft Final Report

Shuzo KANAGAWA, M.D. Team Leader	First Expert Service Division, Bureau of International Cooperation, International Medical Center of Japan (IMCJ), Ministry of Health, Labour and Welfare
Yoshimasa TAKEMURA Grant Aid Programme	Second Project Management Division, Grant Aid Management Department, Japan International Cooperation Agency (JICA)

Chiharu ABE Project Manager /Hospital Management	International Techno Center Co., Ltd.
Shigetaka TOJO Equipment Planner-1	International Techno Center Co., Ltd.
Taizo SHISHIDO Facilities and Utilities Planner	Matsuda Consultants Co., Ltd.
Hiromi WATANABE Interpreter	Translation Center Pioneer, Co., Ltd.

2. Study Schedule

(1) Basic Design Study

			Yoshida, Team Leader Kanagawa, Technical Advisor Nagata, Grant Aid Programme	Consultants
1	25-Jun	Mon		Leaving Narita, via Zurich,
2	26-Jun	Tue		Arriving at Yerevan Meeting with MOFA, MOH, Survey at IF
3	27-Jun	Wed		Survey at CE, TB
4	28-Jun	Thu		Survey at CE
5	29-Jun	Fri		Survey at CE
6	30-Jun	Sat		Survey at CE
7	1-Jul	Sun		Team meeting
8	2-Jul	Mon	Leaving Narita, arriving at Zurich (Kanagawa, Nagata) Leaving Zurich (ditto)	Meeting with MOH Survey at TB
9	3-Jul	Tue	Arriving at Yerevan (ditto), Meeting with MOH	Survey at TB
10	4-Jul	Wed	Meeting with MOH, Visiting CE	Survey at IF
11	5-Jul	Thu	Team meeting	
12	6-Jul	Fri	Visiting TB, Meeting with MOH	Survey at IF
13	7-Jul	Sat	Visiting IF Leaving Narita, arriving at Vienna (Yoshida)	Survey at IF
14	8-Jul	Sun	Leaving Vienna (ditto)	Team meeting
15	9-Jul	Mon	Arriving at Yerevan (ditto), Meeting with MOFA Visiting Medical Center "Armenia"	Survey at CE
16	10-Jul	Tue	Confirmation on Minutes of Discussion, Visiting IF	Survey at IF
17	11-Jul	Wed	Confirmation on Minutes of Discussion Visiting CE, TB	Survey at CE, TB Meeting with IRC
18	12-Jul	Thu	Signing of Minutes of Discussion	
19	13-Jul	Fri	Leaving Yerevan, arriving at Moscow Meeting with Embassy of Japan in Russia Leaving Moscow, arriving at Narita	Survey at CE Survey at Local Agents in Yerevan
20	14-Jul	Sat		Survey at CE
21	15-Jul	Sun		Survey at Local Agents
22	16-Jul	Mon		Meeting with MOH Survey at CE Survey at Local Agents
23	17-Jul	Tue		Meeting with USAID Survey at TB Survey at forwarders Survey at Marz hospital
24	18-Jul	Wed		Meeting with MOFA Survey at IF Meeting with PIU/World Bank Leaving Yerevan (Shishido, Murashita) Leaving Moscow (Shishido)
25	19-Jul	Thu		Arriving at Narita (ditto) Survey at CE Survey at Local Agents, Moscow Meeting with SHA

			Yoshida, Team Leader Kanagawa, Technical Advisor Nagata, Grant Aid Programme	Consultants
26	20-Jul	Fri		Survey at TB Survey at Local Agents, Moscow Meeting with SMU Meeting with NIH
27	21-Jul	Sat		Team meeting Survey at Local Agents, Moscow
28	22-Jul	Sun		Team meeting
29	23-Jul	Mon		Visiting Medical Center "Armenia" Survey at Local Agents, Moscow Meeting with MOH Leaving Moscow (Murashita)
30	24-Jul	Tue		Visiting State Committee of Real Property Arriving at Narita (ditto) Visiting "Haigasard" SCJSC, Survey at IF
31	25-Jul	Wed		Survey at CE, Policlinic No 17
32	26-Jul	Thu		Meeting with MOH
33	27-Jul	Fri		Leaving Yerevan for Moscow (Abe, Tojo, Watanabe) Meeting with Embassy of Japan in Russia Leaving Moscow (Abe, Tojo, Watanabe)
34	28-Jul	Sat		Arriving at Narita (ditto)

(2) Explanation of Draft Report

			Kanagawa, Team Leader/Technical Advisor Takemura, Grant Aid Programme	Consultants
1	8-Oct	Mon		Leaving Narita, via London
2	9-Oct	Tue		Arriving at Yerevan Meeting with MOH/CE/IF/TB
3	10-Oct	Wed		Meeting with TB Meeting with SHA
4	11-Oct	Thu		Meeting with IF Meeting with Health Dept. Yerevan
5	12-Oct	Fri		Meeting with CE
6	13-Oct	Sat		Meeting with MOH/CE/IF/TB
7	14-Oct	Sun		Team meeting
8	15-Oct	Mon		Meeting with TB Visiting Medical Center "Armenia"
9	16-Oct	Tue		Meeting with IF Meeting with NIH
10	17-Oct	Wed		Meeting with CE Meeting with MOH
11	18-Oct	Thu	Leaving Narita, via Frankfurt, arriving at Vienna Leaving Vienna	Meeting with MOH/CE/IF/TB
12	19-Oct	Fri	Arriving at Yerevan Meeting with MOFA,MOH Visiting CE	
13	20-Oct	Sat	Visiting IF,TB	
14	21-Oct	Sun	Team meeting	
15	22-Oct	Mon	Meeting with MOH/CE/IF/TB Confirmation on Minutes of Discussion	
16	23-Oct	Tue	Meeting with World Bank Confirmation on Minutes of Discussion	
17	24-Oct	Wed	Signing of Minutes of Discussion	
18	25-Oct	Thu	Leaving Yerevan, arriving at Moscow Meeting with Embassy of Japan in Russia	
			Leaving Moscow, arriving at London Meeting with JICA Office in London	Survey at Local Agents in Moscow
19	26-Oct	Fri	Leaving London	Leaving Moscow
20	27-Oct	Sat	Arriving at Narita	Arriving at Narita

CE Children's Clinical Emergency Hospital
IF Infectious Diseases Clinical Hospital "Nork"
TB Republican Clinical TB Dispensary

3. List of Parties Concerned in the Recipient Country

Ministry of Foreign Affairs

Rouben Shugarian	Deputy Minister
Rouben Karapetian	Director, Director Asia-Pacific & Africa Department
Michael Vardanian	Head, Pacific and Africa Division, Asia-Pacific & Africa Depart.

Ministry of Health

Haik Darbinyan	Deputy Minister
Levon Eolyan	Deputy Minister
Hovhannes Margaryants	Adviser to the Minister
Levon Yepiskoposyan	Director, Department of Health Policy
Haik Grigoryan	Director, Department of International Relations
Karine Saribekyan	Director, Department of Maternity and Child Health

State Health Agency

Ara Ter-Grigorian	Director, State Health Agency

Hospitals (Project Sites)

Nikolay Dallakian	Director, Children's Clinical Emergency Hospital
Ara Asoian	Director, Infectious Diseases Clinical Hospital "Nork"
Sergey Stepanian	Director, Republican Clinical TB Dispensary
Marina Saferian	Expert, DOTS program, Republican Clinical TB Dispensary

Others

Hamret Mirzoyan	Director, Department of Health Care, Yerevan Municipality
Manouk Vardanyan	Chairman, State Committee of Real Property Cadastre
Richard Walkling	Chief Executive Officer, Yerevan Water & Sewerage SCJSC
Karen Israelyan	Executive Director, Haigasard SCJSC
Grigor Grigorian	Director, Medical Center Armenia
Samvel Hovhannisyan	Head, Department of Family Medicine, National Institute of Health
Mikayel Nareimanyan	Head, Department of Family Medicine, State Medical University

Resident Offices of Other Donors

Hrair Tsolak Aslaniann	WHO Liaison Officer in Armenia
Szannna Hayrapetyan	Operation Officer, World Bank
Sergey Khachatryan	Director, Health Project Implementation Unit, World Bank
Tatul Hakobyan	Health Expert, USAID/PADCO
Aharon Praff	Health Delegate, International Red Cross

4. Minutes of Discussion

(1) Basic design study

MINUTES OF DISCUSSIONS ON THE BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF MEDICAL EQUIPMENT IN THE REPUBLIC OF ARMENIA

Based on the result of the Preparatory Study, the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of Medical Equipment (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to the Republic of Armenia (hereinafter referred to as "Armenia") the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Toru Yoshida, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs, and is scheduled to stay in the country June 26, 2001 to July 27, 2001.

The Team held discussions with the officials concerned of the Government of Armenia and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Yerevan, July 12, 2001

Toru Yoshida
Leader
Basic Design Study Team
JICA

Haik Darbinyan
Deputy Minister
Ministry of Health
Republic of Armenia

Rouben Shugarian
Deputy Minister
Ministry of Foreign Affairs
Republic of Armenia

ATTACHEMENT

1. Objective of the Project

The Objectives of the Project is to improve the hospital functions at the below mentioned sites such as provision of essential medical services and support to rural health care.

2. Project sites

The sites of the Project are as follows.

Children's Clinical Emergency Hospital, 46, Artashisyan Str., Yerevan

Infectious Diseases Clinical Hospital "Nork", 153, Armenakyan Str., Yerevan

Republican Clinical TB Dispensary, 10, Arzniiskoye Shosse, Abovyan

3. Responsible and Implementing Organization

The Responsible and Implementing Organization is the Ministry of Health.

4. Items requested by the Government of Armenia

After discussions with the Team, the Armenian side finally requested the items described in Annex-1. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid Scheme

The Armenian side understands the Japan's Grand Aid Scheme and the necessary measures to be taken by the Government of Armenia as explained by the Team and described in Annex-1 and Annex-2 of the Minutes of Discussions of the Preparatory Study on the Project for Improvement of Medical Equipment for Mother and Children Health Protection Hospitals in the Republic of Armenia signed by both parties on October 30, 2000. For reference, here Annex-2 and Annex-3 are attached to remind the above mentioned scheme.

6. Schedule of the Study

6-1. The consultants will proceed to further studies in Armenia until July 27, 2001.

6-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around October, 2001.

6-3. In case that the Government of Armenia accepts the contents of the report in principle, JICA will complete the final report and send it to the Government of Armenia by February, 2002.

7. Other Relevant Issues

7-1. No Privatization of Hospitals

The Armenian side confirmed that the Children's Clinical Emergency Hospital, the Infectious Diseases Clinical Hospital "Nork", and the Republican Clinical TB Dispensary will not be privatized according to the Optimization Program of the Yerevan Health System that was approved on June 28,2001 by the Armenian Government .

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7- 2. Tax exemption for the project

The Armenian side confirmed that the Ministry of Health and the Ministry of Foreign Affairs shall take necessary measures for tax exemption and custom clearance for the Project.

7-3. Relationship with other donor's projects

The Armenian side confirmed there is no duplication of the Project with the other donor's projects.

7-4. Proper use of the equipment

When the Project is implemented, the equipment to be procured by the Project should be used under the responsibility of the respective hospitals to be included by the Project.

7-5. Monitoring and evaluation

The both sides have confirmed the necessity of evaluation of the Project by utilizing available data.

Annex 1

Children's Clinical Emergency Hospital

No.	Description	Total	A. Operation room	B. Reanimation room	C. Neonatal department	D. X-ray department	E. EEG room	F. Gastrointestinal department	G. Ultrasound diagnostic room	H. Sterilization room	I. Central laboratory	J. Express laboratory	K. Infant department	L. Functional diagnostic room	M. Laundry	N. Blood bank	O. Neurosurgery department	P. Reception	Q. General surgery department	R. Thoracic surgery department	S. Traumatoorthopedic department	T. Dental department	U. Mortuary
1	Analytical balance	2									1	1											
2	Anesthesia apparatus	5	4	1																			
3	Artery tourniquet, electric	1	1																				
4	Arthroscope with TV system	1	1																				
5	Autoclave	3								3													
6	Autoclave, vertical	1									1												
7	Bilirubin meter	2									1	1											
8	Blood cell counter	2									1	1											
9	Blood coagulation analyzer	1										1											
10	Blood gas analyzer	1										1											
11	Bronchofiberscope	2	2																				
12	Bronchoscope	1	1																				
13	Centrifuge	5									4	1											
14	Colonofiberscope	1						1															
15	Deep freezer	1														1							
16	Defibrillator	2	1	1																			
17	Dental Unit	1																				1	
18	Dental x-ray unit	1				1																	
19	Disinfection set	1						1															
20	ECG	2		1										1									
21	Electroencephalograph, 12ch	1					1																
22	Electrolyte analyzer	1										1											
23	Electronic scale, neonatal	5		2	2								1										
24	Electrosurgical unit	3	3																				
25	Equipments for bacteriological analyze	1									1												
26	Equipments for biochemical analyze	1									1												
27	Equipments for Hepatitis analyze	2									1	1											
28	Equipments for immunological analyze	1									1												
29	Gastrofiberscope with TV system	1						1															
30	Heating mattress	3	2	1																			
31	Hematocrit centrifuge	2									1	1											
32	Hot air sterilizer	7								2	4	1											
33	Incubator	4									3												
34	Infant incubator	6		2	4																		
35	Infant warmer	6		2	2								2										
36	Infusion pump	8		6	2																		
37	Instrument set for autopsy	1																					1
38	Instruments for bronchiole and lung suture	2	2																				
39	Instruments for general surgery	2	2																				
40	Instruments for neurosurgery	2	2																				
41	Instruments for orthopedic surgery	2	2																				

Anexa nr. 1

Children's Clinical Emergency Hospital

No.	Description	Total	A. Operation room	B. Resuscitation room	C. Neonatal department	D. X-ray department	E. ATI room	F. Gastrointestinal department	G. Ultrasound diagnostic room	H. Sterilization room	I. Central laboratory	J. Express laboratory	K. Infant department	L. Functional diagnostic room	M. Laundry	N. Blood bank	O. Neurosurgery department	P. Reception	Q. General surgery department	R. Thoracic surgery department	S. Traumatic-orthopedic department	T. Dental department	U. Sanitary
42	Instruments for plastic surgery	2	2																				
43	Ironing machine, laundry	2													2								
44	Laparoscope with TV system	1	1																				
45	Microscope binocular	3									3												
46	Microscope for pathology	1																					1
47	Microtome	1																					1
48	Mortuary refrigerator	1																					1
49	O2 concentrator	2			2																		
50	Operating lamp	3	3																				
51	Operating lamp, mobile	1	1																				
52	Operating microscope	1	1																				
53	Operating table for general surgery	1	1																				
54	Operating table for neurosurgery	1	1																				
55	Operating table for orthopedic surgery	1	1																				
56	Ophtalmoscope	1															1						
57	Paraffin oven	1																					1
58	Patient monitor	10	3	6	1																		
59	Phototherapy Unit	1			1																		
60	Plasma freezer	1														1							
61	Pulse oximeter	2			2																		
62	Spirometer	1												1									
63	Suction unit	16	3	6	1								1				1	1	1	1	1		
64	Suction unit for fiberscope	1						1															
65	Syringe pump	6	2	2	2																		
66	Thoracoscope system	1	1																				
67	Tissue processor	1																					1
68	Ultrasonic surgical aspirator	1	1																				
69	Ultrasound nebulizer	1											1										
70	Ultrasound scanner, color doppler	1							1														
71	Ventilator	4		4																			
72	Ventilator for neonate	3		3																			
73	Washing machine with centrifuge	2													2								
74	X-ray film processor	1				1																	
75	X-ray film viewer	7	3			3												1					
76	X-ray protective apron	10	5			5																	
77	X-ray unit	1				1																	
78	X-ray unit, C-arm	1	1																				
79	X-ray unit, mobile	1		1																			

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Annex 1

Infectious Diseases Clinical Hospital "Nork"

No.	Description	Total	A. Accountant	B. 1st department	C. 2nd department	D. 3rd department	E. 4th department	F. 5th department	G. 6th department	H. Reanimation	I. Minor operation	J. Isolation	K. Pharmacy	L. Adm. Reception	M. Lab. department	N.Microbiology	O.Serology	P.Clinical lab	Q. Biochemical lab.	R. Sonograph	S.X-ray	T.Laundry	U.Endoscopy	V.Sterilization	W.Dental	X. Mortary
1	Ambulance	1												1												
2	Analytical balance	2											1		1											
3	Anesthesia apparatus	1									1															
4	Autoclave	1																						1		
5	Autoclave, farmacy	1											1													
6	Autoclave, vertical	2													2											
7	Blood cell counter, manual	1																1								
8	Blood gas analyzer	1																	1							
9	Cardiograph, portable	2								1		1														
10	Centrifuge	3														1	1	1								
11	CO2 Incubator	1														1										
12	Coagulometer	1																	1							
13	Colorimeter	1																	1							
14	Computer with printer	2	1												1											
15	Defibrillator	1								1																
16	Dental unit	1																						1		
17	Dental X-ray unit	1																			1					
18	Disinfection set	1																				1				
19	Distiller	4											2		1	1										
20	Drying machine	2																				2				
21	Electrolyte analyzer	1																	1							
22	Electronic scale, adult	8				1	2	1	2			1		1												
23	Electronic scale, neonatal	1										1														
24	Electronic scale, Infant	9		2	2	1				4																
25	Examination lamp	3								2				1												
26	Gastroscope	1																					1			
27	Glass ware washing machine	1													1											
28	Hematocrit centrifuge	1																	1							
29	Hemoglobin meter	1																1								
30	Hight scale	1												1												
31	Histopathology table	1																								1
32	Hot air sterilizer	3														1		1						1		
33	Incubator	4														2	1		1							
34	Infant Incubator	4		2	1					1												1				
35	Infant warmer	2								2																
36	Infusion pump	13		2	2			2		4		3														
37	Instrument for Histopathology	1																								1
38	Ironing machine, laundry	1																				1				
39	Laryngoscope, adult	1								1																
40	Laryngoscope, child	1								1																
41	Lift, mortary	1																								1
42	Micro pippet set	2															1		1							
43	Microscope, binocular	8														2	2	2	2							

Annex 1

No.	Description	Total	A. Accountant	B. 1st department	C. 2nd department	D. 3rd department	E. 4th department	F. 5th department	G. 6th department	H. Resuimation	I. Minor operation	J. Isolation	K. Pharmacy	L. Adm. Reception	M. Lab. department	N. Microbiology	O. Serology	P. Clinical lab	Q. Biochemical lab.	R. Sonograph	S. X-ray	T. Laundry	U. Endoscopy	V. Sterilization	W. Dental	X. Mortuary
44	Mortuary refrigerator	1																								1
45	O2 concentrator	1								1																
46	Operating lamp	1									1															
47	Operating table	2								1	1															
48	Operating lamp, mobile	1																								1
49	Patient bed, adult	6						4		1		1														
50	Patient bed, child	8								5		3														
51	Patient monitor	3								3																
52	Protective apron	3																			3					
53	Refrigerator	2											1		1											
54	Draft chamber	1														1										
55	Spectrophotometer	1																	1							
56	Stretcher	2							1	1																
57	Suction unit	16		2	2	2	2	1	2	3		2														
58	Suction unit, low pressure	2						1		1																
59	Syringe pump	2								2																
60	Ultrasound nebulizer	3										3														
61	Ultrasound scanner	1																		1						
62	Ultrasound scanner, portable	1																		1						
63	Ventilator	2								2																
64	Washing machine, laundry	2																				2				
65	Water bath	1															1									
66	Wheel chair	2						1		1																
67	X-ray film processor	1																			1					
68	X-ray film viewer	7		1	1	1	1	1		1		1														
69	X-ray unit	1																			1					

Annex 1

Republican Clinical TB Dispensary

No.	Description	Total	A. Operation room	B. ICU	C. Surgical department	D. Orthopedics department	E. Urological department	F. Endoscopy Room	G. Child department	H. Gynecology room	I. Internal medicine and Diagnostic department	J. X-ray room	K. Bacteriological laboratory	L. Clinical laboratory	M. Biochemical laboratory	N. Pharmacy	O. Sterilization Department	P. Laundry	Q. Dental
1	Analytical balance	3												1	1	1			
2	Anesthesia apparatus with ventilator	2	2																
3	Artificial pneumothorax apparatus	1			1														
4	Autoclave	4											2				2		
5	Autoclave, dental	1																	1
6	Autoclave, pharmacy	1														1			
7	Blood cell counter	1												1					
8	Bone drill	1	1																
9	Bronchofiberscope, adult	1						1											
10	Bronchofiberscope, child	1						1											
11	Centrifuge	7											3	2	2				
12	Coagulation analyzer	1												1					
13	Coagulator	1								1									
14	Colposcope	1								1									
15	Cystoscope with light source, flexible	1					1												
16	Cystoscope, rigid	1					1												
17	Defibrillator	2	2	1															
18	Dental unit	1																	1
19	Dental X-ray unit	1										1							
20	Disinfection set	1						1											
21	Distiller, double	1														1			
22	Draft chamber	1											1						
23	Electrolyte analyzer	1												1					
24	Electrosurgical unit	2	2																
25	Equipment for bacteriological analize	1											1						
26	Examination lamp, stand type	3			1	1			1										
27	Examination table	1							1										
28	Examination table, gynecology	1								1									
29	Gypsum cutter	1				1													
30	Hematocrit centrifuge	1												1					
31	Hot air sterilizer	5	2										1	1	1				
32	ICU bed	4		4															
33	Incubator	6											4	1	1				
34	Instrument cabinet	8	2		1	1	1	1									2		
35	Instrument set for abdominal surgery	2	2																
36	Instrument set for gynecological surgery	2	2																
37	Instrument set for minor surgery	2	2																
38	Instrument set for neurosurgery	2	2																
39	Instrument set for orthopedic surgery	2	2																
40	Instrument set for thoracic surgery	2	2																
41	Instrument set for urology	2	2																
42	Ironing machine	1																1	
43	Laparoscope, thorasotomy set	1	1																

Annex 1

Republican Clinical TB Dispensary

No.	Description	Total	A. Operation room	B. ICU	C. Surgical department	D. Orthopedics department	E. Urological department	F. Endoscopy Room	G. Child department	H. Gynecology room	I. Internal medicine and Diagnostic department	J. X-ray room	K. Bacteriological laboratory	L. Clinical laboratory	M. Biochemical laboratory	N. Pharmacy	O. Sterilization Department	P. Laundry	Q. Dental
44	Laryngoscope, adult & child	6	2	2	1	1													
45	Lumbar puncture set	2							2										
46	Micro pippet set	1												1					
47	Microscope Fluorescent	1											1						
48	Microscope, binocular	4											3	1					
49	Needle biopsy set	2	2																
50	Operating lamp	2	2																
51	Operating lamp, mobile	2			1	1													
52	Operating table	4	2		1	1													
53	Patient monitor	4	2	2															
54	pH meter	2											1		1				
55	Pleural puncture set	30			10				5		15								
56	Pulse oximeter	1		1															
57	Refrigerator	3											1	1	1				
58	Resectoscope	1					1												
59	Resuscitation bag	2			1	1													
60	Spectrophotometer	1													1				
61	Sphygmomanometer	12		3	1	1	1				4								
62	Sphygmomanometer, child	2							2										
63	Stretcher	9	2		1	1			1		4								
64	Suction unit	7	2	2	1	1				1									
65	Suction unit for fiberscope	1						1											
66	Suction unit, low pressure	5	1						1		3								
67	Suture set for lung	1	1																
68	Ventilator	2		2															
69	washing machine	2																2	
70	Water bath	3											1	1	1				
71	Wheel chair	6			1	1					4								
72	X-ray film processor	1										1							
73	X-ray film processor dental	1										1							
74	X-ray film viewer	2			1	1													
75	X-ray protective apron	4										4							
76	X-ray unit	1										1							
77	X-ray unit, C-arm	1	1																

Annex-2 : JAPAN'S GRANT AID SCHEME

1. Grant Aid Procedure

1) Japan's Grant Aid Program is executed through the following procedures.

Application (Request made by a recipient country)

Study(Basic Design Study conducted by JICA)

Appraisal & Approval(Appraisal by the Government of Japan and Approval by Cabinet)

Determination of Implementation(The Notes exchanged between the Governments of Japan and the recipient country)

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA send a Preliminary Study Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;

b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid

Scheme from the technical, social and economic points of view;

c) confirmation of items agreed on by both parties concerning the basic concept of the Project;

d) preparation of a basic design of the Project; and

e) estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participates the Study and prepares a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Study to the recipient country, in order to maintain the technical consistency between the Basic Design and Detailed Design as well as to avoid any undue delay caused by the selection of a new consulting firm.

3. Japan's Grant Aid Scheme

1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed. However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one

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fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) Necessity of "Verification"
The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability of Japanese taxpayers.

6) Undertakings required to the Government of the recipient country
a) to secure a lot of land necessary for the construction of the Project and to clear the site;
b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site;
c) to ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;
d) to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;
f) to ensure that the facilities constructed and products purchased under the Grant Aid be maintained and used properly and effectively for the Project; and
g) to bear all the expenses, other than those covered by the Grant Aid, necessary for the Project.

7) "Proper Use"
The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign the necessary staff for operation and maintenance of them as well as to bear all the expenses other than those covered by the Grant Aid.

8) "Re-export"
The products purchased under the Grant Aid shall not be re-exported from the recipient country.

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9) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of recipient country or its designated authority.

Annex 3 Major Undertakings to be taken by Each Government

NO	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
1)	Advising commission of A/P		●
2)	Payment commission		●
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
1)	Marine(Air) transportation of the products from Japan to the recipient country	●	
2)	Tax exemption and custom clearance of the products at the port of disembarkation		●
3)	3) Internal transportation from the port of disembarkation to the project	(●)	(●)
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		●
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		●

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(2) Explanation of draft final report

MINUTES OF DISCUSSIONS
ON BASIC DESIGN STUDY ON THE PROJECT
FOR IMPROVEMENT OF MEDICAL EQUIPMENT
IN THE REPUBLIC OF ARMENIA
(EXPLANATION ON DRAFT REPORT)

In June,2001, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Team on the Project for Improvement of Medical Equipment (hereinafter referred to as "the Project") to the Republic of Armenia (hereinafter referred to as " Armenia "), and through discussion, field survey, and technical examination of the study results in Japan, JICA prepared a draft report of the study.

In order to explain and to consult the Armenian side on the components of the draft report, JICA sent to Armenia the Draft Report Explanation Team (hereinafter referred to as " the Team "), which is headed by Dr. Shuzo Kanagawa, First Expert Service Division, Bureau of International Cooperation, International Medical Center of Japan, Ministry of Health, Labor and Welfare, from October 9 to October 25,2001.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Yerevan, October 24,2001

Shuzo Kanagawa
Leader
Draft Report Explanation Team
Japan International Cooperation Agency

Eolian

Levon Eolian
Deputy Minister
Ministry of Health
Republic of Armenia

R. Karapetian

Tatoul Markarian
Deputy Minister
Ministry of Foreign Affaires
Republic of Armenia

ATTACHMENT

1. Components of the Draft Report

The Government of Armenia agreed and accepted in principle the components of the draft report explained by the Team. The items finally requested by the Armenian side are listed in ANNEX of this Minutes. Both parties confirmed that the items to be included in the Project would be finalized after further analysis in Japan.

2. Japan's Grant Aid scheme

The Armenian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Armenia as explained by the Team and described in Annex-2 and Annex-3 of the Minutes of Discussions signed by both parties on July 12,2001.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Armenia by February 2002.

4. Other relevant issues

4-1.

The Armenian side shall take all measures, including coordination among the relevant authorities of the Government of Armenia and preparation of budgetary allocation if any, to exempt custom duties, internal taxes and other fiscal levies which will be imposed in Armenia with respect to the supply of the equipment and services under the Project.

4-2.

The Armenian side shall take necessary measures for the preparation of facilities in advance of installation of the equipment procured by the project.

ANNEX: Equipment list finally requested by the Armenian side

ANNEX

Children's Clinical Emergency Hospital

Item No.	Description	q'ty	CE01. Neonatal department	CE02. Infant department	CE03. General surgery department	CE04. Thoracic surgery department	CE05. Trauma/orthopedic department	CE06. Neurosurgery department	CE07. X-ray room	CE08. Ultrasonography room	CE09. Functional diagnostic room	CE10. EEG room	CE11. Endoscopy room	CE12. Central laboratory	CE13. Operation room	CE14. ICU	CE15. Sterilization room	CE16. Blood bank	CE17. Laundry	CE18. Reception	CE19. Mortuary
1	Analytical balance	2												2							
2	Anesthesia apparatus with ventilator	3													3						
3	Artery tourniquet, electric	1													1						
4	Arthroscope	1													1						
5	Autoclave	3															3				
6	Autoclave, vertical	1												1							
7	Bilirubin meter	2												2							
8	Blood cell counter, manual	2												2							
9	Blood gas analyzer	1												1							
10	Bronchofiberscope	1													1						
11	Bronchoscope	1													1						
12	Centrifuge	5												5							
13	Coagulation analyzer	1												1							
14	Colonofiberscope	1											1								
15	Defibrillator	2													1	1					
16	Disinfection set	2											1		1						
17	ECG	2									1					1					
18	EEG	1										1									
19	Electrosurgical unit	3													3						
20	Endotracheal set	2													1	1					
21	Gastrofiberscope	1											1								
22	Heating mattress	1													1						
23	Hematocrit centrifuge	2												2							
24	Hot air sterilizer	7												5			2				
25	Incubator	3												3							
26	Infant incubator	6	4													2					
27	Infant warmer	6	2	2												2					
28	Infusion pump	8	2													6					
29	Instrument set for bronchiole and lung suture	2													2						
30	Instrument set for general surgery	2													2						
31	Instrument set for neurosurgery	2													2						
32	Instrument set for orthopedic surgery	2													2						
33	Instrument set for plastic surgery	2													2						
34	Ironing machine	1																	1		
35	Laparoscope.Thoracoscope set	1													1						
36	Micro pipette set	4												4							

Item No.	Description	q'ty	CE01. Neonatal department	CE02. Infant department	CE03. General surgery department	CE04. Thoracic surgery department	CE05. Trauma/orthopedic department	CE06. Neurosurgery department	CE07. X-ray room	CE08. Ultrasonography room	CE09. Functional diagnostic room	CE10. EEG room	CE11. Endoscopy room	CE12. Central laboratory	CE13. Operation room	CE14. ICU	CE15. Sterilization room	CE16. Blood bank	CE17. Laundry	CE18. Reception	CE19. Mortuary
37	Microscope, binocular	4												3							1
38	Microtome	1																			1
39	Mortuary refrigerator	1																			1
40	O2 concentrator	2	2																		
41	Operating lamp	3													3						
42	Operating microscope	1													1						
43	Operating table for general surgery	1													1						
44	Operating table for neurosurgery	1													1						
45	Operating table for orthopedic surgery	1													1						
46	Ophthalmoscope	1						1													
47	Parafin bath	1																			1
48	Patient monitor	10	1												3	6					
49	Phototherapy unit	1	1																		
50	Plasma freezer	1																1			
51	Pulse oximeter	2	2																		
52	Refractometer	1												1							
53	Refrigerator	3												3							
54	Refrigerator, blood bank	1																1			
55	Spectrophotometer	2												2							
56	Spirometer	1									1										
57	Suction unit	16	1	1	1	1	1	1							3	6				1	
58	Syringe pump	6	2												2	2					
59	Tissue processor	1																			1
60	Ultrasound nebulizer	1		1																	
61	Ultrasound scanner, doppler	1								1											
62	Ventilator	4														4					
63	Ventilator for neonate	2														2					
64	Washing machine with centrifuge	2																	2		
65	Water bath	1												1							
66	Weighing scale, neonatal	5	2	1												2					
67	X-ray film processor	1							1												
68	X-ray film viewer	5							2						2					1	
69	X-ray protective apron	9							4						5						
70	X-ray unit	1							1												
71	X-ray unit, C-arm	1													1						
72	X-ray unit, mobile	1														1					

Infection Diseases Clinical Hospital "Nork"

Item No.	Description	qty	IF01. 1st ward	IF02. 2nd ward	IF03. 3rd ward	IF04. 4th ward	IF05. 5th ward	IF06. 6th ward	IF07. Isolation ward	IF08. X-ray room	IF09. Ultrasonography room	IF10. Laboratory department	IF11. Lab/General	IF12. Lab/microbiology	IF13. Lab/serology	IF14. Lab/Biochemistry	IF15. Minor operation room	IF16. ICU	IF17. Sterilization room	IF18. Pharmacy	IF19. Laundry	IF20. Reception	IF21. Morgue
1	Analytical balance	2										1								1			
2	Autoclave	1																	1				
3	Autoclave, pharmacy	1																		1			
4	Autoclave, vertical	2										2											
5	Blood cell counter, manual	1											1										
6	Blood gas analyzer	1														1							
7	Centrifuge	3											1	1	1								
8	CO2 Incubator	1												1									
9	Coagulation analyzer	1											1										
10	Colorimeter	2											1			1							
11	Defibrillator	1																1					
12	Distiller	3										1		1						1			
13	Draft chamber	1												1									
14	ECG	2							1									1					
15	Endotracheal set	1																1					
16	Examination lamp	3																2				1	
17	Hematocrit centrifuge	1											1										
18	Hot air sterilizer	3											1	1					1				
19	Incubator	4												2	1	1							
20	Infant Incubator	4		3														1					
21	Infant warmer	2																2					
22	Infusion pump	13	2	2			2		3									4					
23	Ironing machine	1																			1		
24	Micro pipette set	2													1	1							
25	Microscope, binocular	5											2	2	1								
26	Mortuary refrigerator	1																					1
27	O2 concentrator	1																1					
28	Operating lamp	1															1						
29	Operating table for general surgery	1															1						
30	Patient monitor	3																3					
31	Refrigerator	2										1								1			
32	Spectrophotometer	1														1							
33	Stretcher	1																1					
34	Suction unit	11		2	1	1	1	1	2									3					
35	Suction unit, low pressure	2					1											1					

Item No.	Description	q'ty	IF01. 1st ward	IF02. 2nd ward	IF03. 3rd ward	IF04. 4th ward	IF05. 5th ward	IF06. 6th ward	IF07. Isolation ward	IF08. X-ray room	IF09. Ultrasonography room	IF10. Laboratory department	IF11. Lab/General	IF12. Lab/microbiology	IF13. Lab/serology	IF14. Lab/biochemistry	IF15. Minor operation room	IF16. ICU	IF17. Sterilization room	IF18. Pharmacy	IF19. Laundry	IF20. Reception	IF21. Mortuary
36	Syringe pump	2																2					
37	Treatment table	1																1					
38	Ultrasound nebulizer	2							2														
39	Ultrasound scanner	1									1												
40	Ventilator	2																2					
41	Washing machine with centrifuge	2																			2		
42	Water bath	1													1								
43	Weighing scale, adult	7			1	2	1	1	1													1	
44	Weighing scale, infant	9	2	2	1													4					
45	Weighing scale, neonatal	1							1														
46	Wheel chair	1					1																
47	X-ray film processor	1								1													
48	X-ray film viewer	7	1	1	1	1	1		1									1					
49	X-ray protective apron	2								2													
50	X-ray unit	1								1													

Republican Clinical TB Dispensary

Item No	Description	q'ty	TB01. General TB ward	TB02. Children's ward	TB03. Surgery department	TB04. Orthopedics department	TB05. Urological department	TB06. Gynecology room	TB07. X-ray room	TB08. Endoscopy Room	TB09. Clinical laboratory	TB10. Bacteriological laboratory	TB11. Biochemical laboratory	TB12. Operation room	TB13. ICU	TB14. Sterilization room	TB15. Pharmacy	TB16. Laundry
1	Analytical balance	2											1				1	
2	Anesthesia apparatus with ventilator	2												2				
3	Autoclave	2														2		
4	Autoclave, pharmacy	1															1	
5	Autoclave, Vertical	2										2						
6	Blood cell counter, manual	1									1							
7	Blood gas analyzer	1									1							
8	Bone drill	1												1				
9	Bronchofiberscope	1								1								
10	Centrifuge	3									2		1					
11	Coagulation analyzer	1									1							
12	Coagulator	1						1										
13	Colposcope	1						1										
14	Cystoscope, rigid	1					1											
15	Defibrillator	3												2	1			
16	Disinfection set	1								1								
17	Distiller	1															1	
18	Electrosurgical unit	2												2				
19	Endotracheal set	5			1	1								2	1			
20	Examination lamp	3		1	1	1												
21	Examination table	1		1														
22	Examination table, gynecology	1						1										
23	Gypsum cutter	1				1												
24	Hematocrit centrifuge	1									1							
25	Hot air sterilizer	5									1	1	1	2				
26	ICU Bed	4													4			
27	Incubator	6									1	4	1					
28	Instrument cabinet	8			1	1	1			1				2		2		
29	Instrument set for general surgery	1												1				
30	Instrument set for gynecological surgery	1												1				
31	Instrument set for minor surgery	1												1				
32	Instrument set for neurosurgery	1												1				
33	Instrument set for orthpaedic surgery	1												1				
34	Instrument set for thorasic surgery	1												1				
35	Instrument set for urology	1												1				
36	Ironing machine	1																1
37	Laparoscope, thoracoscope set	1												1				
38	Lumbar puncture set	2		2														

Item No	Description	qty	TB01. General TB ward	TB02. Children's ward	TB03. Surgery department	TB04. Orthopedics department	TB05. Urological department	TB06. Gynecology room	TB07. X-ray room	TB08. Endoscopy Room	TB09. Clinical laboratory	TB10. Bacteriological laboratory	TB11. Biochemical laboratory	TB12. Operation room	TB13. ICU	TB14. Sterilization room	TB15. Pharmacy	TB16. Laundry
39	Micro pipette set	1									1							
40	Microscope, binocular	3									3							
41	Microscope, fluorescent	1										1						
42	Needle biopsy set	2												2				
43	Operating lamp	2												2				
44	Operating lamp, mobile	2			1	1												
45	Operating table for general surgery	1												1				
46	Operating table for orthopedic surgery	1												1				
47	Patient monitor	4												2	2			
48	pH meter	1										1						
49	Pleural puncture set	30	15	5	10													
50	Pulse oximeter	1													1			
51	Refrigerator	3									1	1	1					
52	Spectrophotometer	1											1					
53	Sphygmomanometer	8	3		1	1	1								2			
54	Sphygmomanometer, child	2		2														
55	Stretcher	8	3	1	1	1								2				
56	Suction unit	6			1	1		1						2	1			
57	Suction unit, low pressure	6	3	1										1	1			
58	Treatment table	2			1	1												
59	Ventilator	2													2			
60	Washing machine with centrifuge	2																2
61	Water bath	2									1		1					
62	Wheelchair	5	3		1	1												
63	X-ray film processor	1							1									
64	X-ray film viewer	2			1	1												
65	X-ray protective apron	2							2									
66	X-ray unit	1							1									

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