

Plan:

One Yag laser apparatus will be introduced on this project. This laser apparatus has characteristics of a relatively small energy loss near infrared at 1,064 nm, a long distance transmission and a strong membrane transmittance which is five times that of argon laser. Therefore, this laser apparatus can be used widely, for example, for photocoagulation of the retinoblastoma, surgical operation of glaucoma (iridotomy) and late cataract, incision and excision of the crystalline lens and vitreous body, etc. Also, there is a local representative of a manufacturer which produce such products, so the maintenance necessary for this item can be provided without any difficulty.

Ultrasound diagnostic system for ophthalmology

Present state:

The hospital does not have this item, which can be used to examine external eye injuries. Patients with eye injuries are brought to the hospital daily. In 1996, 469 operations were performed on the augsens, and in the first half of 1997, 269 operations were performed.

Plan:

This item will be procured to examine the internal condition of the eyes such as the existence of foreign particles in the augsens or the progress or effectiveness of the treatment applied onto the augsens. To improve the diagnostic function, this item will be specified as capable of being operated in A mode and in B mode.

Photocoagulator

Present state:

The hospital has a doctor who is capable of operating aphotocoagulator. However, the hospital does not have this item at present, so the patients who need treatments with a laser apparatus are transferred to another hospital. Without this item, the medical services of the hospital are insufficient.

Plan:

One photocoagulator will be introduced on this project. This

apparatus operates on the same principle as the above mentioned Yag laser apparatus and uses argon laser in blue or green at 480.8 nm or 514.5 nm, respectively, which is easily absorbed into the blood. Therefore, this item is widely used to treat diseases of the retinal blood vessels. As in the case of the Yag laser apparatus, the hospital has a doctor who is capable of operating this item, and there is a local representative of a manufacturer who produces such products. Therefore, this item can be operated without any difficulty after the procurement, and necessary maintenance can be provided by the local representative.

Central Hospital for Children (Grigore Alexandrescu)

Equipment for outpatient consultation rooms

Present state:

The hospital treated about 140,000 outpatients in 1997. If the number of days the hospital was open were taken as 200 days, then about 700 patients were coming daily for outpatient consultation. At present, only two rooms are available for outpatient consultation in internal medicine and three rooms for surgery, so these rooms are very congested.

*At present, the outpatient consultation rooms for internal medicine are located on the basement in a confined space under the pediatrics ward, so these rooms are congested with patients. To alleviate the congestion, there is a plan to move the clinics onto the first floor. These rooms are equipped with a little equipment, which is old and in dilapidation.

*The three outpatient consultation rooms for surgery are assigned one room for general surgery, one room for orthopedic surgery, and one room for urologic surgery. Each room is equipped only with an old examination table, and this condition is an impediment in providing quality diagnostic services to the patients.

Plan:

This project will procure medical devices which can renew or supplement the existing old equipment used in these outpatient clinics for internal medicine and surgery.

Outpatient consultation rooms for internal medicine

The examination tables and the aspirators will be renewed on this project. In addition, a set of diagnostic tools, an examination light, an ultrasonic nebulizer, a film viewer, a sphygmomanometer, a cabinet and a cart which are necessary for outpatient consultation are planned for procurement for each room, and a weighing scale, an ECG apparatus, a height measuring scale, a dry heat sterilizer and a high-pressure steam sterilizer are planned for procurement for common use.

Outpatient consultation rooms for surgery

The examination tables will be renewed on the project. In addition, a set of diagnostic tools, an examination light, a film viewer, a sphygmomanometer, a cabinet and a cart, all of which are necessary for outpatient consultation, are planned for each room, and a weighing scale, an ECG apparatus, a height measuring scale, a dry heat sterilizer and a high-pressure steam sterilizer are planned for procurement for common use.

Equipment for otorhinology department

Audiometer

Present state:

The hospital does not have an audiometer, so when an examination requires an audiometer, the patient is sent to Funden Hospital or to Otorhinology Hospital. Such referrals total to about 30 ~ 40 cases a month. Moreover, without an audiometer, the hospital cannot perform a hearing test for students in periodical health examinations.

Plan:

One unit of audiometer will be planned for procurement to improve the diagnostic function of the hospital.

Otorhinology diagnostic chair with examination unit

Present state:

The existing chairs used for outpatient consultation at the outpatient consultation rooms and those used in the treatment rooms in the ward are of a simple type and are in dilapidation.

	1993	1994	1995	1996	1997
Out-patient	8,750	8,650	10,250	19,205	12,615
No. of treatments	7,200	7,350	8,920	8,750	---

Plan:

These chairs will be replaced on this project to improve the diagnostic function.

Pediatric bronchoscope

Present state:

The hospital has two old bronchoscopes. These bronchoscopes are used mainly for removing an accidentally swallowed-in foreign object from children's throat. These bronchoscopes are of a type that does not allow the doctor to observe the inside while forceps are placed into the bronchoscope. Thus, they are not convenient for use in an emergency. Also, only a few forceps are available for use with these bronchoscopes. The number of forceps available is not sufficient.

Plan:

A bronchoscope which allows observation even while forceps are inside will be procured with a set of forceps.

Pediatric laryngoscope

Present state:

The hospital had a laryngoscope a few years ago, but that laryngoscope was worn out and thrown away. Now, no laryngoscope is available for the treatment of children.

Plan:

A new laryngoscope will be introduced on this project to improve the diagnostic and treatment functions of the hospital.

Emergency care section

Present state:

There are three rooms in the emergency department of the hospital.

One room is assigned for patient consultation, another one for patient observation, and the remaining one for relatively small surgical operations. There is a shortage of equipment even though emergency patients are being treated.

Plan:

Three sets of diagnostic tools, two examination lights, two film viewers, two carts, three sphygmomanometers, three stethoscopes, eight irrigators, a dry heat sterilizer, a refrigerator, three aspirators, a defibrillator, two resuscitators and three stretchers will be introduced on this project.

General radiography apparatus and automatic film developer

Present state:

The existing general radiography apparatus is very old, and it needs renewal. The films taken with this apparatus are developed manually.

Plan:

This general radiography apparatus will be renewed. In connection with this renewal, an automatic film developer will be procured because about 100 films are expected to be radiographed daily with this new general radiography apparatus, which number cannot be dealt manually.

Electrocardiograph (ECG)

The hospital has only one electrocardiograph, and this ECG, which is portable, is placed in the ward for pediatric internal medicine. Thus, when it is necessary for the emergency department to take an electrocardiogram, the emergency department must borrow the ECG from the ward.

Plan:

An electrocardiograph will be procured on this project.

Ambulance

Present state:

In order to save the life of a child in emergency, it is important to

provide emergency care as quickly as possible. The hospital has two ambulances and an emergency staff of nine nurses and fourteen on-call base doctors. These ambulances are station wagons, which were made in Romania in 1993 and have already reached a mileage of more than 160,000 kilometers. These ambulances are old and are burdened with frequent breakdowns, which may require repair work every two or three days. According to the drivers, the vehicles sometimes break down on the road. Ambulances are dispatched about ten times a day. As seen from the table below, the number of ambulance dispatches is about a third of the number of emergency surgical operations. It confirms what is explained by the hospital staff, "about 10% of emergency patients are brought here by ambulance."

Emergency Activities

No. of transported patient	1995	1996	1997
Traffic accident	468	432	465
Burn	709	814	942
Toxication	615	828	811
Accident at home	907	1,197	1,242
Total	2,699	3,271	3,460
No. of Emergency operation	9,079	9,211	9,460
No. of operation during 21 : 00 to 7 : 00	3,620	3,150	4,715

Plan:

From the above table, the number of ambulance dispatches in 1997 was 3,460. As a reference, in the case of the Metropolis of Tokyo, the number of ambulances owned was 182, and the number of ambulance dispatches was 448,265 in 1995. In this case, there were 2,463 dispatches per ambulance with 6.7 daily dispatches. The data of the Metropolis of Tokyo cannot be simply compared with those of Central Hospital for Children (Grigore Alexandrescu). However, if the condition of the ambulances is taken into consideration, the ambulances of this hospital must be in full operation.

This condition of the ambulances and the emergency patient transportation necessitates renewal of the existing ambulances. Therefore, the number of ambulances to be procured is calculated as

follows from data collected in the field study.

Preconditions

The patients transported are those who need emergency surgical operations.

The data of the Metropolitan Fire Department of Tokyo is taken as a reference (average of 6.7 dispatches daily).

The vehicle should be renewed every 150 thousand kilometers, and it should be used for six years (annual mileage of 25,000 km).

Determination from the number of patients

From the data of the last three years, the numbers of patients who receive emergency surgical operations average at 9,250 annually, and the numbers of ambulance dispatches average at 26 daily. If the average daily dispatches of 6.7 per ambulance are applied from the above preconditions, then 3.8 ambulances are necessary. Also, if the number of patients transported is assumed as 70% of the number of emergency surgical operations performed, then the number of patients transported is 6,475, which indicates 17.74 daily dispatches of ambulances. From this point of view, the number of ambulances necessary is determined as 2.6.

Determination from the mileage

The area for which the emergency department of the hospital serves is estimated within a radius of 5 km, and the maximum distance which the ambulance travels in a round trip is taken as 10 km. Then, the ambulance must travel 260 km a day and 94,900 km a year. If the annual mileage of 25,000 km is applied from the above preconditions, then 3.8 ambulances are required. Also, if the annual mileage is assumed lower, for example, as 70% of this mileage, then the number of ambulances necessary is determined as 2.6.

Summary

From the above determinations from the assumed number of patients and mileage, three to four ambulances are necessary. However, it is considered that three ambulances are appropriate for the three-shift 24 hour operation with the present staff organization. Therefore, three

ambulances will be procured on the project, two ambulances to renew the existing ones and the other as a supplement. Each ambulance will be equipped with an oxygen breathing apparatus, a resuscitator, an aspirator, an infusion hook, a treatment light, etc.

Equipment for the central operation rooms and the orthopedics, plastic surgery and urology operation rooms

Present state:

There are two operation rooms for orthopedics, one operation room for plastic surgery and two operation rooms for urology in addition to four central operation rooms. Except the equipment installed in one of the orthopedics operation rooms, the other items of the existing medical equipment installed in the operation rooms are more than ten years old, and all of them are in dilapidation.

Plan:

The existing medical equipment in the operation rooms will be renewed on this project. The high-pressure steam sterilizers and the sterilization casts that are installed in the sterilization rooms which are located next to each operation room are also more than ten years old and in dilapidation. Therefore, these items will be also renewed. Each of the existing high-pressure steam sterilizers includes a distiller unit which produces distilled water for the hand washers. When the high-pressure steam sterilizers are removed for replacement with new ones, this distiller units will be also removed together with the high-pressure steam sterilizers. Therefore, these hand washers, which are installed at the central operation rooms and the urology operation room, must be also renewed in connection with the renewal of the high-pressure steam sterilizers. The items renewed for the operation rooms of the respective departments are described below.

Orthopedics operation rooms

Two operating tables are placed in a large operation room, and surgical operations are performed on these two operating tables. To maintain this arrangement, the following items will be procured: each, two

units of operating table, operation light, anesthesia apparatus, aspirator, patient monitor, electrotome and stretcher; four units of operating stool, step ladder, supply cart and kick bucket; and one unit of bone drill. In addition, two pulse oximeters will be introduced to monitor the patients who are transferred from the operation rooms to a respective ward. Furthermore, the high-pressure steam sterilizer in the sterilization room and the sterilization cast, which is an attachment to the high-pressure steam sterilizer, will be also renewed.

Plastic surgery operation room

Each, one unit of operating table, operation light, anesthesia apparatus, aspirator, patient monitor and electrotome will be procured. In addition, each, two units of operating stool, step ladder, endobrochial tube set and stretcher, and each three units of kick bucket and supply cart will be procured for the renewal. Furthermore, a pulse oximeter will be introduced to monitor the patient being transferred from this operation room to a respective ward. Also, the high-pressure steam sterilizer in the sterilization room and the sterilization cast, which is an attachment to the high-pressure steam sterilizer, will be renewed.

Central operation rooms

Each, four units of operating table, operating stool, step ladder, operation light, anesthesia apparatus, endobrochial tube set, aspirator, patient monitor and electrotome will be procured for the renewal. In addition, eight kick buckets, eight supply carts and four stretchers will be procured. Furthermore, four pulse oximeters will be introduced to monitor the patients who are transferred from these operation rooms to a respective ward. Also, the high-pressure steam sterilizer in the sterilization room and the sterilization cast, which is an attachment to the high-pressure steam sterilizer, will be renewed.

Urology operation rooms

Each, two units of operating table, operating stool, step ladder, operation light, anesthesia apparatus, endobrochial tube set, aspirator, patient monitor and electrotome will be procured for the renewal. In addition, four kick buckets, four supply carts and two stretchers will be

procured. Furthermore, two pulse oximeters will be introduced to monitor the patients who are transferred from these operation rooms to a respective ward. Also, the high-pressure steam sterilizer in the sterilization room, the sterilization cast, which is an attachment to the high-pressure steam sterilizer, and the hand washers will be renewed.

Equipment for ICUs and NICUs

Present state:

The ICUs are used for treatment of patients who are from neonates to 16 year old children. The ICU section allocated for surgery is equipped with 30 beds, and it cares patients who need surgical operations, including premature infants. The ICU section allocated for internal medicine is equipped with 16 beds, and it cares patients who are not serious but need care in internal medicine, including children who have an abnormally low weight. All the items of the existing medical equipment are in dilapidation, and there is a serious shortage of medical equipment.

Plan:

At present, both the surgery ICU and the internal ICU are separately providing neonatal care. This condition has created an overlap of staffmembers and medical equipment. Some restructuring is needed to improve the efficiency of care. Therefore, on this project, a NICU section will be established in a room next to the surgery ICU section, and medical equipment necessary for neonatal care will be introduced to this new NICU section. In connection with the establishment of the NICU section, the hospital is planning a staff reorganization and staff training. The study team has ascertained that this plan is appropriate for the establishment of this NICU section, which is expected to improve the functions of the hospital. Therefore, the procurement will include items of medical equipment necessary for maintaining the NICUs. Also, the existing old equipment used in the surgery ICU section and the internal ICU section will be renewed with an addition of some supplementing items.

Equipment for NICUs

The following items of medical equipment are planned for procurement:

ten infant incubators, two portable infant incubators, two neonate treatment tables, a phototherapy device, six oxygen boxes, ten patient monitors (for neonates), ten infusion pumps, ten transfusion pumps, three artificial respirators, three resuscitators, a neonatal height and weight scale, two neonatal beds, a diagnostic tool set, an examination light, two laryngoscopes, two sphygmomanometers, three stethoscopes, ten irrigators, a dry heat sterilizer, a high-pressure steam sterilizer, a cabinet, a cart, a refrigerator, a film viewer, a blood gas analyzer, a hematocrit centrifuge, a bilirubinometer, a nursing bottle warmer and three aspirators.

Equipment for surgery ICUs

The following items will be procured: ten pulse oximeters, three resuscitators, an examination light, two laryngoscopes, a cabinet, a cart, a refrigerator, a film viewer and three aspirators.

Equipment for internal medicine ICUs

The following items will be procured: five infant incubators, a neonate treatment table, a phototherapy device, four oxygen boxes, two resuscitators, five ultrasonic nebulizers, a neonatal height and weight scale, two neonatal beds, a diagnostic tool set, an examination light, two sphygmomanometers, a stethoscope, a film viewer and a nursing bottle warmer.

Equipment for internal medicine radiology department

X-ray television system

Present state:

There is a fluoroscopy device which uses a fluorescent screen. This device is more than ten years old. Because of the use of a fluorescent screen, the images obtained are not clear.

Plan:

An X-ray television system which includes a general radiography apparatus will be procured to renew the existing system.

Automatic film developer

Present state:

There is no film developer in the internal medicine radiology department, so this department uses the film developer which is installed at the surgery radiology department. The problem is that the internal medicine radiology department and the surgery radiology department are located far from each other, which makes this sharing of the film developer inconvenient.

Plan:

An automatic film developer will be procured for the internal medicine radiology department.

Ultrasound diagnostic system (with color doppler)

Present state:

The existing ultrasound diagnostic system is more than 18 years old and needs repair. This system does not include a color doppler device or any probe which can be used for diagnosing the cardiac function. At present, patients who need such diagnoses are sent to Funden Hospital.

Plan:

This item will be renewed on this project to improve the diagnostic function of the hospital.

Equipment for clinical laboratory

Electrolyte analyzer

Present state:

Annually, electrolyte analysis is performed on about 15,000 specimens. The existing flame photometer is too old to be repaired.

Plan:

The hospital requested a flame photometer originally. However, there are few manufacturers who produce flame photometers. As the analysis to be performed with the flame photometer here is electrolyte analysis, the procurement of an electrolyte analyzer instead of a flame photometer has been agreed upon after a talk.

Blood cell counter

Present state:

The hospital has a blood cell counter, which is a donation from the Swiss government. If the capacity of this blood cell counter is estimated from the number of samples which can be tested annually, this blood cell counter seems to satisfy the need of the hospital. However, a large number of specimens are brought in in the last two hours of the morning, and it is impossible for this one blood cell counter to handle all these specimens within this time period. Some patients must wait for a while to receive a test result.

Plan:

A blood cell counter will be procured to supplement the existing blood cell counter, thereby improving the throughput and reducing the waiting time.

Spectrophotometer

Present state:

An automatic biochemical analyzer is used for the routine biochemical analysis of a large number of specimens. However, if the number of specimens is small with respect to the biochemical analysis items, then a spectrophotometer is used to perform a biochemical analysis manually to save the cost of running the automatic biochemical analyzer. As the existing spectrophotometer is in dilapidation and not usable, the hospital is now using a spectrophotometer which is borrowed from a medical device manufacturer. When this spectrometer is returned to the manufacturer, the biochemical analysis work of the laboratory is hindered.

Plan:

A spectrophotometer is planned for procurement on this project to improve the analysis function.

Coagulometer

Present state:

Blood coagulation is measured manually at present, so only seven

specimens can be tested daily on coagulation factors and EDP while an average of 35 specimens are tested on fibrinogen. This deviation in the numbers of analysis items can be eliminated if the analysis of a plurality of items is carried out on the same specimen simultaneously.

Plan:

A semi-automatic coagulometer will be introduced on this project to analyze specimens uniformly on a plurality of analysis items so as to improve the blood coagulation measurement.

Electrophoresis apparatus and densitometer

Present state:

There is an old electrophoresis apparatus, which is used for serum electrophoresis that is conducted on an average of 16 specimens daily. With new equipment procured on the project, the hospital is planning to conduct gel electrophoresis of lipoproteins and immunoelectrophoresis.

Plan:

The electrophoresis apparatus and the densitometer will be renewed on the project to improve the analytic function of the hospital.

Stirrer, mixer, and water bath

Present state:

Stirring is done manually, and the existing water bath is operated also manually by pouring hot water periodically to keep the temperature of the water constant.

Plan:

A stirrer, a mixer and a water bath will be introduced on the project to improve the efficiency of the work.

Binocular microscope

Present state:

The existing microscopes are more than 15 years old, and they are of low quality.

Plan:

Two binocular microscopes will be procured for the bacteriology section of the clinical laboratory, and also two binocular microscopes will be procured for the hematology section.

Microscope (trinocular, for educational purpose)

Present state:

Although the hospital provides training to medical students, there is no microscope which is suitable for educational use.

Plan:

An educational use microscope designed for two viewers will be introduced on the project to improve the educational function of the hospital.

Distilling apparatus

Present state:

The existing distilling apparatus was made in Romania more than five years ago. It is still running, but the quality of the water produced is not reliable.

Plan:

This item will be renewed on this project.

Incubator

Present state:

There are two old incubators.

Plan:

One of the existing incubators which cannot control the temperature will be renewed on the project.

Vertical type high pressure sterilizer

Present state:

The existing vertical type high pressure sterilizer is severely dilapidated, so it often breaks down or stops operating, impeding the routine laboratory work.

Plan:

This item will be renewed on the project to improve the laboratory work.

Refrigerator

Present state:

The refrigerator which is used for storing culture media at the bacteriology section is a small home-use refrigerator. The relatively small capacity of this refrigerator is not enough to keep all culture media necessary for the bacteriological work, so some media are stored separately in another refrigerator which is used in another department.

Plan:

A refrigerator having an appropriate capacity will be procured on this project.

Freezer

Present state:

Culture media and immune sera are stored in the freezer section of a home-use refrigerator. Because the space of the freezer section is relatively small, the media and sera are stored separately in different refrigerators. In addition, the temperatures of these refrigerators are not controllable, and -10°C is not attainable.

Plan:

A freezer will be introduced on this project.

Carbon dioxide incubator

Present state:

An anaerobic jar is used for culture incubation. This way of culturing is time-consuming and does not allow the incubation of culture media in a sufficient amount.

Plan:

A carbon dioxide incubator will be introduced on this project.

Hematocrit centrifuge

Present state:

Hematocrit measurement is performed by using an automatic blood cell counter. This way of hematocrit measurement requires a few cc of blood which is taken even from a little child. This is not preferable.

Plan:

A hematocrit centrifuge will be introduced on the project. With this hematocrit centrifuge, capillary tubes can be used for the hematocrit measurement, and the measurement is made simple, requiring only a little amount of blood. When the procurement of this item was first considered, it was not certain whether capillary tubes could be supplied continuously after the procurement. However, it has been ascertained that capillary tubes are used in other hospitals currently, and there is a supplier in Romania.

Equipment for endoscopic examination room

Pediatric gastrofiberscope

Present state:

When it is necessary to examine the stomach internally, an inflexible endoscope is borrowed from the ENT department to perform an endoscopic examination (about ten to twenty examinations annually), or the hospital asks another hospital to perform such examinations (about 200 cases annually).

Plan:

A pediatric gastrofiberscope will be introduced on the project to improve the diagnostic function of the hospital.

Pediatric colonofiberscope

Present state:

Colon examinations are performed with an inflexible endoscope, which is more than ten years old. With this scope, about 340 such examinations are performed annually.

Plan:

A pediatric colonofiberscope will be procured to replace this old device, and the following items will be added as attachments to this colonofiberscope: a light source, an aspirator, an examination table, an endoscope cabinet, a disinfection cart and an ultrasonic cleaner.

Equipment for urology department

Urethrocystoscope

Present state:

The device the hospital owns is a urethrocystoscope which is designed for neonates only. With this scope, about 100 neonates are examined monthly, but patients other than neonates are referred to Funden Hospital for such examinations.

Plan:

A urethrocystoscope will be procured on the project to improve the diagnostic function of the hospital.

Artificial dialysis apparatus with water treatment device

Present state:

Eight old Italian made artificial dialysis apparatus were donated a few years ago, but only one apparatus is in operation. This apparatus has been used for the dialysis of 16 patients during the last one and a half years while 14 patients who needed dialysis were sent to Funden Hospital during the same period. In June 1998, a peritoneal dialysis apparatus was donated by a bank, so peritoneal dialysis is now available, and patients of acute renal insufficiency are treated mainly with this apparatus. Though a chronic patient brought to the hospital in emergency is treated timely, in principle, chronic patients are transferred to Funden Hospital. However, such patient transfer is not smooth. The reason is that Funden Hospital, which is crowded with patients who need dialysis, has only 16 dialysis apparatus for chronic patients and only two dialysis apparatus for acute patients. The Ministry of Health has a national dialysis program, in which budgets are allocated for the procurement of reagents and consumables used in dialysis treatments. This hospital has a procurement agreement with a local representative of a supplier to receive a supply of reagents and

consumables at regular intervals.

Plan:

In consideration that this hospital is an only pediatric emergency hospital which has a department for intoxication treatment in Romania, two artificial dialysis apparatus and individual water treatment devices are planned for procurement on the project. These newly procured apparatus can help the hospital provide dialysis care to the patients who are waiting for a transfer to Funden Hospital.

Suction unit

Present state:

Urology has 2 ope.room. But Department has only one suction unit, so that it is difficult to manage operation.

Plan:

Add. one suction unit for smooth operation.

As a result of the above determination, the equipment list of this project is prepared as Table 2-3 and Table 2-4. Table 2-5 shows the applications of major items of the medical equipment.

Table 2-3 Equipment List Emergency Hospital (Floreasca)

Dept.	No.	Item	Qty.
Medical Imaging Dept.	1	X-ray TV system	1
	2	Automatic Film developper	1
	3	Ultrasound Scanner with Color Doppler	1
Digestive Endoscopy Dept.	1	Panendoscope Set with Light Source	1
	2	Duodenofiberscope set	1
	3	Electrosurgical Unit	2
	4	Suction Unit	2
	5	Colonofiberscope Set with Light Source	1
	6	Video Endoscopic System	1
	7	Cabinet for Fiberscope	1
	8	Disinfection Trolley	1
	9	Ultrasonic Cleaner	1
ICU/CCU	1	Central monitor with 14 Patients monitor	1
	2	Bedside monitor	19
	3	Defibrilator with monitor	2
	4	Ventilator	15
Operating Room	1	Anesthesia apparatus	6
	2	Electrosurgical unit	6
	3	Electric Suction Unit	6
	4	Arthroscopy unit with Light Source	1
	5	Operation Microscope for Neurosurgery	1
	6	Mobile C-arm X-ray TV System	1
ENT	1	Rhino-Laringofiberscope set with light source	1
	2	Bronchofiberscope Set with Light Source	1
	3	Video Endoscope System	1
	4	CO2 surgical Laser	1
	5	Full-auto and full- automasking audiometer	1
Ophtalmology	1	Operation Microscope for ENT and Ophtalmology	1
	2	Phaco system (anterior-segment surgical technology)	1
	3	Slit lamp microscope	1
	4	Ophtalmic YAG lazer system	1
	5	Echo scan for Ophtalmology	1
	6	Photocoagulator	1

Table 2-4 Equipment List Central Hospital for Children (Grigore Alexandrescu)

Dept.	Item	Qty.	Dept.	Item	Qty.
Out-patient	Diagnostic set	5	Operating Theater, Orthopedic	Pulse Oxymeter	2
	Examination Table	5		Instrument Cart	4
	Examination light	5		Electro Cautery	2
	Ultrasonic Nebulizer	2		Born Drill Set	1
	Suction unit	2		Kick Bucket	4
	ECG 1ch	2		Autoclave	1
	X-ray film illuminator	5		Stretcher	2
	Weighing scale	2		Dressing Container	5
	Height Measuring Scale	2	Endotracheal Set	2	
	Sphygmomanometer	5	Operating Theater, Plastic Surgery	Operating Table	1
	Hot Air Sterilizer	2		Operating Stool	1
	Autoclave	2		Foot Stool	1
	Instrument cabinet	5		Anesthesia Apparatus with Ventilator	1
	Instrument cart	5		Endotracheal Set	1
	ENT	Audiometer		1	Stretcher
ENT treatment chair		2		Suction Unit	1
ENT treatment unit		2		Patient Monitor	1
Jackson Bronchoscope		1		Pulse Oxymeter	1
laryngoscope for child		1		Instrument Cart	2
Emergency	Diagnostic Set	3		Electro Cautery	1
	Examination Table	2		Hot Air Sterilizer	1
	Examination Light	2		Autoclave	1
	X-ray Film Illuminator	2		Dressing Container	5
	Instrument Cart	2		Kick Bucket	2
	Instrument Cabinet	2	Scrub Unit	1	
	Sphygmomanometer	3	Operating Theater, Central	Operating Table	4
	Stethoscope	3		Operating Stool	4
	I.V. Stand	8		Foot Stool	4
	Hot Air Sterilizer	1		Operating Lamp	4
	Medical Refrigerator	1		Anesthesia Apparatus with Ventilator	4
	Suction Unit	3		Endotracheal Set	4
	Defibrillator With ECG Monitor	1		Stretcher	4
	Resuscitator, Ambu	2		Suction Unit	4
	Stretcher	3		Patient Monitor	4
	X-ray Unit	1		Pulse Oximeter	4
	Automatic X-ray Film Developer	1		Instrument Cart	8
	ECG Machine	1		Electro Cautery	4
	Ambulance	3		Hot Air Sterilizer	2
	Operating Theater, Orthopedic	Operating Table For Orthopedic		2	Autoclave
Operating Stool		2		Dressing Container	10
Foot Stool		2	Kick Bucket	8	
Operating Lamp		2	C-arm X-ray Unit	1	
Anesthesia Apparatus		2	Scrub Unit	1	
Suction Unit		2	Ope. Theater, Urology	Operating Table	2
Patient Monitor		2		Operating Stool	2

Dept.	Item	Qty.	
Operating Theater, Urology	Foot Stool	2	
	Operating Lamp	2	
	Anesthesia Apparatus with Ventilator	2	
	Endotracheal Set	2	
	Stretcher	2	
	Suction Unit	2	
	Patient Monitor	2	
	Pulse Oximeter	2	
	Instrument Cart	4	
	Electro Cautery	2	
	Hot Air Sterilizer	1	
	Autoclave	1	
	Dressing Container	5	
	Kick Bucket	4	
	Scrub Unit	1	
	ICU	Infant Incubator	15
		Transport Incubator	2
Infant Care Unit		3	
Phototherapy Unit		2	
Oxygen Head Box for Infant		10	
Patient Monitor for Pediatric		10	
Pulse Oximeter		10	
Syringe Infusion Pump		10	
Infusion Pump		10	
Infant Ventilator		3	
Resuscitator, Ambu		8	
Ultrasonic Nebulizer		5	
Infant Scale		2	
Infant Bassinet Stand		4	
Diagnostic Set		2	
Examination Light		3	
Laryngoscope		4	
Sphygmomanometer W/3 Sizes of		4	
Stethoscope For New Born		4	
Iv Stand		10	
Hot Air Sterilizer		1	
Autoclave		1	
Instrument Cabinet		2	
Instrument Cart		2	
Medical Refrigerator		2	
X-ray Film Illuminator		3	

Dept.	Item	Qty.
ICU	Blood Gas Analyzer	1
	Hematocrit Centrifuge	1
	Bilirubin Meter	1
	Nursing Bottle Warmer	2
	Suction Unit	6
	Radiology	X-ray Unit Fluoroscopy
Ultrasound Apparatus Color Doppler		1
Automatic X-ray Film Developer		1
Laboratory	Electrolyte Analyzer	1
	Blood Cell Counter	1
	Spectrophotometer	1
	Coagulometer	1
	Centrifuge Table Top	2
	Electrophoresis Apparatus	1
	Densitometer	1
	Stirrer	2
	Mixer	2
	Water Bath	2
	Binocular Microscope	4
	Trinocular Microscope For Education	1
	Water Distiller	2
	Incubator	1
	Hot Air Sterilizer	1
	Autoclave Vertical Type	1
	Medical Refrigerator	1
Deep Freezer	1	
CO2 Incubator	1	
Hematocrit Centrifuge	1	
Endoscope	Gastrointestinal Fiberscope for Child	1
	Colonofiberscope for Child	1
	Universal Light Source	1
	Endoscopic Suction Unit	1
	Examination Table	1
	Cabinet For Fiberscope	1
	Disinfection Trolley	1
	Ultrasonic Cleaner	1
Urology	Urethroscope for Pediatric w/ Light Source	1
	Hemodialysis Apparatus	2
	Water Treatment System	2
	Suction Unit	1

Table 2-5 Applications of Major Items of Medical Equipment

Floreasca Emergency Hospital

Item	Spec.	Applications	Qty.
X-ray TV system	Local monitor; 1 unit, Bucky table with stand	This item is used for fluoroscopy of respiratory disease, the digestive organs, the chest, the spinal cord, bones, etc. and for simple X-ray photography of any body part.	1
Ultrasound Scanner with Color Doppler	Scanning method: Electronic sector, linear, convex array	This item is used for noninvasive examination of the internal organs of emergency patients. To extend its use for cardiometry, it incorporates a doppler function.	1
Panendoscope Set with Light Source	Field of view : 120° , Direction of view : 0° , Depth of field: 3~100mm	This item is used for examination and treatment of the stomach.	1
Duodenofiberscope set	Field of view : 80° , Direction of view : 15° , Depth of field: 5~60mm	This item is used for examination and treatment of the duodenum.	1
Electrosurgical Unit	Output method: Bipolar & monopolar, Output types: 3 cut modes	This item is used for incision, styptic incision and coagulation of living tissues when using an endoscope.	2
Colonofiberscope Set with Light Source	Field of view : 140° , Direction of view : 0° , Depth of field: 5~100mm	This item is used for observation and biopsy of the lower alimentary canal between the sigmoid colon and the ileocecum.	1
Video Endoscopic System	TV system: PAL/NTSC, 14inch, Picture adjustment, Printer: Thermal head	This item is installed in the endoscope room, and it is used for examining the stomach of a patient. It is also useful for training medical students.	1
Central monitor with 14 Patients monitor	Monitor: 15inch, 8 traces, Patient monitor 14	This item is used for collective monitoring of cardiograms, heart rates, etc. which are sent from a plurality of bed-side patient monitors. This item is specified as a modular type monitor which incorporates a recording device and monitors a plurality of cardiograms and heart rates	1
Bedside monitor	Monitor: 6.5inch, 4 traces, Measuring parameters: ECG/Res., Spo2, NIBP, IBP, Temp.	This item is used for monitoring and recording the cardiogram, the blood pressure, the arterial blood oxygenation (SpO2), etc. of a patient at his bed side in the ICU or CCU room. continuously.	19
Defibrillator with monitor	Output energy levels: 2-360J , Charge time: 5 sec., with ECG	This item is used for defibrillation of the ventricles of the heart in serious arrhythmia and for revivification of the heart in ventricular tachycardia (i.e., the heart is experiencing spasm, and if the patient were left in this condition, he would surely die.). It is also used for auricular fibrillation.	2
Ventilator	With Humidifier, Application : Pediatrics~ adult	This item is used in intensive care for respiratory control of the patient, who has just received a surgical operation.	15
Anesthesia apparatus	With 3 gas flow, CO2 absorber	This item is used for general anesthesia in surgical operations. This device can control the flow of the oxygen and the laughing gas used in anesthesia so that the patient will not experience hypoxemia.	6
Arthroscopy unit with Light Source	Light source : Xenon, 300W, Force-air cooling, with guide	This item is used in treating the shoulder joints, the knee joints, the finger joints, etc. in surgical operations and also used in biopsy to assist the diagnosis of rheumatoid arthritis. This item consists of an inflexible scope, a light source and a set of forceps.	1
Operation Microscope for Neurosurgery	Inclination angle: 30° ~ 110° variable, Objective: 200~400mm	This item is a microscope which is designed for use in surgical operations of minute objects which are not observable with the naked eyes. This item is specified as a stand alone twin type microscope (one for the chief surgeon and the other for the sub surgeon).	1
Mobile C-arm X-ray TV System	Driving system: Manual, C-Arm: Rotation ± 180°	This item is used for X-ray fluoroscopy of the patient, for example, in a surgical operation.	5

Item	Spec.	Applications	Qty.
Rhino-Laryngofiberscope set with light source	Field of view : 85° Direction of view : 0° Depth of field: 3~50mm	This device is inserted from one of the nostrils into the larynx to observe the glottis in phonation. It can be used for patients who are not able to open the mouth. For such patients, inflexible scopes are not useful.	1
Bronchofiberscope Set with Light Source	Field of view : 120° Direction of view : 0° Depth of field: 3~50mm	This item is used for examining bronchial disease, and it is also used in biopsy of the bronchus. Targeted tissues are taken with forceps, which are inserted through the bronchoscope. It is also useful in finding an accidentally swallowed-in foreign object in the bronchus and removing it. Flexible scopes are advantageous in reducing pains and in observing peripheral portions of the bronchus.	1
Video Endoscope System	TV system: PAL/NTSC, 14inch. Picture adjustment, Printer: Thermal head	This item is installed in the endoscope room, and it is used for monitoring a patient. It is also useful for training medical students.	1
CO2 surgical Laser	Wavelength: 10.6micron, output power 1~40W	This device uses the denaturation of the tissue which is exposed to a laser beam for incision, coagulation, and hemostasis. This item is widely used in surgery, obstetrics and gynecology, otorhinology, ophthalmology, etc.	1
Operation Microscope for ENT and Ophthalmology	Observation tube : Inclination angle: 30° ~ 110° Objective: 170~400mm	This item is a microscope which is designed for use in surgical operations of minute objects which are not observable with the naked eyes.	1
Phaco system (anterior-segment surgical technology)	Phaco & Vitrectomy, aspiration, ophthalmic bipolar unit, U/S handpiece frequency 25-60 kHz.	This item is a surgical device which is used for incision and excision of a turbid vitreous body that has appeared from vitreous bleeding or amyloidosis of the vitreous body.	1
Ophthalmic YAG laser system	Laser wavelength : 1064mm Pulse duration : 7n sec.	This item is used for treating eye diseases such as retinopathy, retinodialis and glaucoma with a laser beam irradiated into the eye ball. It is used commonly in Japan.	1
Echo scan for Ophthalmology	A/B mode: Solid probe, Measurement value: Axial length, anterior chamber depth, Lens thickness, vitreous length, Measurement range : 15~40mm	This item is used for examining the internal condition of the eye ball and the eye socket, for example, for examining the existence of foreign particles or tumors, and turbidity or bleeding in the vitreous body, and such diseases as retinodialis, choroidopathy and choroidopathy, and the hypertrophy of the muscles of the eyeball. It is also used for measuring the thickness of the cornea, the depth of anterior lobe, the thickness of the vitreous body, and the length of ocular axis as well as the intraocular blood stream.	1
Photocoagulator	Argon laser, Wavelength : 488, 514.5, 528.7nm	This device irradiates a laser beam into the eye ball, causing denaturation of the tissue. It is used for treating eye diseases such as retinopathy, retinodialis and glaucoma.	1

Grigore Alexandrescu Pediatrics Hospital

Item	Spec.	Applications	Qty.
Patient Monitor	Monitor: 6.5inch, 4 traces, Measuring parameters: ECG/Res., Spo2, NIBP, IBP, Temp.	This item is used for monitoring and recording the cardiogram, the blood pressure, the arterial blood oxygenation (SpO2), the body temperature, etc. of a patient at his bed side in the ICU room.	16
ENT treatment unit	With suction, Exhaust, Warm water device, Compressor, Instrument tray	This item comprises an aspirator, syringes, a light and a set of instruments, and it is used collectively for diagnosing and treating a patient at the otolaryngology department.	2
Bronchoscope Pediatric Set	Bronchoscope (length 30 cm) 5 types	This item is used for examining the bronchus. This set of bronchoscopes mainly includes inflexible scopes and forceps, which are necessary for treating the patient.	1
Defibrillator With ECG Monitor	Output energy levels: 2-360J Charge time: 5 sec., with ECG	This item is used for defibrillation of the ventricles of the heart in serious arrhythmia and for revivification of the heart in ventricular tachycardia (i.e., the heart is experiencing spasm, and if the patient were left in this condition, he would surely die.). It is also used for auricular fibrillation. This item is placed in the emergency department.	1

Item	Spec.	Applications	Qty.
X-ray Unit	Generator :40-150KV、 10-500mA、 X-ray tube support : Floor loading type	This item is used for simple X-ray photography of any body part to examine fractures, lung disease, cardiopathy, encephalopathy, etc. It is installed in the emergency department.	1
Ambulance	One box type	This item is used for transporting emergency patients to the hospital.	3
Operating Table	Electro-hydraulic type	This item is installed in each of the operation rooms which include the central operation rooms and the operation rooms whose uses are specialized for orthopedics, plastic surgery and urology.	9
Operating Lamp	Satelite light, Main light: 100,000 lux at 1 meter distance	This item is used in surgical operations for illuminating the parts of the patient being operated. This lighting equipment provides optimal intensity of illumination without creating a shadow and heat.	9
Anesthesia Apparatus	With 3 gas flow, CO2 absorber	This item is installed in each of the central, orthopedics, plastic surgery and urology operation rooms and are used for general anesthesia in surgical operations. This device can control the flow of the oxygen and the laughing gas used in anesthesia so that the patient will not experience hypoxemia.	9
Bom Drill Set	Electric type, Speed: 0~18000rpm	This item is used in orthopedics for cutting, grinding and drilling bones.	1
Autoclave	Capacity: 410L	This item is installed in each of the central, orthopedics, plastic surgery and urology operation rooms and used for sterilizing surgical instruments, linens, etc. to prevent infections.	5
C-arm X-ray Unit	Driving system: Manual, C-Arm: Rotation $\pm 180^\circ$	This item is placed in one of the central operation rooms and used for X-ray fluoroscopy of the patient in a surgical operation.	1
Scrub Unit	Wall mounted type, Distilled water volum:20L/h Cooling water requirement 150L/h Storage tank capacity :100L	The existing high-pressure steam sterilizer in the operation room incorporates a distiller unit which produces distilled water for the hand washers used in the operation rooms. When this high-pressure steam sterilizer is removed for renewal, this distiller unit will be also removed. Therefore, this water treatment equipment to provide clean water for hand washing is installed at the central operation rooms and the urology operation room.	1
Infant Incubator	Air temp. control : 25 - 39 ° , Hood : Double wall	This item is installed in the neonate intensive care room and used for treating neonates. This item is capable of keeping a constant temperature and supplying oxygen.	15
Transport Incubator	Transport incubator, I.V. pole, Oxygen cylinder, Battery	This item is used for transporting neonates in an ambulance, or in the hospital.	2
Infant Care Unit	Fluorescent lamps, Temp. control : 34° ~37.9° , Temp. probe, I.V. pole, with Alarms	This item is installed in the intensive care rooms and used for warming hypothermic neonates in a short period of time.	3
Patient Monitor for Pediatric	Monitor: 6.5inch、 4 traces、 Measuring parameters: ECG/Res.、 Spo2、 NIBP、 IBP、 Temp	This item is used for monitoring and recording the cardiogram, the blood pressure, the arterial blood oxygenation (SpO2), the body temperature, etc. of a neonate at his bed side in the intensive care rooms.	10
Infant Ventilator	Res. mode: IMV、 SIMV、 CPAP, etc.	This item is installed in the intensive care rooms and used for controlling the breathing of a neonate or an infant.	3
Blood Gas Analyzer	Measuring parameter:pH、 pCO2、 pO2、 Barometric pressure, Calculated parameter :pH、 pCO2、 pO2、 BE、 SBE、 HCO3-, etc.	This item is installed in one of the intensive care rooms and used for measuring the partial pressure of oxygen (O2), the partial pressure of carbon dioxide (CO2), pH, etc. in the arterial blood for the purpose of grasping the condition of the patient.	1
X-ray Unit Fluoroscopy	Tube voltage: 150KV、 Fluoroscopy table: Table tilting : 90° ~-30° 、 X-ray tube	This item is installed in the radiology department and used for fluoroscopy of respiratory disease, the digestive organs, the chest, the spinal cord, bones, etc. and for simple X-ray photography of any body part.	1

Item	Spec.	Applications	Qty.
Ultrasound Apparatus Color Doppler	Scanning method: Electronic sector, linear, convex array	This item is used for noninvasive examination of the internal organs of emergency patients. To extend its use for cardiometry, it should incorporate a doppler function.	1
Electrolyte analyzer	Measured parameter: Blood :K+/Na+/Ca+, Urine: K+/Na+	This device generates an electrical potential between a reference electrode and a reaction electrode in response to the activities of specific ions in a solution. It is used for measuring the ion activities of pH, Na+, K+, Cl-, etc.	1
Blood Cell Counter	Calculated parameter: WBC/RBC/PLT/HGB/HCT/MCV/MCH/MCHC, etc.	This item is installed in the laboratory and used for counting red blood cells, white blood cells, etc., which counts are used for diagnosis of anemia.	1
Coagulometer	Mesuring parameter PT/APTT/FIB/TT	This is an automatic device which can be used for examining various hemorrhagic diatheses. Blood coagulation involves two factors, intrinsic and extrinsic factors. This item is used for examining the lack or loss of these factors, and this examination is helpful in diagnosing hemophilia and aplastic anemia and in controlling medication.	1
Spectrophotometer	With Printer, Vavelength band width: Less than 325 to more than 900nm in 1 nm	This item is used for biochemical analysis of the blood and the urine, and the results are helpful for diagnosing the renal function and the hepatic function of the patient. (The number of samples tested is much smaller than that tested with an automatic biochemical analyzer.)	1
Trinocular Microscope For Education	Mainunit, Observation tube, Stand, eyepiece, Objective : 4X/10X/20X/40X/100X, Eyepiece: 10X	This item is used for finding bacteria and for counting blood cells in diagnosing anemia. It is also used for training students.	1
Gastrointestinal Fiberscope for Child	Field of view : 100° , Direction of view(forward viewing :0° , Depth of field:3~100mm	This item is used for examining and treating the stomach.	1
Colonofiberscope for Child	Field of view : 120° , Direction of view(forward viewing :0° , Depth of field:3~100mm	This item is used for observation and biopsy of the lower alimentary canal between the sigmoid colon and the ileocecum.	1
Universal Light Source	Light source : Xenon, 300W, Force-air cooling, Light source guide	This item is used as a light source for an endoscope.	1
Urethroscope for Pediatric w/ Light Source	Telescope 30° /0° for infant	This item is used for observation, examination and treatment of the urethra and the bladder. It is also used for renal contrast imaging, biopsy of the bladder, removal of a foreign object or a calculus from the bladder, etc.	1
Hemodialysis Apparatus	Pump : single pump 20~500ml/min	This item is used for treating chronic and acute renal failure. It can be also used specifically for draining water or for extracorporeal circulation of the blood, which may be necessary in the treatment of a patient who is in intoxication or liver failure.	2

Chapter 3 Implementation Plan

Chapter 3 Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Concept

1. Executing agency

The Ministry of Health of Romania is the executing agency which is responsible for the implementation of the project.

2. Consultant

This project is formally implemented after an Exchange of Notes (E/N) is signed by the Government of Romania and the Government of Japan. Immediately after this signing of an E/N, an agreement for consultant service shall be signed between the Ministry of Health, which represents the Government of Romania, and a Japanese consultant firm in compliance with the system of the Japanese Government's Grant Aid Assistance. This agreement becomes effective after it is verified by the Government of Japan. Under this agreement, the consultant firm carries out the following tasks.

- (1) Preparing for a bidding: designing the project in detail, preparing the specifications and technical data of the medical equipment for holding a bidding;
- (2) Holding a bidding: helping the executing agency nominate a supplier for the procurement and sign an agreement with the supplier;
- (3) Procurement: overseeing the procurement work and inspecting some items of the medical equipment prior to shipment; and
- (4) Installation: overseeing the installation of the medical equipment and the training sessions which are offered to the staffs of the respective hospitals.

The consultant shall consist of three engineers including a project manager, a first planner who plans the medical equipment for the procurement, and a second planner who also plans the equipment and concurrently serves as a facility planner. This team as the consultant shall

prepare for holding the bidding and oversee the procurement.

***Project manager**

The project manager manages discussions between the Romanian party and the Japanese party as a person in charge of the work from the preparation for the bidding to the completion of the project.

***First equipment planner**

The first planner prepares documents which are submitted to the Government of Romania and the Government of Japan, including documents used for collecting tenders and documents which specify the details of the medical equipment to be procured. He also executes a final inspection on the medical equipment prior to the handing over of the equipment to the Romanian party.

***Second equipment planner / Facility planner**

The second equipment planner estimates the cost of the procurement in Japan and also prepares documents necessary for holding the bidding.

3. Supplier

The supplier who carries out the procurement of the medical equipment on this project is selected by a bidding. After the selection, he shall sign an agreement with the Ministry of Health of the Government of Romania. This agreement also needs verification by the Government of Japan to become effective. The supplier carries out the procurement of the equipment, which includes the delivery and installation of the equipment and provision of technical instructions to the hospital staffs who will operate and maintain the equipment. He also prepares technical documents including manuals and a list of the local representatives of the manufactures, which will be necessary for the maintenance of the equipment. As the medical equipment to be procured includes some products which are made in countries other than Japan, the procurement of such products may

take longer than the procurement of products made in Japan. The supplier shall maintain a good communication with the executing agency and shall organize the best schedule for the delivery and installation of the medical equipment so as to facilitate the implementation of the project.

(2) Implementation policies

1. After the signing of the Exchange of Notes E/N, the consultant shall consult with the executing agency of the Government of Romania, the agency of the Government of Japan concerned with this project, the supplier and other concerned agencies and shall take necessary formalities to implement this project smoothly at certain stages in the progress of the project, especially when the bidding is held, when the supplier is selected, when the agreement is signed with the supplier, when the schedule to manufacture the medical equipment is confirmed, when the equipment is inspected prior to shipment, and when the payments are made for the procurement.

2. The facilities to be improved on this project are hospitals, so it is not possible to halt the operation of the hospitals at the time of the delivery and installation of the medical equipment. Therefore, the consultant shall consult with the hospitals to arrange the best schedule and procedure for carrying out the installation work. Furthermore, the delivery work shall be carried out on the principle of safety first, and also the installation must be conducted carefully without causing noises or hygienic problems.

3. A sufficient quality control and an inspection during the production or before the shipment shall be executed on the products which are procured from Japan. As for the products which are procured from countries other than Japan, on principle, an inspection shall be executed prior to shipment in the countries where the respective products are produced, to ensure that the products are manufactured as specified in the agreement and within the agreed time period.

4. As for the items of the medical equipment which require special installation work, the supplier shall dispatch engineers of the manufacturers who have produced the respective items. If it is difficult for some manufacturers to send their engineers for the installation work, then

the supplier shall make engineers of the local representatives of such manufacturers carry out special installation work, instead. On this matter, the consultant shall advise the supplier.

5. When all the items of the medical equipment are delivered to the Romanian party, the consultant shall execute an inspection on the spot. The consultant shall grasp the arrangement of the medical equipment in the respective departments of the hospitals which are improved on this project and shall confirm the delivery of the medical equipment.

6. For effective use of the medical equipment procured on this project, instructions shall be given to persons in charge of the respective departments of the hospitals on the subject how to operate and maintain the medical equipment. The consultant shall prepare a curriculum, and the supplier shall carry out an orientation and an actual training session. Such items of the equipment which are easily understandable from operation and maintenance manuals provided with the equipment will not be dealt with in this training. This training is intended to offer effective methods for performing periodical checks on the equipment, which will be helpful to the persons who will be in charge of maintaining the equipment.

3-1-2 Implementation Conditions

(1) Japanese party

The Japanese party shall transport the medical equipment procured on this project to the capital city of Romania, i.e., Bucharest. After the transportation, the packages will be opened for installation and adjustment. Then trial operations shall be carried out before the Romanian party will inspect and accept the equipment.

(2) Romanian party

The Romanian party shall complete the evacuation of the existing X-ray apparatus, high-pressure steam sterilizers, etc. which are to be renewed on this project in preparation for the installation of the new equipment. This evacuation must be carried out well before the start of the installation work so as to keep the smooth progress in the implementation of the project.

3-1-3 Scopes of Works

The cost for the implementation of the project is shared by the Romanian party and the Japanese party as follows.

(1) Japanese party shall:

1. execute the procurement of the medical equipment on the project;
2. transport the equipment to the respective hospitals, which includes marine and land transportation;
3. install and set up the equipment; and
4. perform the test run of the equipment and provide technical instructions on the operation, inspections and maintenance of the equipment.

(2) Romanian party shall:

1. provide information and data necessary for the installation of the equipment;
2. provide a temporary office room in each of the hospitals for the Japanese party during the installation of the equipment;
3. provide facilities and rooms for the installation of the equipment;
4. complete the preparatory work for the installation of the equipment, which work includes the evacuation of the places where the equipment procured on the project will be installed and the laying of power supply lines, water supply lines, drainage lines, etc. which may be necessary for the equipment;
5. provide temporary storage facilities for the equipment upon arrival until the installation;
6. arrange smooth unloading, customs clearance and inland transportation of the equipment brought into Romania;
7. exempt the Japanese nationals who stay in Romania in providing services in connection with the implementation of the project, from customs duties and various taxes;
8. provide assistance or support to the Japanese nationals entering Romania or staying in Romania who will provide services on the project or will bring in some equipment which may be necessary for carrying out work and services on the project, and take security measures for their protection;
9. bear the costs and expenses for the processing of a Banking

Arrangement (B/A) and Authorizations to Pay (A/P) in connection to the project;

10. assign personnel and appropriate funds for the implementation of the project (including the operation and maintenance cost of the equipment procured in this Japanese grant assistance);
11. prepare a plan for effective use of the major items of the medical equipment which is procured in this Japanese grant assistance for the next five years, and report the condition of use to the JICA office and to the Japanese Embassy in Romania periodically;
12. maintain the equipment properly and effectively after the procurement, by appropriately allocating funds necessary for the maintenance;
13. grant permits, licenses, and other certificates which may be necessary for implementing the project;
14. bear the costs and expenses involved in receiving such permits, licenses, etc.; and
15. bear costs and expenses which are not specified in the above Scopes of Work between both the parties but may become necessary for the implementation of the project.

3-1-4 Consultant Supervision

A Japanese consultant firm will enter into a consultant service agreement with the Ministry of Health of Romania, which is the executing agency of the Romanian party, in accordance with the system of Japanese grant assistance. In compliance with this agreement, the consultant shall provide services in planning and holding a bidding and in overseeing the implementation of the project. In this supervisory work, the consultant verifies in fairness whether the implementation of the procurement is executed as scheduled and whether the items of the medical equipment procured are produced as specified in the documents of the supply agreement. The purpose of the work is to ensure proper execution of the procurement, so the consultant offers advice and guidance and makes adjustment in the implementation of the project. This supervisory work includes the following tasks.

(1) Bidding and supply agreement

The consultant prepares documents necessary for holding a bidding to select a Japanese supplier who will procure and install the medical equipment on this project. The consultant publicizes the bidding, receives applications for the bidding, examines the applicants on qualification, distributes the above mentioned documents for tenders, receives tenders, evaluates the tenders and offers advice in the signing of an agreement between the Ministry of Health of Romania and the supplier who won the bidding.

(2) Guidance, advice and adjustment to the supplier

The consultant determines the procedure and schedule for the implementation of the project, which includes the procurement and installation of medical equipment, and offers guidance, advice and adjustment to the supplier.

(3) Check and approval of production drawings and installation layouts

The consultant checks production drawings and installation layouts submitted by the supplier, offers guidance, and gives approvals.

(4) Confirmation and approval of products for the equipment procured

The consultant verifies the products which are presented by the supplier whether they are in compliance with the design documents of the agreement and gives approvals.

(5) Spot inspection

The consultant attends inspections which are carried out in factories and storage facilities to ensure that the items procured are in the condition as specified in the agreement.

(6) Report of the progress

The consultant monitors the condition of the sites and the implementation of the project and reports the progress of the project to the authorities of both the governments who are concerned with the project.

(7) Completion inspection and trial run

After the installation of the equipment, the consultant examines and tests the medical equipment to verify whether it is in the condition which is specified in the agreement. Then, the consultant submits an inspection completion report to the Romanian party.

(8) Guidance on operation and maintenance training

The operation and maintenance of some items of the medical equipment requires some technical know-how. Therefore, while the equipment is being installed, adjusted and tested, a training session will be held on the sites for staff members who will be in charge of operating and maintaining the equipment. In this training, special instructions will be offered with respect to the operation, inspection and repair of the equipment. The consultant offers guidance and advice for holding this training session.

The consultant will dispatch an appropriate number of engineers to the sites in correspondence with the progress in the implementation of the project, and these engineers will offer the above mentioned services. Furthermore, the consultant will establish a backup system by also keeping a person in Japan who will communicate with these engineers and assist them. In addition, the consultant will report to the Japanese government agency who is concerned with the project on the following matters: the progress of the project, the payment procedure for the cost of the project and the handing over of the medical equipment to the Romanian party.

3-1-5 Procurement Plan

In consideration of the medical equipment market and the services available for repair and maintenance in Romania, policies for procurement from countries other than Japan, transportation route, etc are determined as follows.

(1) Local Procurement

After studying the distribution of medical equipment and consumable in Romania, it is ascertained that locally produced medical equipment lacks sufficient reliability in product quality and in after-sale service. It is almost impossible to include local products in the

procurement as far as the repair and maintenance of the equipment is concerned.

(2) Procurement from other countries

The present condition of the medical equipment market in Romania is favorable to foreign made medical equipment. Therefore, it is possible to procure some items of the medical equipment from countries other than Japan. However, the selection of products from the local market should be based on whether the manufacturers have local offices or local representatives in Romania to ensure that after-sales services will be available to these items.

The procurement from countries other than Japan should not be considered only on the basis of the prices of the products, but rather it should be based on such factors as ease of procurement, availability of repair or after-sales service (including availability of replacement parts and consumable), popularity, etc..

(3) Transportation period

The marine transportation of products which are procured from Japan and from the United States of America takes about 30 to 40 days, and the procurement from European countries takes about 15 days. In addition, the customs clearance takes about ten days, and the inland transportation is expected to take about one day. A total of about 50 to 60 days are necessary for the transportation of the medical equipment. The procurement should be carefully scheduled to allocate sufficient time to the unloading and customs clearance of the equipment.

3-1-6 Implementation Schedule

After the Exchange of Notes (E/N) for the implementation of this project is signed by the Government of Romania and the Government of Japan, the project will be implemented in the following three stages: preparation for bidding, bidding and selection of the supplier and equipment procurement.

1) Preparation for bidding

The Japanese consultant firm, after signing a consultant service agreement with the Ministry of Health of Romania, which agreement is authenticated by the Government of Japan, starts the preparation for holding the bidding to select the supplier. In this preparation work, the consultant studies the items of the medical equipment and the facilities to be improved on the project in detail for the purpose of designing the project in detail and receives final confirmation from the Romanian party. With this detailed design of the project, the consultant compiles a set of documents which includes the technical specifications of the medical equipment to be procured and the instructions to tenderers who participate in the bidding. This set of documents needs to be approved by the Romanian party. This preparation work, which includes the above mentioned final confirmation study carried out in Romania, the compilation of documents for the bidding in Japan and the receiving of approval of the documents, takes about one month.

(2) Bidding and selection of the supplier

The supplier who will carry out the procurement on this project is selected by a bidding. The bidding and the selection of the supplier are carried out in the following order: publication of the bidding, receiving of applications for the bidding, examination of the applicants, qualification, distribution of the above prepared documents for tenders, holding of the bidding, evaluation of the tenders, nomination of the supplier and signing of an equipment procurement agreement with the supplier. This stage takes about two and a half months.

(3) Equipment procurement

After this equipment procurement agreement is verified by the Government of Japan, the supplier starts procuring the medical equipment in compliance with the agreement. It is estimated from the condition and size of the hospitals to be improved, the contents of the procurement, the climate in Romania, etc. that the implementation of the project will take about seven and a half months.

The implementation of the project is scheduled from the signing of the Exchange of Notes to the completion of the project as follows.

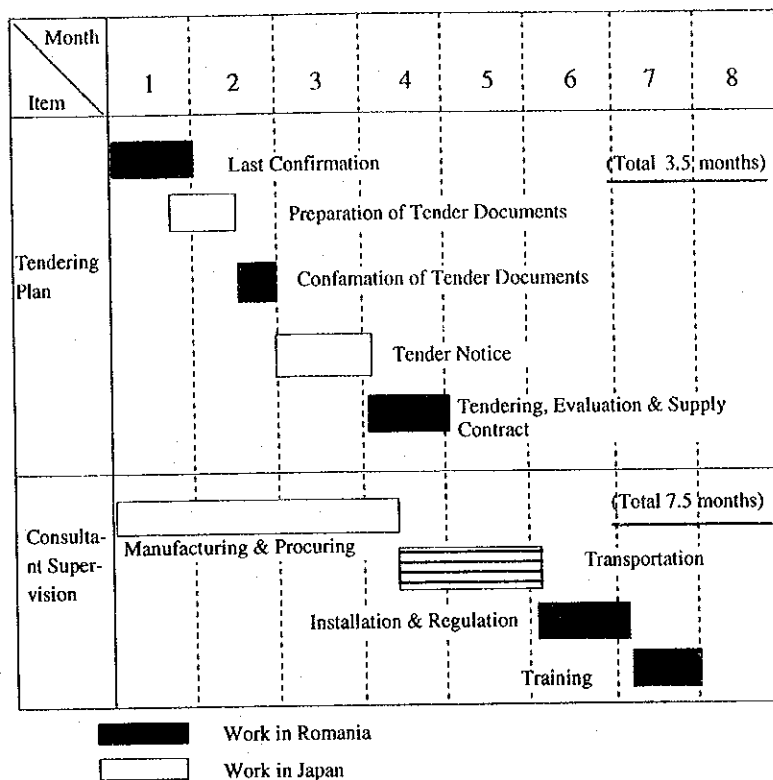


Table 3-1 Implementation Schedule

3-1-7 Obligations of recipient country

The matters to be executed on this project by the Romanian party are mentioned in "4-1-3 Scopes of Work". However, the following matters are especially important to be taken care of appropriately. The Romanian party shall:

1. complete the preparatory work for the installation of the medical equipment, this work including the evacuation of the existing equipment from the places where the equipment procured on the project will be installed and the preparation of infrastructure which may require laying of power supply lines, water supply lines, drainage lines and other facilities necessary for the new equipment;
2. provide temporary storage facilities for the medical equipment upon arrival until the installation;
3. arrange smooth unloading, customs clearance and inland transportation of the equipment in Romania;
4. exempt the Japanese nationals who are staying in Romania for providing services in connection to the implementation of the project,

from customs duties and various taxes;

5. provide assistance and support to the Japanese nationals entering Romania or staying in Romania who will provide services or who will bring in some equipment which may be necessary for carrying out work or services on the project, and shall take security measures for their protection;
6. bear the costs and expenses for the processing of a Banking Arrangement (B/A) and Authorizations to Pay (A/P) in connection to the project;
7. grant permits, licenses and other certificates which may be necessary for implementing the project in Japanese grant assistance; and
8. bear the costs and expenses for processing the above mentioned tax exemption to the Japanese nationals.

3-2 Project Cost Estimation

1) Cost borne by the Romanian party

None

2) Conditions applied for cost estimation

- (1) Estimated in: January 1999;
- (2) Exchange rate: US\$ 1.00 = 130 yen, 1 DM = 77.26 yen, 1FF = 23.28 yen, 1 ATS = 10.70 yen;
- (3) Period for implementation: about eleven months;
- (4) Ordering method: bundled in a lot; and
- (5) Others: this project shall be implemented in compliance with the system of grant assistance of the Government of Japan. Also, the Government of Romania shall exempt the Japanese nationals or corporations who provide services in connection to this project from various taxes such as customs duties on imported goods and corporation taxes or shall shoulder the payments for such taxes levied upon the Japanese nationals.

The Government of Romania should expect such expenses as for executing formalities and for shouldering taxes, including:

- (1) expenses for executing official procedures which are necessary for the delivery of the medical equipment;

- (2) expenses for shouldering the customs duties levied on the equipment and materials which are imported;
- (3) expenses for processing the banking arrangement and the "authorizations to pay" for the payment of the project cost;
- (4) expenses for processing tax exemptions for the Japanese nationals and for shouldering the taxes levied upon them, such taxes including domestic taxes, financial surcharges, and value-added taxes.

It is necessary for the Government of Romania to take appropriate budgetary measures for these expenses, so that the project be implemented smoothly, and that the medical equipment be utilized effectively immediately after the installation.

3-3 Operation and maintenance cost

Major part of the medical equipment procured on this project is to renew the existing medical equipment, so the existing items which break down frequently are replaced with new medical devices. Therefore, the cost for the repair and maintenance of the medical equipment is expected to decrease. The tables below show the items of the medical equipment which require consumable such as recording paper, electrodes and reagents. The total amount expected for the maintenance cost for each hospital is not very burdensome, so after the implementation of this project, each respective hospital will be able to manage expenses necessary for maintaining the medical equipment within the present amount of budget. The following tables show the estimated annual operation and maintenance cost for each hospital, respectively.

Table 3-1 Maintenance cost of Emergency Hospital (Floreasca)

Rate : 1Dollar=136Yen

Item	Qty.	Cost per 1 unit (1,000yen)	Annual cost(1,000yen)	Annual cost(Dollar)
X-ray TV System	1	4,604	4,604	33,853
Ultrasound Scanner with Color Doppler	1	1,162	1,162	8,544
Patient Monitor	19	45	855	6,287
Patient Monitor (IBP)	14	403	5,643	41,493
Central Monitor	1	26	26	191
Ventilator	15	864	12,959	92,287
Defibrillator	2	71	142	1,044
CO2 Surgical Laser	1	1,020	1,020	7,500
Echo Scan for Ophthalmology	1	768	768	5,647
Photocoagulator	1	1,380	1,380	10,147
Total			28,565	210,036

Table 3-2 Maintenance cost of Central Hospital for Children (Gregore Alexandrescu)

Rate : 1Dollar=136Yen

Item	Qty.	Cost per 1 unit (1,000yen)	Annual cost(1,000yen)	Annual cost(Dollar)
E.C.G.	2	184	368	2,706
Defibrillator	1	54.04	54	397
C-arm X-ray TV System	1	2,480	2,480	18,235
Patient Monitor	19	42.8	813	5,978
Infant Ventilator	3	711	2,133	15,684
Blood Gas Analyzer	1	747.28	747.28	5,495
Ultrasound Scanner with Color Doppler	1	1,112.4	1,112.4	8,179
Electrolyte Analyzer	1	1,236.8	1,236	9,088
Blood Cell Counter	1	700	700	5,147
Electrophoresis Apparatus	1	300	300	2,206
X-ray Unit	1	2,480	2,480	18,235
Hemmodialysis Apparatus	2	340.4	680	5,000
Total			13,105	96,360

The completion of the project is scheduled in February, 2000. On the basis of the above estimation tables, the annual operation and maintenance costs for major items are calculated for the year 2000 with an annual inflation rate of 7%. The results are that about 32.70 million yen (about US\$ 240,000) is necessary for Emergency Hospital (Floreasca) , and about 15.00 million yen (about US\$ 110,000) for Grigore Alexandrescu Hospital. The estimated amount for the maintenance of the medical equipment procured on this project accounts for about 3% of the total budget of Emergency Hospital (Floreasca) in 1997 and about 5% of the total budget of Central Hospital for Children (Grigore Alexandrescu), respectively. Therefore, it is considered that the Government of Romania will be able to secure the funds necessary for maintaining the equipment after the implementation of this project without any difficulty.