(6) Maintenance System

Under the maintenance system in this institution, three engineers maintain and repair sterilizer and X-ray apparatuses, but no engineer can maintain and repair electronic apparatus. This institution asks to repair them for Department of Maintenance in Bach Mai Hospital and the Institute of Medical Equipment and Health Facility managed by the Ministry of Health and the Workshop for Repairing Medical Equipment, if necessary. However, whenever they ask to other institutes, they have to pay for it.

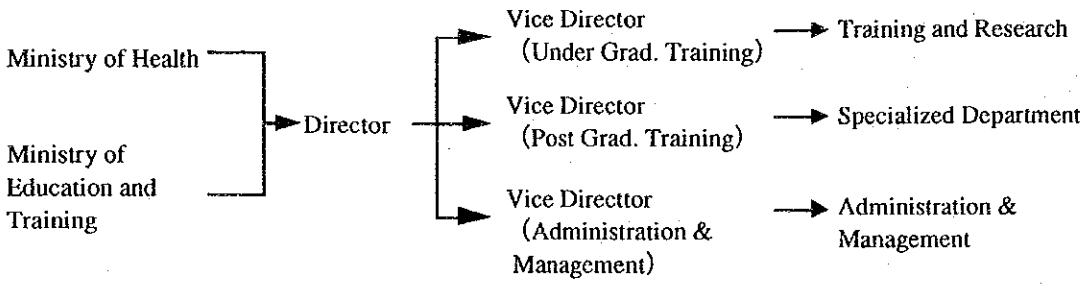
2-7-2 Ha Noi Medical College

(1) Present State

Originally this school establish as the first medical professional college in 1902 and has a history. It represents in eight medical schools in Viet Nam and is a leading institute. The three fifth doctors in Viet Nam graduated from this college and leading personnel in the health sector were educated in this college. However, students have to be doing clinical practices in hospitals in Ha Noi city because the college doesn't have a hospital.

This college is under the Ministry of Health and the Ministry of Education and Training. The Ministry of Health manages a budget, personnel affairs, curricula, and clinical practice, and the Ministry of Education and Training takes charge of advisory body an entrance examination. There are about 2,000 students for six grades. The total number of staff becomes 895 and includes 103 professors, 311 doctors, and 11 biochemical scholars. Most of professors studied in foreign countries, which are mostly social republic countries in the former Soviet Union and the Eastern Europe. To study in Western countries were limited to a short visit. Figure 2-12 shows the system of this school.

Fig. 2-12 Organization of Ha Noi Medical College



(2) Finance

Table 2-28 shows a financial situation from 1990 to 1992. All revenues of this school were distributed from the Ministry of Health. In annual expenditure, the rate of labor costs was the highest and accounted 66% in 1990. After then, it accounted from 35 ~ 37%. Other expenses are not known.

Table 2-28 Revenue · Expenditure (1990-1992) (Unit : Dong)

	Revenue		Expenditure		
	Item	Amount		Item	Amount
1992	Government Budget	5,436,800,000	1	Labor Cost	1,920,937,944
			2	Medical Supplies	
			3	Food	
			4	Transport	
			5	Utilities	
			6	Maintenance	
			7	Other	3,515,862,000
	Total	5,436,800,000		Total	5,436,799,944
1991	Government Budget	2,680,200,000	1	Labor Cost	991,200,000
			2	Medical Supplies	
			3	Food	
			4	Transport	
			5	Utilities	
			6	Maintenance	
			7	Other	1,689,000,000
	Total	2,680,200,000		Total	2,680,200,000
1990	Government Budget	1,500,700,000	1	Labor Cost	991,200,000
			2	Medical Supplies	
			3	Food	
			4	Transport	
			5	Utilities	
			6	Maintenance	
			7	Other	509,500,000
	Total	1,500,700,000		Total	1,500,700,000

Source : Ha Noi Medical College

(3) Activity

Under the Viet Nam War, 6,893 doctors graduated from the school for thirty years from 1945 to 1975. After the war, 6,748 doctors graduated for sixteen years form 1976 to 1992.

(4) Buildings and Facility

The college is composed of three three-storied buildings used for lecture rooms and laboratories, a building for administration, a building for library, an auditorium, and dormitories. Since most buildings were recently constructed, there is no damage by becoming superannuated on the external appearances. However, the facilities such as electric power, air conditioning, and water supply are very poor. Especially, the water supply has problems about deficiencies of quantity and pressure on the water supply. So pressure pump was requested in the list of requested equipment but refused because it was out of project policies.

(5) Equipment

Most equipments were used around for 20 ~ 30 years old and superannuated. Moreover, most of them were made by the former Soviet Union and East European countries. Those models arem old and it is impossible to obtain parts for replacing because of the collapse of the former Soviet Union and East European countries.

The students are doing clinical practice at hospitals in Ha Noi city, but they don't produce satisfactory results because equipment for examination, diagnosis, and treatment are superannuated or are not enough. This college receives the equipment that is out of use or out of order and teaches only the principle of the structure of the equipment.

The library is in a comparatively new building, but most of documents and books are old, and the latest documents of medical technique are scarce. Since it is difficult to obtain necessary documents and data, the books must be considered as grant aid.

(6) Maintenance System

Eleven full-time engineers engage in maintaining and repairing, but tools for maintenance are remarkably poor, which causes obstacles to maintain and repair. As described above, it is impossible to obtain parts for replacement.

2-7-3 National Institute of Malariology, Parasitology and Entomology

(1) Present State

The contamination of malaria and dengue fever spread out all over the country and the average mortality rate is 7.05/100 thousand people. Especially, northern and central mountain regions are thickly contaminated. The northen and central mountain regions are the heavily contaminated because the shortage of health institution and personnel and high prevalence of outside worker cause the high mortality rate of 16.5 ~ 18.8/100 thousand people. The main causes of the nation wide contamination come from a decrease of malaria control fund because of the suspension of aid from the former Soviet Union, technical problem, and aggravation of economical situation.

Under the Committee of National Malaria Control Program (1991 ~ 1995), this institute takes a charge of the leading role for this program around the northern region. The head of the committee is the Minister of Health. The main activities are below.

1. Protection and treatment for malaria and dengue fever. Research on parasitology and entomology.
2. Technical guidance to medical institutes in the country.
3. Training of engineers for the malaria control and re-education for health workers.
4. Health education about malaria and dengue fever.
5. Supply activities of medicine and medical goods and medical equipment in the malaria control program.

This institute had belonged to National Institute of Hygiene and Epidemiology and became an independent research organ managed by the Ministry of Health in 1957. Department of Clinic only performs simple diagnosisand has no beds.

There are the head and two vice-heads in the institute. Each vice-head manages Research Section and Administration Section. Research Section consists of Departments of Epidemiology, Clinical Laboratory, Entomology, and Training, and Administration Section consists of Departments of Finance, Planing, Material Supply, Personnel, and Administration. The activities of each section are described below. Figure 2-13 shows the system. Table 2-29 shows the number of staff members.

1) Department of Epidemiology

The grasp of situation and data and the prospect of the future on malaria in the country. The examination of specimen slides collected from all over the country. The dispatch of

the survey and control team to malaria contamination regions, especially mountain regions.

2) Clinical Laboratory Department

The research about whole treatment. The research about immunity of malaria. The development for medicinal drugs based on the traditional medicine. The research about tolerance to drugs.

3) Entomology Department

The cultivation, the research, and the vector control of mosquitoes transmitting diseases such as malaria and dengue fever.

4) Parasitology Department

The research about filariasis, parasitic disease transmitted by soil, and protozoan.

5) Training Department

The education for engineers in the program and retraining for engineers at a provincial level and a district level.

Fig. 2-13 Organization of National Institute of Malariology, Parasitology and Entomology

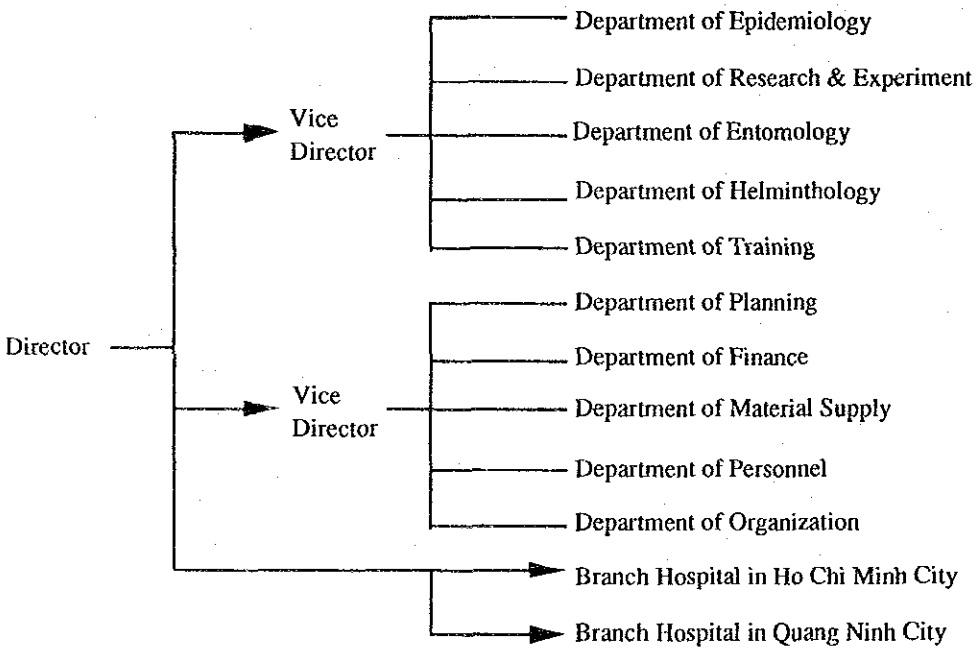


Table 2-29 Personnel

	Doctor	Pharmacist	Assistant Doctor	Nurse	Laboratory Technician	Entomologist	College Graduate	High School Graduate	Driver	Other	Total
Epidemiology	22	-	1	-	13	3	2	-	-	1	42
Clinical Research and Experiment	19	4	-	-	7	3	-	-	-	-	35
Entomology	11	-	-	-	10	7	-	-	-	-	28
Helminthology	5	-	1	-	8	35	-	-	-	1	50
Training	9	-	-	-	6	4	1	-	-	-	20
Planning	8	1	2	-	3	1	5	1	-	2	23
Finance	-	-	-	-	-	-	3	5	-	-	8
Personnel Organization	1	-	1	-	2	-	1	-	-	6	11
Material Supply	-	4	-	-	2	-	3	-	-	3	12
Administration	1	-	-	-	-	1	2	3	9	12	27
Other	6	-	2	1		-	-	-	-	1	16
Total	82	9	8	1	54	59	17	9	9	26	272

Source : National Institute of Malariology, Parasitology and Entomology

(2) Finance

Over a half of revenues come from WHO, UNICEF, donor countries, and NGO to assist the malaria control program. The most of the fund is used to purchase medicine drugs and medical equipment to distribute to each region, and this is the reason why the medicine stick out in the expenditures. Even aid from donor countries is not enough to improve facilities and equipment for research in the institute. The frequent visit to each region for the guidance of the program described above causes a big expense for vehicles and transportation. Table 2-31 shows revenues and expenditures from 1990 to 1992. The utility expense is included in others and is not clear about details. The maintenance expense for institute, facility, experimental equipment is limited to buy consumables but cannot buy new equipment.

(3) Buildings and Facility

The institute was established in 1962 and is consisted of two three-storied buildings for laboratories, a building for administration, a building for training, and dormitories. The institute was damaged by bombing under the Viet Nam War. Since it has been thirty years after constructing, the institute is remarkably deteriorated and has cracks in every place. The facilities of water supply, drainage, electric power, air conditioning are

remarkably worn out. The improvement of the building and facility is not a subject in this plan, but the study team recognizes its necessity.

Table 2-30 Revenue · Expenditure (1990-1992) (Unit : Dong)

	Revenue		Expenditure		
	Item	Amount		Item	Amount
1992	Government Budget	2,907,551,733	1	Labor Cost	345,007,462
			2	Medical Supplies	1,181,759,212
			3	Food	5,000,000
			4	Transport	508,063,453
			5	Utilities	
			6	Maintenance	7,928,347
			7	Other	719,175,558
	Total	2,907,551,733		Total	2,766,943,034
1991	Government Budget	1,265,460,806	1	Labor Cost	272,252,064
			2	Medical Supplies	419,040,167
			3	Food	4,000,000
			4	Transport	37,720,245
			5	Utilities	
			6	Maintenance	4,000,000
			7	Other	12,644,581
	Total	1,265,460,806		Total	740,657,057
1990	Government Budget	1,927,465,638	1	Labor Cost	195,500,000
			2	Medical Supplies	760,765,000
			3	Food	5,000,000
			4	Transport	200,000,000
			5	Utilities	
			6	Maintenance	4,500,000
			7	Other	37,113,000
	Total	1,927,465,638		Total	1,202,878,000

Source : National Institute of Malariology, Parasitology and Entomology

(4) Equipment

The most equipments are related to the basic research by nature. There are 138 microscopes which are used frequently, and 22 of which were made in Japan (Olympus, Chiyoda) keep good condition. Since others were made in the former Soviet Union and East European countries and have been used for 20 ~30 years, some cannot examine samples because of superannuated lenses. A half of them are usable and are not enough for research activities. Especially the microscopes which are used for training are in out of use.

The institute has six incubators, 13 dryers, eight centrifuges, 11 refrigerators, and six analytical balances but most of them were made in the former Soviet Union and East European countries, have been used over for 20 years.

At the entomology section, the cultivation of mosquitoes transmitting diseases such as malaria and dengue fever in general laboratory which has no air conditioner or isn't well equipped.So, the laboratory has a risk that the cultivated mosquitoes go out and must be urgently improved. At the epidemiology section, Immunoflourescent and Enzyme Immunoassay are performed but ELISA reader for the latter examination is out of order. It is impossible to be repaired.

(5) Maintenance System

There are a full-time engineer and two part-time engineers for maintenance of the institute and facilities but they rarely maintain the building and facilities. They repair simple electric apparatus and all equipment for researches. The parts for replacements are tried to obtain at free markets in the country, but the adequate parts are impossible to be obtained. The institute has a plan to cooperate with the workshop for Repairing medical Equipment for maintaining equipments granted from the Government of Japan.

2-7-4 National Institute of Ophthalmology

(1) Present State

The institute was established in 1917 and managed by the Ministry of Health. The Minister of Health takes a position of director of this institute. This is the highest institute of four other ophthalmology institutes and gives a high-level clinical activities and prevention, especially, the research about diseases causing blind such as vitamin deficiency disease and trachoma, educational activities including master course, and an enlightenment campaign to the nation.

Although Minister of Health is a director, the vice-director manages the institution. Under vice-director, there are Clinical Section, Paramedical Section, and Administration Section. Clinical Section has Departments of Clinical Medicine, Outpatients and Inpatient. Department of Inpatient has clinics every each disease. Paramedical Section has Department of Pharmaceutics, Department of Radiation, Department of Ultrasonic Diagnosis, Department of False Eyes, Biochemistry, Hematology, Microbiology, and Pathology. There are 200 beds. Figure 2-14 shows the system and Table 2-31 shows the number of staff.

Fig. 2-14 National Institute of Ophthalmology

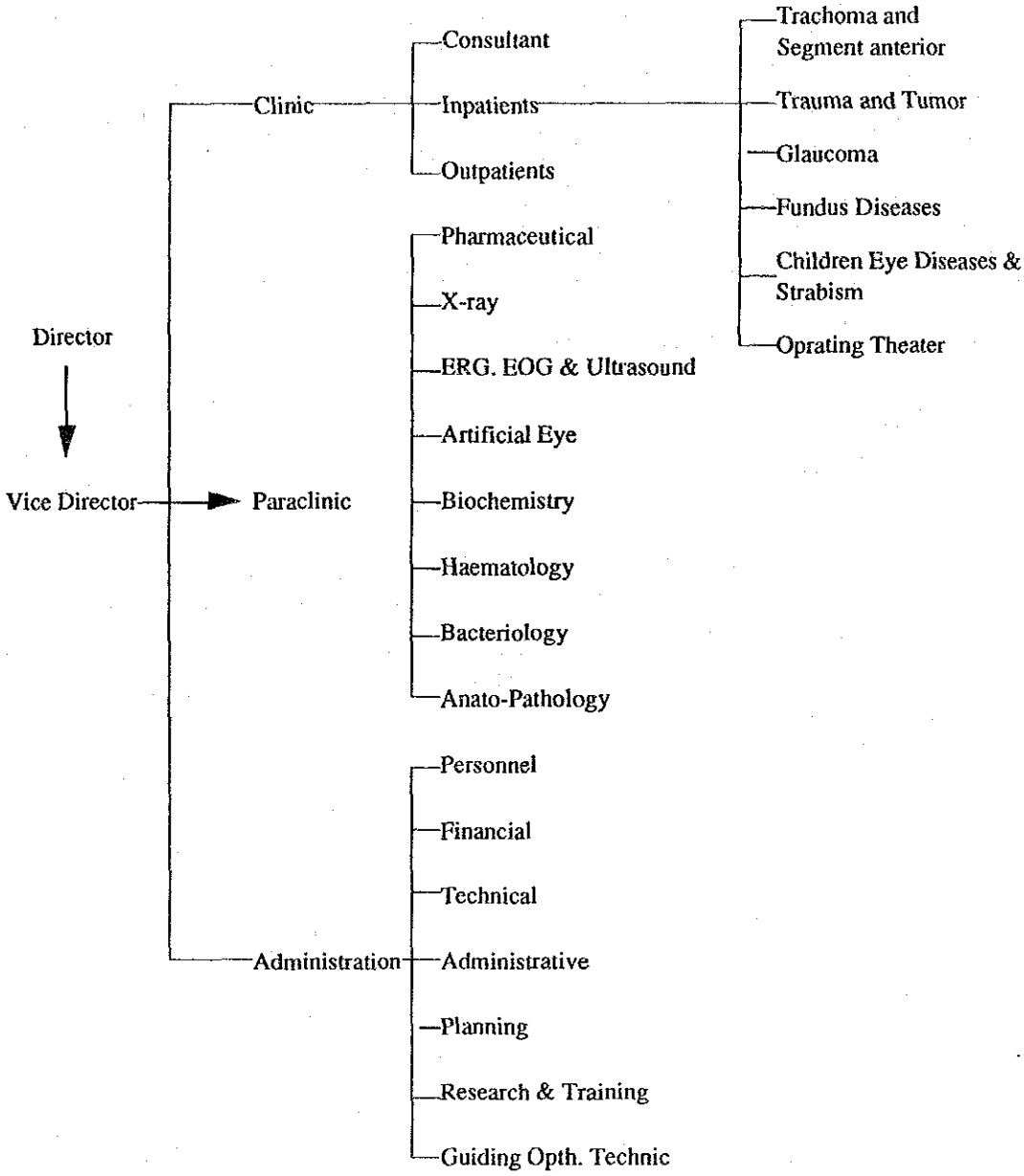


Table 2-31 Personnel

Department	Doctor	Midwife	Laboratory Technician	X-ray Technician	Pharmacist	Office Worker	Other	Total
Ophthalmology	65	64	-	-	-	-	96	225
Laboratory	-	-	-	3	17	-	-	20
Administration	-	-	-	-	-	53	-	53
Other	-	-	-	-	-	-	3	3
Total	65	64	-	3	17	53	99	301

Source : National Institute of Ophthalmology

The institute is in a leading position for protection, treatment, and research in the ophthalmology field and executes activities listed below.

1. Protection and treatment for eye diseases.
2. Education for ophthalmologists.
3. Treatment for serious diseases in the country.
4. Guidance of the blindness control program.
5. Campaign of enlightenment to the people.

(2) Finance

Table 2-32 shows revenues and expenditures for three years from 1991 ~ 1993. The 1991 revenue from the government budget was 570 million dong (about 6.3 million yen), the 1992 revenue 1.26 billion dong (about 13.8 million yen), and the 1993 revenue 1.276 billion dong (about 14 million yen). The revenues tend to increase. Also this institute received revenues, whose total amount was over the government's budget, from the international aid organs and NGO. The revenue from these organs was 2.37 billion dong (about 26 million yen) in 1991, 1.99 billion dong (about 21.9 million yen) in 1992, and 4.9 billion dong (about 53.9 million yen) in 1993 The aid is an important source of the revenue although the amount is different each year. Total amount of the government budget and aid increased remarkably each year as it was 2.9 billion dong (about 32 million yen) in 1991, 3.2 billion dong (about 35 million yen) in 1992, and 6.1 billion dong (about 67 million yen) in 1993.

(3) Main Disease

Trachoma was the highest rate of eye diseases in Viet Nam and is estimated 17.5% of population, which was about 12 million people in 1990. There were 1.4 million patients who became blind. Cataract causing blind became about 4.7%, which was 3.3 million people.

About 70% of inpatients need operations. There are regulary 250 ~ 280 inpatients for 200 beds. Some patients share one bed. Most patients are from northern regions of Ha Noi city because they cannot be treated in the regions. But hospitals at the district level perform simple cataract operations, and hospitals at the commune level treat trachoma. Twenty operations are performed a day on the average. About 10 thousand operations included simple operations and high technique operations with an microscope are performed in a year. Five operation rooms out of six were used to perform for retinal detachment, strabismic correct, eyelid reshaping, and cataract in the day when the

institute was investigated. As some operations can be seen on the TV monitor, technical level is high.

Department of Pharmaceutical produces about 40 kinds of drugs based on the original formula and the European pharmaceutical formula .

Table 2-32 Revenue · Expenditure (1990-1992) (Unit : Dong)

	Revenue		Expenditure		
	Item	Amount		Item	Amount
1993 (9 month)	Government Budget	1,276,000,000	1	Labor Cost	141,193,039
	Other	4,899,451,548	2	Medical Supplies	247,682,903
			3	Food	
			4	Transport	
			5	Utilities	639,812,457
			6	Maintenance	2,813,690,196
			7	Other	
	Total	6,175,451,548		Total	3,842,378,595
1992	Government Budget	1,260,000,000	1	Labor Cost	185,150,527
	Other	1,993,340,498	2	Medical Supplies	293,030,505
			3	Food	
			4	Transport	
			5	Utilities	1,237,396,116
			6	Maintenance	872,155,324
			7	Other	
	Total	3,253,340,498		Total	2,587,732,472
1991	Government Budget	570,000,000	1	Labor Cost	125,762,104
	Other	2,371,368,680	2	Medical Supplies	183,988,061
			3	Food	
			4	Transport	
			5	Utilities	450,042,047
			6	Maintenance	898,835,028
			7	Other	
	Total	2,941,368,680		Total	1,658,627,240

Source : National Institute of Ophthalmology

(4) Buildings and Facility

The institute is placed on the center of Ha Noi city and has very small site if compared with other institutes, but buildings are efficiently placed and not obstacles to medical activities. The oldest building was constructed in 1917. It has been about 70 years and are considerably superannuated. The institute has a two-stories building constructed in

1990. There are operation rooms with air conditioning and water for washing hands in the rooms through a sterilizing tank in the building. The examination of water reported no colon bacillus that were found in other institutes.

(5) Equipment

There are six operation rooms in a operation ward, each room has two operation tables. They are equipped with operation microscopes for ophthalmology which are granted from Australia and Germany. Since they have a back-up system with an electric generator five minutes after a power cut, there is no hindrance to operate. The sterilizing facility is fully completed in the operation ward, and the inside of the building keeps clean. The equipment and apparatus of operation have been used for a long time. Especially, operation lumps, forceps, and probes of a ultrasonic diagnosis apparatus are remarkably worn out. Some equipments are unable to use because of no comsumables.

Department of Outpatient has six clinic rooms for diagnosis and simple treatment. Most of equipments here are superannuated, and the department is short of equipment both in quantity and variety. Laboratory has various diagnosis apparatus that is frequently used. The department has two ultrasonic diagnosis apparatus for ophthalmology (American made, no identified year and French made, 1971), which are still usable in spite of old types. The tomometer (1960) is out of order, and it is impossible to obtain parts for replacement on this . The water distilling apparatus in Department of Pharmaceutical works but is superannuated and doesn't have an enough capacity. The skull radiography apparatus (the former East Germany) in Department of Radiation was introduced four years ago but is a poor quality and cannot give a satisfactory diagnosis.

If the operation rooms are compared with other departments, the former holds considerably high equipment but equipment of the latter is in the lower grade and is insufficient both in quantity and variety.

(6) Maintenance System

A full-time engineer and two part-time engineers are engaged in repair and maintenance for about 30 cases on the average every month. The parts for replacement are short and difficulty obtained. The parts of the radiation apparatuses are supplied from the General Company of Health Facilities and Medical Equipment but are not enough.

2-7-5 Gynecology and Obstetric Hospital In Ha Noi

(1) Present State

The institute is a city hospital managed by Department of Health of Ha Noi People's Committee and is doing medical activities on women's disease and delivery. There are 200 beds including 50 in Department of Obstetrics and 50 in Department of Gynecologics. There are 45 doctors, 22 nurses, and 79 midwives out of 232 staff members. Table 2-33 shows the details.

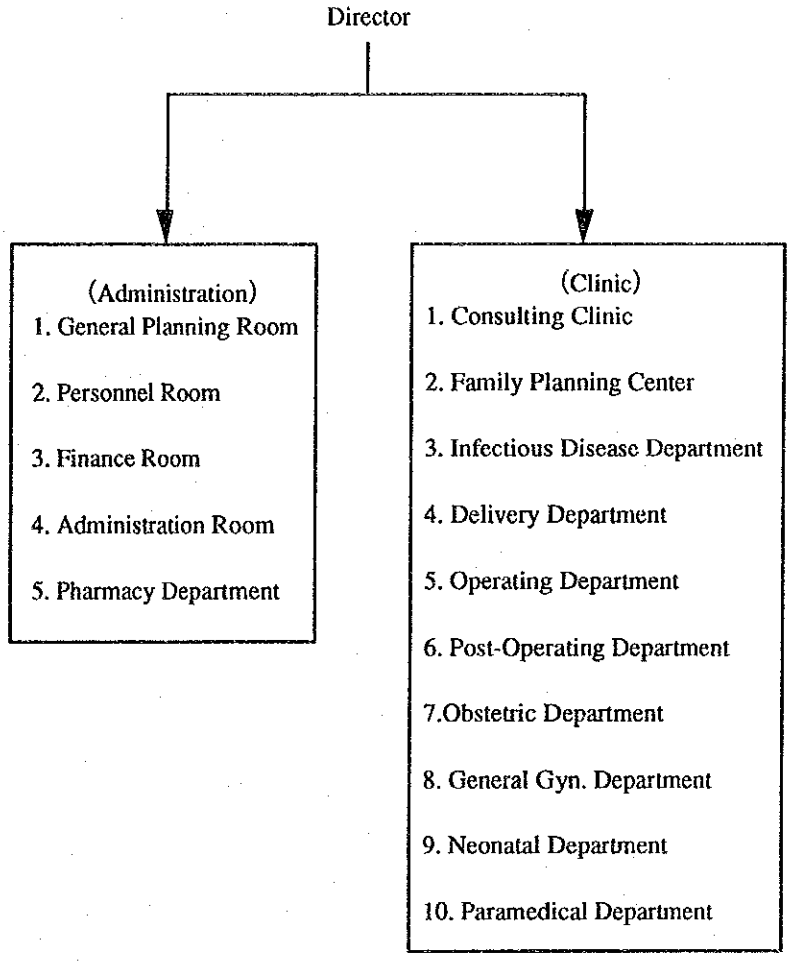
There are Clinical Section and Administrative Section under the head physician. Clinical Section is divided into Consulting Clinic, Family Planning Center, Department of Infectious Disease, Department of Delivery, Department of Operating, Department of Obstetrics, Department of General Gynecology, Department of Neonate, and Department of Paramedics. Figure 2-15 shows the system.

Table 2-33 Personnel

Department	Doctor	Nurse	Midwife	Other	Paramedical Staff	Non Medical Staff	
Consulting Clinic	7	-	13	2	-	Administration	3
Infectious Disease	3	-	7	1	-	Office Worker	11
Delivery	4	-	12	3	-	Maintenance	3
Theater & ICU	3	12	8	3	-	Cooking Staff	1
Postpartum	4	-	10	5	-	Driver	2
Newborn	3	8	5	2	-	Helper	11
Gynecology	4	-	6	4	-	Other	9
Laboratory	3	-	-	1	4	Total	40
Anatomy	1	-	-	1	2		
X-ray	1	-	-	-	2		
Family Planning	2	-	4	-	-		
Obstetric Pathology	3	-	8	2	-		
Pharmacy	-	-	-	-	3		
Other	7	2	6	-	11		
Total	45	22	79	24	22		
					Total	232	

Source : Gynecology and Obstetric Hospital in Ha Noi

Fig. 2-15 Organization Chart of Gynecology & Obstetric Hospital in Ha Noi



(2) Finance

There are three primary revenues: 1) a budget from Ha Noi People's Committee, 2) contribution from NGO and other grant aid organs, and 3) health insurance. Since 2) and 3) weren't detailed the amount of money every year, the proportion of those revenues is unknown. A patient has to pay 1,000 dong for delivery, 1,000 dong for hospital charges, and 6,000 ~ 7,000 dong for an operation of a Cesarean. Each annual budget became about 9.6 million yen in 1990 and about 8.4 million yen in 1991. The labor costs, medicine expense, utility expense in the annual expenditure increase every year. The others haven't changed The budget in 1992 is considerably big when it is compared with the last two years because it includes a budget for rebuilding Department of Pharmaceutics and Department of Laundry. The building for Department of Pharmaceutics and Department of Laundry is seriously damaged caused by subsidence and is under reconstruction. Table 2-34 shows the change of budgets from 1990 to 1992.

Table 2-34 Revenue · Expenditure (1990-1992) (Unit : Dong)

	Revenue		Expenditure		
	Item	Amount		Item	Amount
1992	Government Budget	3,371,136,563	1	Labor Cost	353,905,108
			2	Medical Supplies	290,911,242
			3	Food	1,750,100
			4	Transport	135,640,753
			5	Utilities	398,529,610
			6	Maintenance	1,423,439,852
			7	Other	
	Total	3,371,136,563		Total	2,604,176,665
1991	Government Budget	842,409,000	1	Labor Cost	209,152,463
			2	Medical Supplies	186,658,402
			3	Transport	2,300,700
			4	Utilities	42,454,838
			5	Maintenance	116,930,744
			6	Other	342,980,599
	Total	842,409,000		Total	900,477,746
1990	Government Budget	961,320,943	1	Labor Cost	140,035,519
			2	Medical Supplies	104,568,410
			3	Transport	1,058,500
			4	Utilities	19,279,323
			5	Maintenance	229,565,979
			6	Other	401,447,352
	Total	961,320,943		Total	895,955,083

Source : Gynecology and Obstetric Hospital in Ha Noi

Before executing Doi moi policies, patients didn't pay for medical service, and the revenues for the institute depended on the state budget and aid from the former Soviet Union and East European countries. After Doi moi started, the revenues come from out of a budget such as from health insurance and patients. However, the expenditure such as the maintenance for facilities and medical equipment and consumables increases with the increase of labor costs and consumer products expense under the Doi moi policies. As it is mentioned above, it is difficult to obtain foreign made medical equipment and comsumables for economical reason. The institute shorts of medical equipment and comsumables.

(3) Main Disease

The population growth rate tends to increase in Viet Nam. The country introduces the two children policy as a population control program but the childbirth rate also tends to increase even in this institute. Table 2-35 shows a number of childbirth and neonate for five years.

Table 2-35 Recent 5 Years Statistics of Delivery and New Birth in the Hospital

	1992	1991	1990	1989	1988
Delivery	1,682	1,440	1,460	1,445	1,798
Neonate	372	406	382	356	290

Source : Gynecology and Obstetric Hospital in Ha Noi

Table 2-36 and Table 2-37 shows leading cause of disease for inpatient and outpatient in this institution each year. The total number of outpatients increases from 17,000 in 1988 until 28,000 in 1992 for five years. Pregnancy examination, Gynecological disease, and abortion are three main works in this institute. Since the government encourages contraception and abortion under the two children policy of the population control program, the number of patients for abortion is big. Like the cases of outpatients, there are three main diseases of a natural delivery, a hard labor, and treatment for premature delivery and premature baby. The case of inpatient hardly changed because 200 beds are full at all times and sometimes two beds are shared with three patients.

Table 2-36 Total Number of Outpatients in 5 Year

No.	Name of Disease	1992	1991	1990	1989
1	Examination of Normal Pregnancy	3,859	2,001	3,170	2,179
2	Examination of Abnormal Risk of Pregnancy	982	670	200	381
3	Examination of Gynecology Normal	3,379	6,052	6,706	6,961
4	Tumor	559	420	432	288
5	Examination of First Aid Cases	7,876	7,956	872	2,312
6	Procedures	1,765	2,701	4,233	6,429
7	Sterilization	1,128	936	68	4,642
8	Fuctious Exploration	3,757	566	563	583
9	Induced Abortion & Menses. Regulation	4,463	4,136	3,187	3,337
10	IUD	1,464	1,281	637	816
Total (incl. patients infected with other diseases)		28,455	25,249	27,314	21,192

Source : Gynecology and Obstetric Hospital in Ha Noi

Table 2-37 Total Number of Inpatients in 5 Year

	Name of Disease	1992	1991	1990	1989
1	Fibroid Tumor	123	233	188	180
2	Ovarian Cysts	30	115	95	108
3	Ectopic Pregnancy	85	73	74	50
4	Hydatido Form Mole + Chorio	49	58	35	53
5	Hematocele Cyst	33	26	75	30
6	Abnormal Risk of Pregnancy	144	163	117	142
7	Difficult Labor	1,686	1,894	1,715	1,140
8	Normal Labor	3,381	3,084	2,918	2,213
9	Premature Newborn and Weak Newborn	816	810	114	553
10	Infection Disease	273	226	161	220

Source : Gynecology and Obstetric Hospital in Ha Noi

Most operations are for Cesarean, others are for extrusion of uterus and ovarian cyst. The number of operation is about 1,000 ~ 1,300 a year.

The X-ray diagnosis is mostly general exposure and recently decreased with the introduction of the examination by ultrasound scanner. The ultrasound scanner is a secondhand apparatus granted from NGO in 1990. Most of clinical examinations are for blood type, red corpuscle, and white corpuscle and are followed by biochemical, pregnancy, bacteriological examinations. There is no equipment for biochemical examination so that it is asked to the Olof Palme Institute for tbiochemical examination.

(4) Buildings and Facility

The institute consists of a building constructed in 1974, a hospital ward and an outpatient ward constructed in 1979 and are made of reinforcing concert. Generally, buildings in Viet Nam are weak although pillars and floors are constructed of reinforcing bars. Like other buildings, the weight of equipment for this institute must be considered. Especially, a ceiling type operation light and sterilizer require the enough strength of ceiling or floor.

The site of this institute used to be a garbage dump and has a weak ground . Since the subsidence of Department of Pharmaceutics and Department of Laundry is developing, the construction of new building for them began in the last year. The pipes between the

central supply system for medical oxygen gas and vacuums and the hospital ward are damaged by the subsidence.

One out of five elevators works because of a poor maintenance and deficiency of spare parts. The elevator is superannuated and won't work soon, but Ha Noi People's Committee give a billion dong for improving them.

A power sub station in the institute has an enough capacity. There are 2 ~ 3 power cuts a week in Ha Noi city, and the electric voltage changes in a range of 230V ~ 140V. Since the institute doesn't have a power generator, it is difficult to perform an emergency operation. The water is supplied from the city water and drained after it is collected to a septic tank.

(5) Equipment

Eighty percent of the medical equipment in this institute were granted from International Council of Women in 1979 when the construction was completed. Most of equipments have been used over for 14 years and superannuated, and some is out of use. Since it is difficult to purchase new equipment and to obtain parts, the superannuated equipment becomes an obstacle for medical activities.

There are two operation tables. One is the East European made and the other is the Japan made and the both work. Although the ceiling type operation light works, some bulbs are burn out. A Japan made ventilator in 1979 is out of use. Two floor type operation lights work. A anesthesia apparatus works but is shared by operation rooms on the second floor and the fifth floor. The delivery tables that were made in Japan in 1979 and made in Viet Nam are superannuated.

Twenty infant incubators were introduced in 1979, and only 4 incubators work. A incubator is shared with 2 ~ 3 newborn babies. A colposcope in the consultation room of Gynecological Department is out of use because a lamp is out. However, it is possible to obtain a lamp.

Laboratory has Japan made microscope, hemoglobin meter, and centrifuge, but all of them are superannuated. There is no biochemical equipment. Department of Pharmaceutics has two small water distilling apparatuses made in the former Soviet Union, but only one of them works and distills 50 ~ 100l/day.

Recently, the consultation room of Department of Gynecologics introduced a hysteroscope in 1992, and it works well. The ultrasonic diagnosis apparatus was granted from NGO, and some functions are out of order, but there is no problem for regular use. It diagnoses 20 ~ 25 patients a day.

(6) Maintenance

Three engineers including the chief engineer maintain and repair for the institute. They maintain and repair sterilizer, ventilator, incubator, operation light, elevator, water pump, and air conditioning. These engineers sometimes visit other institute to repair and maintain.

The technical level is comparatively good, but deficiency of tools and diagnose instruments is an obstacle to work. In addition, not to able to obtain spare parts is an obstacle for maintenance work.

2-7-6 Bach Mai Hospital

(1) Present State

This is a health institute managed by the Ministry of Health and the final organ as a referral hospital for all medical institutes including national and city hospitals but excluding military hospitals and hospitals for Party in the northern part of Viet Nam. This institute was established in 1911 and is the oldest hospital. The buildings are entirely superannuated, and many departments keep using old facilities. This is a big hospital which has 960 beds and 1,300 staff members. The buildings for outpatients (Department of Surgery, Department of Gynecology and Obstetrics, and Department of Outpatient in 24-hour system) and Tropical Diseases Laboratory are under construction and almost completed in the part of the site.

The main department in this health institute is Department of Internal Medicine. In addition, the institute has 12 clinic departments such as Department of Surgery and Department of Gynecology and Obstetrics and six Laboratories for circulatory system and dermatology with clinical medicine. There are 960 beds and each building is scattered in the site. Figure 2-16 shows the organization chart, and Table 2-38 shows the number of staff.

Fig. 2-16 Organization Chart of Bach Mai Hospital

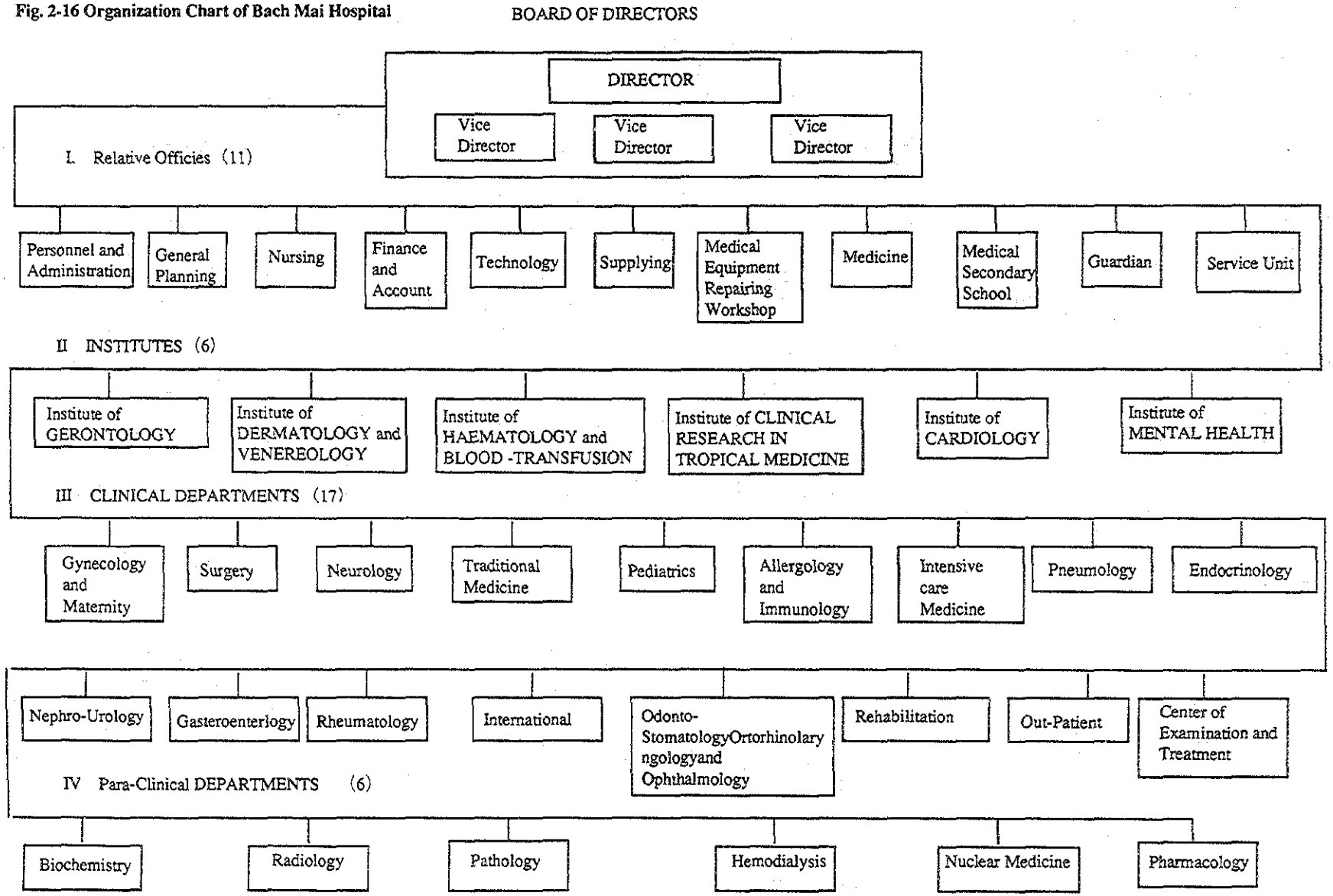


Table 2-38 Personnel

Department	Doctor	Nurse	Practical Nurse	Mid Wife	Other Medical Staff	Non Medical Staff
ICU	9	24	1	-	5	-
Gastroenterology	9	9	2	-	3	-
Endocrinology	6	7	1	-	2	-
Respiratory	8	8	1	-	2	-
Nephro-Urology	8	7	1	-	2	-
Rheumatology	7	8	1	-	2	-
Pediatrics	12	10	2	-	3	-
Surgery	13	23	7	-	14	-
Gyne-Obstetrics	12	12	4	13	5	-
Allergology & Immunology	7	6	7	-	6	-
Neurology	14	24	3	-	6	-
Dental-Ophtalmic-ENT	18	17	3	-	10	-
International	23	16	-	1	17	-
Traditional Medicine	16	-	-	-	-	-
Cardiology	21	16	2	-	4	-
Gerontology	14	13	-	-	8	-
Dermatology	39	16	7	-	22	-
Hematology	19	8	1	-	15	-
Tropical Medicine	33	39	1	-	23	-
Physiology	10	13	2	-	4	-
Administration	-	-	-	-	-	14
Office Worker	-	-	-	-	-	8
Maintenance	-	-	-	-	-	17
Cooking Staff	-	-	-	-	-	26
Driver	-	-	-	-	-	17
Helper	-	-	-	-	-	4
Other	-	-	-	-	-	-
Total	298	276	46	14	153	86
Source: Bach Mai Hospital					Total	873

The medical activities are listed below.

1. General clinical diagnosis and treatment.
2. Receiving patients transferred from all over the country as the top referral hospital.
3. Education for doctors and training after graduating.
4. Guidance about medical treatment at each region.

This institute as a referral institute managed by the Ministry of Health receives general patients as well as patients who cannot be treated by other institutes.

Students at Ha Noi Medical College are doing clinical practice in this institute, and this is the center institute for clinical practice at northern part of Viet Nam. Also, this is a training institute for medical specialists. Some doctors each department are professors of Ha Noi Medical College, and there are many doctors who engage in medical education and research. The level of medical service is high. There are many staff members who acquired medical treatment technique at foreign countries. However, only some departments can diagnose and treat with the latest equipment, and other departments short of equipment and use remarkably superannuated equipment.

(2) Finance

Since this is the biggest hospitals managed by the Ministry of Health and a referral institute, the budget is higher than other hospitals. Table 2-39 shows the budget. According to the data in 1990, the revenue was 6,240 million dong (62.4 million yen), and then it was 17,222 billion dong (172 million yen) in 1992, which increased about three times as big as it in 1990. There is no big change on labor costs, utility, maintenance in the expenditure, but the medicinal goods is about four times as big as it in 1991 and about 10 times as big as it in 1990.

The reason that the revenue rapidly increased in 1992 is that the institute received 8 million dong from the health insurance and patients every month and an expanded grant form NGO. However details of the revenue are unknown. The reason that the expenditure of medical goods increased in 1992 is that the institute purchased equipment. A new building for outpatients and a laboratory of tropical diseases are under construction. The revenue and expenditure on the construction are unknown, but the cost for the construction seems to be paid from a special budget of the Ministry of Health as well as the budget of this institute.

Table 2-39 Revenue · Expenditure (1990-1992) (Unit : Dong)

	Revenue		Expenditure		
	Item	Amount		Item	Amount
1992	Government Budget	7,340,000,000	1	Labor Cost	1,789,605,389
	Other	9,884,425,020	2	Medical Supplies	8,654,903,240
			3	Transport	130,143,427
			4	Utilities	2,498,366,670
			5	Maintenance	2,606,933,868
			6	Other	131,755,033
	Total	17,224,425,020		Total	15,811,707,627
1991	Government Budget	3,584,000,000	1	Labor Cost	1,173,257,409
	Other	5,062,610,779	2	Medical Supplies	2,125,078,673
			3	Transport	93,019,997
			4	Utilities	1,418,970,428
			5	Maintenance	3,043,979,040
			6	Other	53,762,987
	Total	8,646,610,779		Total	7,908,068,534
1990	Government Budget	4,122,800,000	1	Labor Cost	924,972,942
	Other	2,116,621,145	2	Medical Supplies	854,775,577
			3	Transport	39,353,846
			4	Utilities	1,112,667,997
			5	Maintenance	158,961,525
			6	Other	20,096,512
	Total	6,239,421,145		Total	3,110,828,399

Source : Bach Mai Hospital

(3) Main Disease

The number of outpatient a year is 150 thousands ~ 200 thousands, and names of main diseases are high blood pressure, diabetes, rheumatism, chronic hepatitis, and pneumonia. The number of inpatients is 200 thousands a year, and names of main diseases are gastrectomy, stomach ulcer, duodenal ulcer, acute bronchitis, and dysentery. The beds are full through the entire year. The main operation is for appendicitis and performed for 1,300 cases. The gastrectomy and gastroenterostomy follow it. The endoscopy is done for 1,000 cases a year, and names of endoscopy are proctoscopy, gastroscope, endocystoscopy, laparoscopy, and bronchoscopy. The number of delivery in the Department of Obstetrics is 1,200 a year and hasn't changed for five years.

The number of clinical examination is 80,000 for red and white corpucles, 17,000 for erythrocyte sedimentation rate, 25,000 for blood sugar, 22,000 for urine, 15,000 for ureteral protein, 6,500 for malaria staining, and 8,000 for cholesterol. The number of radiography is 12,000 for chest, 9,000 for abdomen, 1,600 ~ 4,500 for hands and feet, and 2,500 for spinal cord.

Aside from the medical service, the institute educates medical students and trains for medical specialists, and other activities are showed below.

1. BCG inoculation.
2. Hepatitis B inoculation.
3. Tetanus inoculation.
4. Articles about public hygiene in newspaper.
5. Education about public hygiene on TV and radio.

(4) Buildings and Facility

The institute consists of a building for infectious disease constructed in 1911 and a building constructed in 1932. Each department is scattered in the site. Department of Pharmaceutics, operation rooms, and ICU are connected to the main building with corridors. Like other institutes, these buildings were simply constructed with brick walls although pillars were used reinforcing bars. Since the strength of ceiling and floor which were used reinforcing bars is also low, the heavy equipment cannot be supported.

The electric power is not enough and overworked in each department. The electric voltage is not stable and sometimes becomes 80V. During study 220V fell down to 140 V. Each department needs automatic voltage regulator.

The water supply was used ground water but is also used the city water because of deficiency of quantity. A construction of treatment plant was begun in 1972 but stopped due to bombing. After that it was left for an economic reason.

(5) Equipment

Most of equipments are made in the former Soviet Union and Eastern Europe and entirely worn-out. They are frequently repaired. Since it is difficult to obtain spare parts, the institute takes parts from the same equipment that is out of use.

Department of Emergency and Department of ICU use two Japan made ventilators, a Sweden made apparatus, and a new apparatus. Other ventilators and suction units are remarkably superannuated and need to be replaced. Since there is no patient monitoring equipment except a portable electrocardiograph 1 ch, the institute requires the patient monitor equipment.

Department of Radiology has 4 X-ray rooms, and general diagnosis X-ray machine, angiography, tomography, and an automatic film development machine. All equipment were made in 1979, and three of nine equipments are out of use. As to automatic film development machine, only dryer part of it can work. The equipment in the department must be graded up as the equipment in the high level medical institute.

A central examination room integrates laboratories for blood test, biochemical examination, and bacteriological examination if it were in Japan, but the room has only Biochemical Laboratory. The blood test is in National Blood Center. Most of the equipments in this institute are superannuated. The replacement of the equipment was carried out only one time during the time from 1972 to 1992. Some equipments were second-handed equipments granted form NGO. There are many unusable equipments that lack some parts. A new equipment is only spectrophotometer granted from Sweden. In the granted examination equipment, a small biochemical analyzer is able to work but doesn't work because the department is unable to buy reagent. Most equipment in the examination department must be replaced but it is impossible to purchase reagent or comsumables.

(6) Maintenance System

The Department of Maintenance for equipment has 16 engineers including a chief engineer and maintains and repairs equipments from a general diagnosis X-ray machine, electrocardiograph, electroencephalogram, ventilator, and ultrasonic apparatus. The engineers visit other institutes for maintenance if requested. This department repairs 90 ~ 150 equipments a month but cannot work satisfactorily because it is impossible to obtain parts and consumables (a short of budget, a complicated process for import) and tools and diagnose instruments for maintenance are also not enough. It has some instruments such as oscilloscopes and testers, but the quantity of them are not enough as well as they are superannuated.

2-7-7 Emergency Transfer Center in Ha Noi

(1) Present State

This institute is managed by the Public Health Service in Ha Noi People's Committee and was established in 1985 when the Viet Nam War was ended. There are 42 staff members who engage in emergency activities. When there are patients by a car accident or in emergency, the center receives a phone call requesting for an ambulance, and then a doctor and staff rushed to the spot by the ambulance. The center does not have Department of Clinical Medicine but gives a patient a first aid treatment at the spot and transfers to a near-by medical institute.

The center has an emergency telephone number of 15 and is in a 24-hour system. It also receives requests from each health institute and transfers a patient in the institute to a referral hospital. In this center, there are a parking place, a repair shop, a telephone operation room, a staff room, and a dormitory. This center also rents a part of a parking place and a part of the center to private companies.

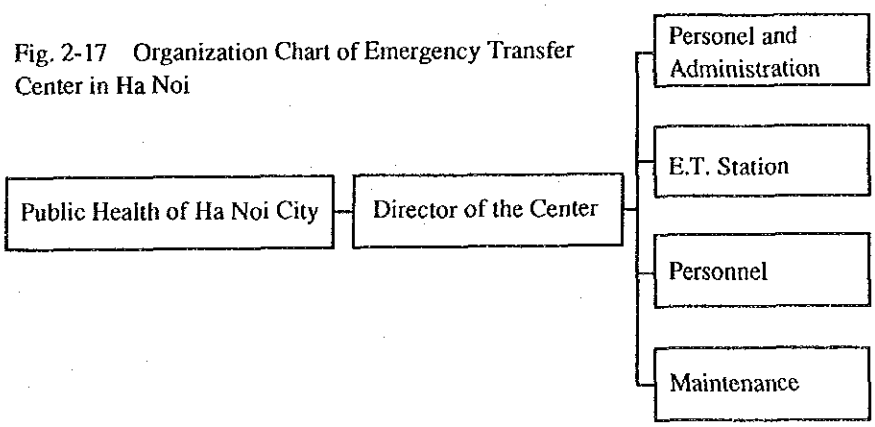
Under the head of this center, there are Department of Administration, Department of Business Management, and Department of Transfer and Facility. The center consists of 10 doctors, 18 nurses, 7 drivers, a pharmacist and 6 others. Figure 2-17 shows the system, and Table 2-40 shows the staff members.

Table 2-40 Personnel

Department	Doctor	Nurse	Pharmacist	Driver	Helper	Administration	Clerk	Total
	10	18	1	7	1	1	4	42

Source : Emergency Transfer Center in Ha Noi

Fig. 2-17 Organization Chart of Emergency Transfer Center in Ha Noi



(2) Finance

A budget of 1992 is reported only data, and budgets before 1991 were unknown. According to the budget of 1992, the revenue comes 100% from Public Health Services. A maintenance expense in the expenditure is 16% and the biggest. The labor costs of 8%, and the transfer expense of 5% follow it. However, the center purchased three ambulances and paid the total 436 millions dog which accounts for 70% of the budget. Table 2-41 shows the revenue and expenditure.

Table 2-41 Revenue · Expenditure (1992) (Unit : Dong)

	Revenue		Expenditure		
	Item	Amount	No.	Item	Amount
1992	Government Budget	519,500,000	1	Labor Cost	35,692,451
			2	Medical Supplies	3,332,449
			3	Food	
			4	Transport	25,217,982
			5	Utilities	
			6	Maintenance	73,139,000
			7	Other	323,955,000
	Total	519,500,000		Total	436,115,900

Source : Emergency Transfer Center in Ha Noi

(3) Activities

When there are patients who are in a car accident or in emergency, people calls the emergency number of 15 and asks for an ambulance. The emergency team with a doctor gives a first aid treatment for a patient at the spot and transfers him to a closest hospital. The staff works on a three-shift in a 24-hour system.

The frequency of telephone request is high and becomes 30 times a day. However, the actual service is 2 ~ 3 times a day and in a poor efficiency. Since the telephone belongs only to hotels or public buildings, it is not easy for the ordinal people to use it even when it is in emergency. The telephone is under implementation in Viet Nam, and the toll phone is getting to appear at downtown and at the side of main roads. And also telephone is getting popular in the private company, the shop under private management, and the rich family. In the actual situation, when there are patients who are in an accident or in

emergency, the bicycle, the motor bike, or the cycle through the spot transfers to the hospital in many cases.

The facility for vehicles' maintenance is used to repair or maintain vehicles for other institutes. In this case, other institutes are asked to pay for a charge.

Whenever an ambulance rushes to the spot, a doctor and a nurse go on board. Some medical staff members are chosen for training for certain time at Bach Mai Hospital every year.

(4) Buildings and Facility

The building was constructed in 1989. There are a parking place on the center, the telephone operation room on the side, the dormitory and rental offices on the opposite side, a garage on the back and a management office on the second floor. There are ambulances and motor bikes in the parking place. At the rental place of the parking place, there are also several cars.

(5) Equipment

The institute holds 14 ambulances. Only 3 out of 14 are able to work, 6 are under repair, and 5 are superannuated and unable to work. One ambulance is purchased in 1992 and keeps a good condition. There is no medical equipment in ambulances, but the oxygen resuscitation and the defibrillator are considered to be indispensable so that a patient in serious condition could be treated in an ambulance.

As for the poor efficiently that the center can only correspond 10 out of 30 requests, it is possible to greatly improve the situation if all ambulances load radios and the radio station is installed in the office.

(6) Maintenance

The maintenance system in the center is only for vehicle. There are five engineers who maintain and repair ambulances and visit to maintain to other institutes. These engineers have comparatively high technique. However, they hardly have maintained medical equipment so medical equipment might be maintained in other institutes. The radio, the oxygen resuscitation set, or the portable defibrillator aren't equipments that easily happen troubles so the expense for maintenance and repair is considered to be small.

2-7-8 National Institute of Tuberculosis and Respiratory Disease

(1) Present State

The institute has held a leading position on prevention, treatment, and research in Viet Nam since 1957 when the institute opened. The patients of tuberculosis is 75/100 thousand people (41.9/100 thousand in Japan) in 1992 and the death rate of tuberculosis accounts about 10.5 % of total death in Viet Nam. The tuberculosis is regarded as a serious disease. The institute also has a function to lead hospitals at local level as the highest organ in the field of the tuberculosis and respiratory disease. The medical activities are shown below.

1. Prevention and instruction of tuberculosis in the whole country .
2. Diagnosis and treatment for tuberculosis and respiratory diseases.
3. Basic research of tuberculosis and respiratory diseases.
4. Training for the specialists.
5. Enlightenment campaign.

As to 1, the institute emphasizes not to have the prejudice that tuberculosis is a fatal disease. As to 3, the institute is assigned three themes from the Government of Viet Nam (lung disease of pediatrics, lung cancer, and the tuberculosis control program at the national level) As to 4, since the chief professor of Department of Tuberculosis and Respiratory Disease in Ha Noi Medical College holds a position in the institute, the institute has programs of clinical practice for students and retraining for local doctors, and courses of master and Ph.D.

Under the head physician, there are three sections of the Clinical Section, the Paramedical Section, and the Business Management Section. Figure 2-18 shows the organization chart. The Clinical Section has the Department of Surgery, the Department of Internal Medicine, and the Department of Pediatrics. The Paramedical Section has the Department of Pulmonary Function Test, the Department of Examination, The Department of Endoscopy, the Department of Blood Test, the Department of Biochemistry, the Department of Microbiology, the Department of X-ray, the Department of Pharmaceutics, the Department of Nurse, the Department of Pathological Anatomy. There are 432 beds dividing into 268 of the Department of Internal Medicine, 102 of the Department of Surgery, and 32 of ICU. There are 400 staff members and Table 2-42 shows the number of staff in each department.

Fig. 2-18 Organization Chart of National Institute of Tuberculosis and Respiratory Disease

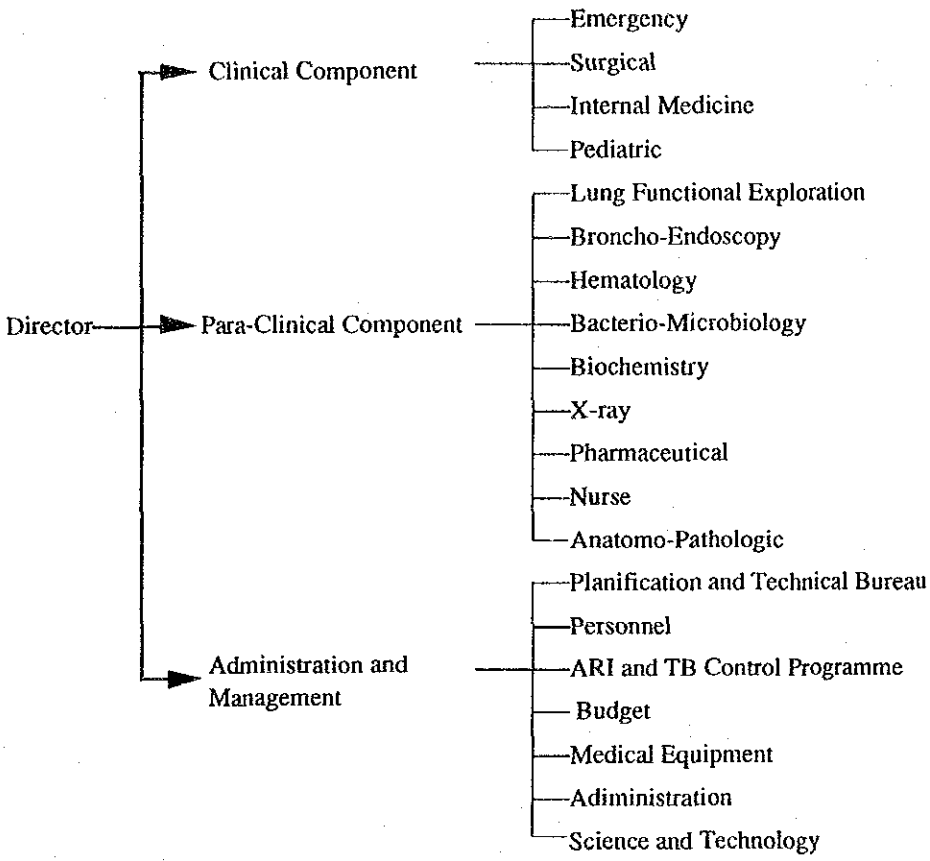


Table 2-42 Personnel

	Doctor	Nurse	Laboratory	X-ray	Pharmacist	Officer	Other	Total
Internal Medicine	29	40	-	-	-	-	15	84
Surgery	22	22	-	-	-	-	8	52
Pediatrics	4	9	-	-	-	-	3	16
ICU, CCU	10	16	-	-	-	-	-	26
Laboratory	-	-	19	10	16	-	38	83
Administration	-	-	-	-	-	59	-	59
Other (incl. ENT)	55	11	-	-	-	-	14	80
TOTAL	120	98	19	10	16	59	78	400

Source : National Institute of Tuberculosis and Respiratory Disease

(2) Finance

Table 2-43 shows revenues and expenditures for three years from 1990 to 1992.The revenue is 1.25 billion dog (about 13.8 million yen) in 1990, 2.9 billion dog (about 32 million yen) in 1991, and 4.4 billion dog (about 48 million yen) in 1992. The revenue increased remarkably as well as the expenditure. Each expense of labor costs, medicinal goods, transportation, and maintenance increases 100 % as big as it in 1990. The expenses increase with the construction of a new building.

Table 2-43 Revenue · Expenditure (1990-1992) (Unit : Dong)

	Revenue		Expenditure		
	Item	Amount	No.	Item	Amount
1992	Government Budget	4,416,856,397	1	Labor Cost	720,607,959
			2	Medical Supplies	2,264,275,644
			3	Food	-
			4	Transport	1,088,851,215
			5	Utilities	-
			6	Maintenance	324,762,497
			7	Other	-
	Total	4,416,856,397	No.	Total	4,398,497,315
1991	Government Budget	2,893,933,431	1	Labor Cost	557,978,408
			2	Medical Supplies	1,357,574,771
			3	Food	-
			4	Transport	564,895,849
			5	Utilities	-
			6	Maintenance	146,223,356
			7	Other	-
	Total	2,893,933,431	No.	Total	2,626,672,384
1990	Government Budget	1,254,065,236	1	Labor Cost	261,562,964
			2	Medical Supplies	592,128,774
			3	Food	-
			4	Transport	240,842,600
			5	Utilities	-
			6	Maintenance	95,682,830
			7	Other	-
	Total	1,254,065,236		Total	1,190,217,168

Source : National Institute of Tuberculosis and Respiratory Disease

(3) Main Disease

There were 3,100 inpatients dividing into 1,441 of pulmonary, 1,172 of respiratory disease, and 487 of others in 1992. 322 inpatients of the respiratory disease are diagnosed lung cancer and treated with carcinostatic substance. 313 serious diseases were performed operations in 1992.

The institute that gives bronchoscope retrains doctors in the city and receives patients from other institutes for bronchoscope. The number of bronchoscope a year is about 600. Table 2-44 shows the change of the number of outpatients in 5 years.

Table 2-44 Total Number of Outpatients in Five Years

	1992	1991	1990	1989	1988
Lung Disease & Pulm. TB	1,928	1,698	1,628	1,621	1,391
Respiratory Diseases (excld. TB)	1,172	1,143	1,053	1,155	1,326

Source : National Institute of Tuberculosis and Respiratory Disease

(4) Buildings and Facility

The institute is used to be a religious house and is not functional to use as a health institute. Since the pipes of the washing place in operation rooms is rusted through and the water tank is superannuated, the washer sterilizer must be installed.

(5) Equipment

This is a only institute that has bronchoscopes. As the institute holds a room for them, it regards the bronchoscope as important. Since many patients visit here to be diagnosed and treated, the frequency of use on bronchoscopes is high and its accessories becomes superannuated so fast. The prompt replacement is needed. The institute has a high technique for bronchoscope and retrains doctors of other institutes.

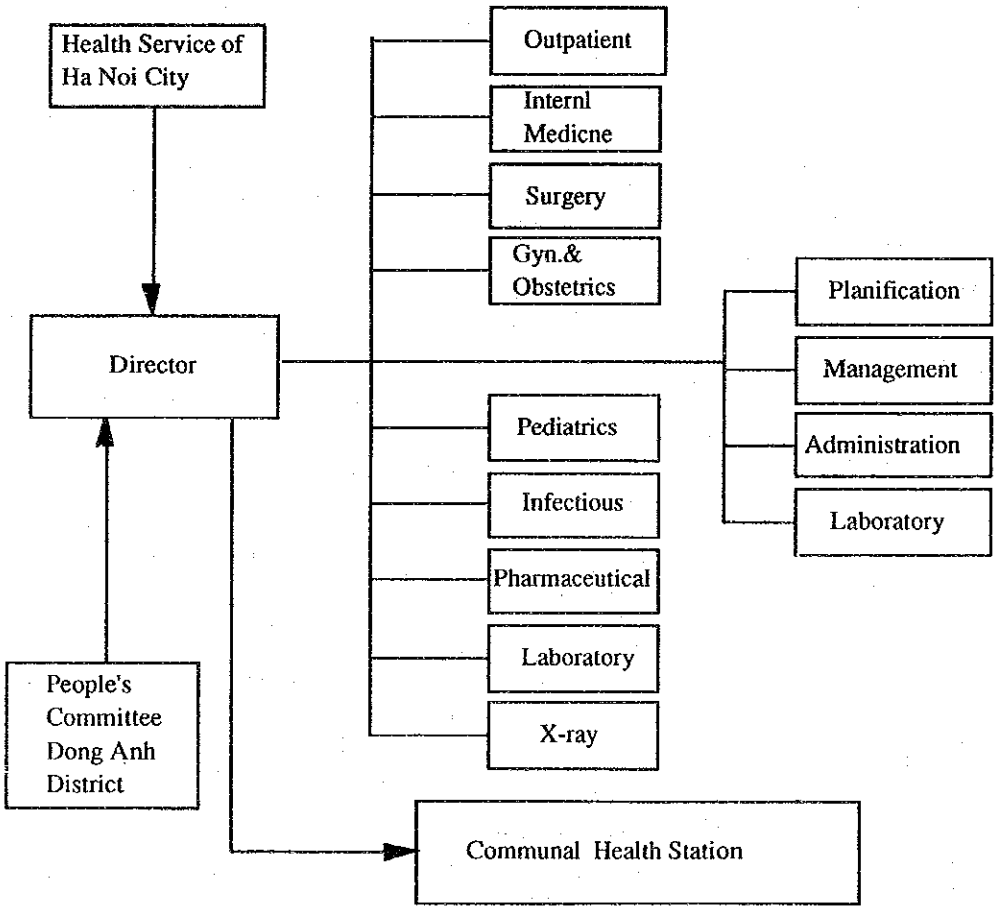
There are 3 sterilizers in Operation Section, 5 in the Department of Pharmaceutics, 2 in the Bacteriological Section but they are questionable on their safety. The blood gas analyzer is installed in Laboratory but is left for two years because it is impossible to obtain parts. There are 5 superannuated X-ray machines in Department of Radiography. During our study, Italian NGO gave a X-ray machine to the department. Although 1,000 ~ 1,500 patients are taken examinations a month, 4 of 6 radiographs are out of order and others also frequently have troubles.

2-7-9 Dong Anh Hospital

(1) Present State

The institute is located on the center of Dong Anh Prefecture, and its exact status is the district health center. The city of Ha Noi has 4 wards and equivalent to 23 wards in Tokyo. The Dong Anh Prefecture is equivalent to the outer area of Tokyo. Although it is 40 ~ 50 km from the center of Ha Noi and not far so much, it takes over one hour by car because of poor road condition. The prefecture consists of one city and 23 communes and has the population of 2.3 million. 80 % of the population engage in farming. Because of recently established factories, the rate of employees of commerce and industry is increasing. There are 2 polyclinics as the medical institute and a health center in the each village.

Fig. 2-19 Organization Chart of Dong Anh Hospital



The institute was established in 1973 and has been for 20 years. There are Department of Internal Medicine, Department of Surgery, Department of Pediatrics, Department of Gynecology and Obstetrics, Department of Infectious Diseases, ICU, and CCU. Figure 2-19 shows the organization chart and Table 2-45 shows the number of staff members.

Generally, the both of buildings and facility are superannuated. Some hospital wards for outpatient, pediatrics, gynecology and obstetrics, and operation room are placed in the site of 22,000 square meter. Department of Pharmaceutics is located in the place that is 200 meter far from the site. The institute performs operations, and medical equipment of the institute is superannuated and deficient.

Table 2-45 Personnel

Department	Doctor	Nurse	Midwife	Other	Paramedical Staff	Non Medical Staff	
Internal Medicine	3	6	-	1	-	Administration	-
Surgery	3	12	-	3	-	Office Worker	20
Pediatrics	4	6	-	2	-	Maintenance	-
Gyne. & Obstetrics	3	6	9	3	-	Cooking Staff	8
Infectious Disease	5	7	-	1	-	Driver	1
ENT	1	-	-	-	-	Helper	-
Ophthalmology	1	-	-	-	-	Other	18
Dermatology	-	-	-	-	-	Total	47
Traditional Medicine	-	-	-	-	-		
Dental	1	-	-	-	3		
ICU · CCU	1	7	-	1	-		
Other	22	35	-	5	11		
Laboratory	-	-	-	-	9		
X-ray	-	-	-	-	3		
Physical Therapy	-	-	-	-	-		
Pharmacy	-	-	-	-	13		
Total	44	79	9	16	39		
					Total	196	

Source : Dong Anh Hospital

The Parenteral fluid is produced by each institute in Viet Nam. The departments use water distills and water purification systems in other institutes but the institute has no such equipment so it needs them urgently. With introducing the medical insurance system in Viet Nam, this is the first institute that introduces the medical insurance system as a model case. A hundred percent of salary men attended into the system. Since the standard income of farmer is low, 20% of farmers attended into it.

(2) Finance

The finance in the institute tends to increase every year, a budget of 1992 is the two times as big as it of 1991. However the rate of each item is little changed. The 1992 budget that is equivalent of 10 million yen is insufficient to replace or purchase consumables.

The revenue includes a budget from the Ministry of Health and payment from the insurance system, but the details of the revenue is not reported. The distributed money of medical insurance system is decided in advance on the bases of clinical condition, the number of patient, and the scale of the hospital. The details of utilities and maintenance in the expenditure are not reported but included into others. However, the expense for maintenance is 31%, which is the high rate following 40% of labor costs in 1992. Table 2-46 shows the revenue and expenditure.

Table 2-46 Revenue · Expenditure (1990-1992) (Unit : Dong)

	Revenue		Expenditure		
	Item	Amount		Item	Amount
1992	Government Budget	1,004,289,800	1	Labor Cost	403,489,100
			2	Medical Supplies	87,793,100
			3	Food	-
			4	Transport	-
			5	Utilities	312,181,000
			6	Maintenance	-
			7	Other	200,826,600
	Total	1,004,289,800		Total	1,004,289,800
1991	Government Budget	479,202,600	1	Labor Cost	243,890,300
			2	Medical Supplies	80,890,000
			3	Transport	-
			4	Utilities	-
			5	Maintenance	-
			6	Other	154,442,300
	Total	479,202,600		Total	479,222,600
1990	Government Budget	349,592,200	1	Labor Cost	189,929,000
			2	Medical Supplies	63,528,000
			3	Transport	8,933,000
			4	Utilities	-
			5	Maintenance	-
			6	Other	87,202,200
	Total	349,592,200		Total	349,592,200

Source : Dong Anh Hospital

(3) Main Disease

Since this is a only institute that is able to perform operation and hospitalize, the number of patients is large. The people in Viet Nam tends to give a birth in a hospital. The increase population growth rate is still high although the increase of birth rate stops. Table 2-47 shows the change of the number of delivery and neonate in 5 years.

The number of outpatient has been decreased from 126,000 in 1988 to 66,000 in 1992. The number of tuberculosis in 1998 decreases one seventh as many as it in 1992, the skin disease decreases one eighth, and infectious disease between children dicers one fifth. A total number of patients also decreases. However, the number of pneumonia, upper respiratory inflammation, diarrhea and traffic accident remarkably increases. The increase of factories that were recently established in the prefecture and the increase of the volume of traffic caused traffic accident . The strength of medical system is necessary. Table 2-48 shows the number of outpatients by each disease and Table 2-49 shows the number of inpatients by each disease.

Table 2-47 Recent 5 Years Statistics of Delivery and New Birth in the Hospital

	1992	1991	1990	1989	1988
Delivery	1,087	1,135	1,175	1,075	1,029
Neonate	1,070	1,104	1,127	1,029	985

Source : Dong Anh Hospital

Table 2-48 Total Number of Outpatients

	Name of Disease	1992	1991	1990	1989
1	Pneumonia	3,841	4,902	6,930	10,210
2	Upper-Respiratory Infection(ARI)	1,420	2,110	2,210	4,040
3	Bacillary & Amoebic Dysentery	520	710	1,012	1,068
4	Diarrhoea and Intestinal Infection	1,480	3,102	3,711	5,604
5	Heart Diseases	320	242	405	182
6	Gastric and Duodenum Diseases	720	982	1,542	1,098
7	Parasitic Disease	620	715	1,019	880
8	Muscular, Osseous, Arthritis Nervous Diseases	1,110	802	862	570
9	Kidney and Urinary Diseases	632	702	887	936
10	Accident and Toxicosis	297	510	921	802
Total of outpatients(including other diseases)		66,114	25,249	56,913	78,165

Source : Dong Anh Hospital

The operations are for appendicitis, Cesarean, and gastrectomy in order. There are 270 ~ 420 operations a year. If it is too difficult to perform the operations or treat in the institute, the patients are sent to other institutes.

Table 2-49 Total Number of Inpatients

	Name of Disease	1992	1991	1990	1989
1	Bacillary & Amoebic Dysentery	65	103	82	118
2	Diarrhoea and Intestinal Infection	478	694	720	667
3	Parasitic Disease	153	215	359	401
4	Rheumatism Acute Arthritis	70	110	80	98
5	Heart Diseases	76	68	111	99
6	Upper-Respiratory Infection(ARI)	124	97	194	204
7	Pneumonia	975	1,137	1,154	1,710
8	Gastric and Duodenum Diseases	113	137	132	168
9	Glomerulonephritis Syndrome	84	151	158	94
10	Accidents	130	54	84	64
Total of outpatients(including other diseases)		6,857	9,488	10,470	11,065

Source : Dong Anh Hospital

Table 2-50 shows the number and the names of operations.

Table 2-50 Total number of Surgical Operation

No.	Name of Operation	1992	1991	1990	1989
1	Acute Appendicitis	167	101	129	102
2	Complication due to Appendicitis	66	52	56	49
3	Stomach Break	21	5	16	14
4	Stomach Operation	34	25	38	15
5	Caesarean Section	52	57	39	52
6	Extropic Pregnancy Operation	23	13	16	10
7	Intestinal Block	12	10	5	11
8	Ovarian Cyst	15	6	13	5
9	Uterine Fibromyoma	18	3	3	5
10	Vasectomy and Sterilization	12	7	3	12

Source : Dong Anh Hospital

The radiography and the fluoroscopy are done by the institute, but these equipments are superannuated and frequently out of order. The number of examinations decreases. The clinical examinations are mostly for the blood type, red corpuscle, white corpuscle, and cross match for blood transfusion. Party, the biochemical examination is done. The institute gives examinations mostly by microscope. The equipment for biochemical examinations is limited and the variety of examinations is limited too.

Since the institute doesn't have diagnosis equipment such as electrocardiograph, ultra sound scanner, and endoscope, there are no other examinations except radiography and blood test. Table 2-51 shows the number of the clinical examination and the radiograph.

Table 2-51 Present Activity of Laboratory and X-ray Examination

	1992	1991	1990	1989
Hematology	32,366	34,873	25,354	40,403
Biochemistry	13,608	14,553	19,128	15,871
Plain roentgenograhy	1,940	3,430	3,220	4,172
Fluoroentgenograhy	850	565	1,260	626

Source : Dong Anh Hospital

(4) Buildings and facility

The institute consists of buildings established in 1974 and 1979 for inpatients and outpatients in the side of 22,000 square meter. Like simply constructed other institutes, pillars are made of reinforcing bars, and walls pasted concrete are made of bricks. Although floors and ceilings are made of reinforcing bars, their strength is low. They cannot support the heavy equipment.

The electric power cut happens frequently. Since the transmission line wired from outside is poor, it is in a possibility to burn out when the consumption of power becomes big. The institute doesn't have emergency power generator, it has a trouble with medical service in the case of emergency. In this project, the power generator should be considered as well as the automatic voltage regulators attached to the electric equipment.

The doors and windows of the radiography room were not enough to prevent from leaking X-ray. However, they are currently under improvement and will be completed soon.

Since there is no public water, the institute usually uses ground water. However, ground water contains many impurities such as middle and heavy metals so the institute uses rain water saved in the water tank for producing parenteral fluid. Also boiling rain water is used as sterilized water for operation, washing equipment, and diluting. It has many problems such as infection and precision of test results. Under such circumstances, the process in plant should be considered after piping city water.

(5) Equipment

There are some equipments for Department of Otolaryngology, Department of Ophthalmology, and Department of Dental Surgery in Outpatient Section. The comparatively new grinder in Department of Dental Surgery is the foot operating type, and others have been used for over 15 years. The radiographic equipment has been used for over 20 years, is superannuated, and frequently has troubles. It should be replaced. There are colorimeter, centrifuges, spectrophotometers, and microscopes, but most of them weren't replaced after setting up. They are mostly superannuated. The basic consumables such as slide glasses are insufficient. Since it is difficult to obtain them, they are used many times and the examinations are done with flawed glasses.

The hospital ward does not have patient monitors or the equipment for treatment but a small boiling sterilizer. Department of Gynecology and Obstetrics has no diagnosis for a fetus or incubator but delivery tables made in Viet Nam. For the reason, the institute cannot diagnose or treat premature babies. There are two operation tables granted from the United Kingdom in 1976, three mobile operation lamps damaged some lights, a drying oven used for 15 years, a suction unit made in the former Soviet Union, and a tank made of a thin plate for washing hands (1000L) in operation rooms.

Pharmaceutical Section is divided into Department of Parenteral Fluid Production and Department of Supply for Drugs and Injection. Department of Parenteral Fluid Production has no water distill or water purification system but uses boiling rain water for parenteral fluid. The balance is only able to measure milligrams. The water distill is not included in the list of requested equipment, but the study team proposed it to be considered.

(6) Maintenance

The institute employs one engineer who maintains and repairs equipment about simple troubles. Since tools for maintenance are very poor, they should be considered to be prepared. However, due to a insufficient budget and a poor route for supplying parts of replacement, the simple equipment must be installed.

CHAPTER 3 OUTLINE OF THE PROJECT

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3-1 Objectives

This project is designed to renew superannuated medical equipment for diagnosis and treatment, supply the shortage of medical equipment, and furnish audiovisual equipment for training of medical personnel at the nine medical institutions. Objectives of this project are shown below.

1) To improve the medical services for people who lives in the northen part of Viet Nam including 2 million residents of Ha Noi city.

2) To strengthen the top referral hospitals in order to upgrade medical technique in Viet Nam.

3) To strengthen medical institutions in order to improve training for medical personnel.

4) To improve the research institutions in order to strengthen infectious disease control plans.

5) To improve medical services for people in the area with few medical facilities.

3-2 Study and Examination of the Request

3-2-1 Examination of Propriety and Necessity of the Project

The top referral medical institutions lead other institutions in Vietnamese health care system. These medical institutions are in trouble with superannuation and shortage of equipment to give medical treatment and examination, although they had a certain level of diagnostic ability about medical technique. The nine medical institutions of this project have used their medical equipment for more than 15 years without renewal, and these equipments cannot be used or repaired, because manufacturers no longer produce spare parts.

Since social structures of the former Soviet Union and Eastern European countries collapsed, it is impossible to supply equipment or renew superannuated equipment in

nationwide health care services without other assistance from international aid organizations and donor countries.
Like other developing countries, malaria, tuberculosis, and salmonella are widely spread in Viet Nam, and at the same time, the rapid growth of economic activity increases traffic accident in this country. These situations result in increase of patients at each institution, and overall improvement of health care services is urgent and necessary. However, it is difficult for the Ministry of Health of Viet Nam to improve this situation.

Medical activities and training for medical personnel will be improved by supplying medical equipment and audiovisual equipment through this project. This project will benefit people in Ha Noi city and the northern part of Viet Nam. Therefore, it is highly appropriate and necessary to implement this project.

3-2-2 Relations with other Similar Projects

It was difficult for the Ministry of Health to allocate its budget for improvement of medical equipment. Most foreign assistant programs were for PHC activities in the health sector. Under these circumstances, the Ministry of Health requested improvement of medical equipment to international aid organizations and donor countries. However, a most of cases were to supply secondhand equipment to several institutions. These assistance for the equipment result in some troubles for management.

Sweden has been continuously supporting Uong Bi General Hospitals and Institute for the Protection of Children's Hospital. The support contributes to improve medical services and upgrade medical technique in Viet Nam. However, Sweden does not have other projects to improve medical equipment. In 1992, Japan granted basic medical equipment for X-ray department and operation department in Hai Ba Trung Hospital. The infectious disease department and laboratory need to be improved, although they were out of that project .

It is an outstanding project to improve medical equipment for the nine medical institutions, in the northern part of Viet Nam. Since supplying medical equipment to these institutions will give benefit to the people in Viet Nam, and the Viet Nam side great expects for this project.

3-2-3 Examination of Project Components

The objectives of this project is to improve medical technique in the northern part of Viet Nam by installing the medical equipment to the nine medical institutions and to improve the medical services for those who live in the northern part of Viet Nam including 2 million people in Ha Noi city. In order to achieve this objective, components of the project are divided into three categories and examined as follow. Categories are basic medical equipment, advanced medical equipment, and equipments for education, examination and administrative use.

(1) Basic Medical Equipment

Medical equipment and instrument being used at objective institutions are more than 15~20 years and already exceed its durable years. These old equipment interferes medical activities conducted in the northern part of Viet Nam. Therefore, it is urgent to replace them.

Especially, all main departments at each institutions such as operating department, central sterilized supply department, and laboratory are short of basic medical equipment which is essential to conduct basic medical activities. Therefore, the project shall cover all main departments at each institutions .

(2) Advanced Medical Equipment

Since this project is designed to supply medical equipment for maintaining basic medical service system, advanced medical equipment which demands complicated maintenance technique and expensive maintenance cost is excluded. However, angiography system and CT scanner are requested in the list of Bach Mai Hospital since it is a top referral hospital in the northern part of Viet Nam.

At present, Bach Mai Hospital has one angiography system which is old and partially broken. Diagnosis by this system is limited, although angiography system is necessary for the final diagnosis. Since it demands complicated maintenance technique and expensive maintenance cost, it was excluded from the subject. Considering the necessity of the diagnosis, the study team suggested ultrasound scanner with color doppler which has multiple function and is easy to be maintained.

In recent years, CT scanner is commonly used and no longer considered as an advanced medical equipment. CT scanner is essential for a top referral hospital like

Bach Mai Hospital. Mechanism of CT scanner is simpler than that of ordinary tomograph and easier to maintain. CT scanner will be installed at Bach Mai Hospital. In this project, engineers will receive training in Japan to strength their technique of operation and maintenance.

(3) Equipment for Education, Examination and Administrative Use

Ha Noi Medical College, from which graduated three fifth of total doctors in Viet Nam, requires equipment for education and examination. Students who learn mostly about basic medical sciences at the college take clinical training at Bach Mai Hospital or Hai Ba Trung Hospital because the college has no affiliated hospital. Therefore, this project only includes equipment for education and basic examination and excludes equipment for clinical training and research.

Photocopy machines and personal computers will be furnished as equipment for administrative use. Photocopy machines will be furnished in all institutions. Personal computer will be provided at National Institute of Malariology, Parasitology and Entomology and Gynecology and Obstetric Hospital in Ha Noi. Maintenance for these machines is relatively easy because there are many local agencies in the city.

3-2-4 Operational Plan of the Project

International Cooperation Department under the Ministry of Health is responsible for the administration and implementation of the project. Ha Noi People's Committee closely cooperate with the Ministry of Health for implementation of this project.

(1) Personnel Plan

These objective institutions already have sufficient number of medical staff who are engaged in medical activities. New staff will not be required since this project is limited in replacing superannuated equipment and supplying equipment which are short in number.

CT scanner for Bach Mai Hospital requires three staffs, a radiologist, an operator, and an assistant. It can be managed through technical training for operation and maintenance to personnel currently serving at the Bach Mai Hospital. The project has a plan to send a doctor and a X-ray engineer for training in Japan. Training also can be done at Viet-Xo Hospital and 108 Hospital because they have CT scanners in these hospitals.

Regarding personnel for central radio communication equipment at Emergency Transfer Center in Ha Noi, current telephone operators will manage radio system through training. Since ambulances are for renewal, new drivers and doctors are not necessary.

This project does not require any additional personnel for other institutions. However, technical training is necessary for operation and maintenance.

(2) Budgetary Plan

Table 2-8 shows the annual budget. Maintenance cost of objective institutions of this project is 10.8 billion dong (120 million yen) in 1992. Operation cost of each institution is shown in Table 3-1. After completion of this project, the cost is estimated about 4.9 billion dong (54 million yen) as shown in Table 3-1. However, actual increase is estimated 980 million dong (10.8 million yen), about 9% of the maintenance cost in 1992. Considering rapidly increase of budget in recent years it can be paid by the Viet Nam side .

Table 3-1 Operation Budget of each Institution

		1992			1991		
		Revenue	Expenditure	Maintenance Cost	Revenue	Expenditure	Maintenance Cost
1	Hai Ba Trung Hospital	42,200,000,000	42,000,000,000	1,900,000,000	1,866,000,000	2,074,027,000	1,073,304,000
2	Ha Noi Medical College	5,436,800,000	5,436,799,944	-	2,680,200,000	2,680,200,000	-
3	National Institute of Malariology, Parasitology and Entomology	2,907,551,733	2,766,934,034	515,991,800	1,265,460,806	740,657,057	41,720,245
4	National Institute of Opthalmology	3,253,340,498	2,918,732,538	872,155,324	2,941,368,680	1,863,373,928	898,835,028
5	Gynecology and Obstetric Hospital in Ha Noi	3,371,136,563	2,604,176,665	534,170,363	842,409,000	900,477,746	161,686,282
6	Bach Mai Hospital	17,224,425,020	15,811,707,627	5,235,443,965	8,646,610,779	7,908,068,534	5,393,149,438
7	Emergency Transfer Center in Ha Noi	519,500,000	436,115,900	98,356,982	-	-	-
8	National Institute of Tuberculosis and Respiratory Disease	4,416,856,397	4,398,497,315	1,413,613,712	2,893,933,431	2,626,672,384	711,119,20[illegible]
9	Dong Anh Hospital	1,004,289,800	1,004,289,800	312,181,000	479,202,600	479,202,600	154,442,300
	Total (Dong)	80,333,900,011	77,377,253,823	10,881,913,146	21,615,185,296	19,272,679,249	8,434,256,498
	Total (Yen)	883,672,900	851,149,792	119,701,045	237,767,038	211,999,472	92,776,821

		1990		
		Revenue	Expenditure	Maintenance Cost
1	Hai Ba Trung Hospital	1,261,624,000	1,049,331,000	362,509,000
2	Ha Noi Medical College	1,500,700,000	1,500,700,000	-
3	National Institute of Malariology, Parasitology and Entomology	1,927,465,638	1,202,878,000	204,500,000
4	National Institute of Opthalmology	-	-	-
5	Gynecology and Obstetric Hospital in Ha Noi	961,320,943	895,955,076	249,903,802
6	Bach Mai Hospital	6,239,421,145	3,110,828,379	1,310,983,368
7	Emergency Transfer Center in Ha Noi	-	-	-
8	National Institute of Tuberculosis and Respiratory Disease	1,254,065,236	1,290,217,168	336,525,430
9	Dong Anh Hospital	349,592,200	349,592,200	96,135,200
	Total (Dong)	13,494,189,162	9,399,501,823	2,560,556,800
	Total (Yen)	148,436,081	103,394,520	28,166,125

	Dong	Yen
Total Revenue	115,443,274,469	1,269,876,019
Total Expenditure	106,049,434,895	1,166,543,784
Total Maintenance Cost	21,876,726,444	240,643,991

Note) Un known figure is not included in the calculation.

3-2-5 Examination of the Requested Equipment

The object of this project is to improve insufficient function of referral hospitals providing medical services to patients coming from northern part of Viet Nam includes Ha Noi city and its peripheral area, research institutions being at the leading position of all health institutions in Viet Nam, and a training institution with the shortage of basic medical equipment.

As described in 2-4-2 Contents of the Request, there was not only basic medical equipment but also equipment which requires advanced technology for operation and expensive maintenance cost e.g. angiography system, blood gas analyzer, cobalt-60 etc. Since the request includes several equipment which does not meet the current condition, we examined requested equipment on the basis of following elements;

(1) To select basic equipment with necessity and appropriateness for treatment and diagnosis

(2) To select equipment which meets the technical level of medical staff

(3) To select equipment with easy maintenance

(4) To select equipment with inexpensive maintenance cost

(5) To select equipment which can be installed without any construction work

(6) To select equipment which meet the function and level of institutions

However, a few exceptions are made in conjunction with the function of each institutions, technical level, possible access to local agencies, and special support from the Ministry of Health. For example, regardless of constantly requiring consumables such as reagents and recording papers, Elisa Reader will be installed in both Hai Ba Trung Hospital and National Institute of Malariology, Parasitology and Entomology with special support from the Ministry of Health and the Ha Noi People's Committee.

Some equipment that is not included on the request will be added considering their necessity and high appropriateness. For example, glass injectors and glassware will be distributed to all facilities except Emergency Transfer Center in Ha Noi.

Although all institutions have maintenance department, instruments for repair and check-up is meager. Basic kits and measuring instruments will be supplied through this project. They are chosen based on the condition of maintenance ability and the allocation of technical staff.

Considering its high necessity, photocopy machine will be installed in all institutions. At present, they use copy shop outside of the institution with charge. For the maintenance, there exist number of agencies in the city.

(1) Hai Ba Trung Hospital

Since the Japan's Grant Aid assistance implemented in 1992 supplied basic medical equipment to Hai Ba Trung Hospital, this project emphasizes on equipment for infectious disease department and laboratory that need to be more strengthened. Cobalt 60, replacement of only two existing treatment devices of cancer in Viet Nam, shall be deleted because maintenance requires advanced technology and expensive cost.

Elisa Reader that is used to examine the HIV of AIDS is included despite of its necessity of constant supply of consumables because the Ha Noi People's Committee guaranteed assistance. All other requested equipment which are mostly basic equipment for infectious disease department and laboratory are considered reasonable.

(2) Ha Noi Medical College

Most of the audiovisual equipment on the request is indispensable and considered proper for experiment, practical training and lecture. As equipment for experiment and practical training are basic equipment like centrifuge, microscope, and water bath, considered to be with easy maintenance. Audiovisual equipment includes mainly video projector, screen, OHP and public address system. Some advanced equipment for research are eliminated from the list.

Medical equipment for clinical training are deleted because Ha Noi Medical College does not have affiliated hospitals and all the clinical training is conducted at Bach Mai Hospital as well as Hai Ba Trung Hospital. Various anatomical models of the human body for lecture are added although it was not on the request.

(3) National Institute of Malariology, Parasitology and Entomology

Although an insectary with the strong demand is considered necessary and appropriate for the National Institute of Malariology, Parasitology and Entomology, it is eliminated from the list, because it needs to be managed with high accuracy of temperature and humidity. Equipment itself cannot satisfy the required condition. For the future, an adequate facility should be prepared before installing equipment.

Other requested equipment is considered necessary and appropriate since only superannuated existing equipment for research and training is renewed. Equipment for training are short in number, and it is necessary to install appropriate number of equipment which will not impede medical activities. The poor condition of audiovisual equipment should be improved.

This institute is in the leading position to control malaria. Since field survey is always conducted, personal computers are considered necessary for drawing up research data. National Institute of Malariology, Parasitology and Entomology already use several personal computers that needs to be upgraded. Maintenance system is assured by a number of local agencies for personal computers.

(4) National Institute of Ophthalmology

Most of requested equipments are considered necessary and appropriate for diagnosis and treatment for ophthalmology. Especially, the poor condition of instruments for ophthalmological operation, which are indispensable for this hospital, should be completed. The National Institute of Ophthalmology is equipped sophisticated equipment which meets their high technical level. However, some of which, visual tester and operational microscope, are remarkably old and should be replaced immediately. Since this institution produces parenteral fluid, water distill is included.

(5) Gynecology and Obstetric Hospital in Ha Noi

Most of requested equipments are considered necessary and appropriate since they are replacing existing basic equipment related to Operating Department, Consulting / Delivery Department, Laboratory Department, Neonatal Department, and Infectious disease Department. Particularly, those for operating department which is poor in condition should be entirely improved because currently it cannot fulfill its expected role as the most important department in the hospital.

Although the importance of installing lift for patients and for goods is recognized, they are deleted from the list because the construction in large scale is necessary.

Out of requested vehicles, only ambulance is included in the case of transferring patients to the referral hospital and calling out for emergency case. Light truck, four seat car, and twelve seat car are deleted since its purpose is unclear.

(6) Bach Mai Hospital

As requested equipment related to ICU, biochemistry department, X-ray department, and blood transfusion center includes sophisticated equipment which demands advanced technical knowledge and high maintenance cost, some of them should be deleted. Inadequate number of ventilator should be adjusted to correspond the current situation. Since Bach Mai Hospital receives patients with the most severe condition, some other advanced equipment should be substituted and not only excluded. For example, ultrasound scanner with color doppler will be supplied instead of angiography system for the X-ray department.

CT scanner has been used in Viet-Xo Hospital and 108 Hospital. Since these hospitals only serve senior bureaucrats and military personnel, the general public could hardly enjoy the benefits. CT scanner is considered necessary and appropriate for Bach Mai Hospital, the top referral hospital where ordinary patients can receive treatment. The maintenance of CT scanner does not come into question since a X-ray specialist is permanently stationed at this hospital, and there are many local agencies of manufactures. Therefore, this device is included in this project. This project prepares the training for engineer at a manufacturer in Japan.

Fluoroscopic apparatus and other devices related to X-ray are superannuated and should be replaced immediately. Bach Mai Hospital can hardly meet the needs of the growing number of patients since the hospital still develops films manually. To improve the situation, the project includes simple type of automatic film developer and dark-room set.

Blood gas analyzer requested from biochemistry department requires advanced technical ability and expensive consumables. It is deleted since blood gas analyzer at ICU is not functioning. Automatic film developer is also excluded by the same reason.

Maintenance department at Bach Mai Hospital has relatively sufficient number of staff with high technical ability, however, tools for maintenance and measuring instruments

are in poor condition. Upon the request from other health institutions, Bach Mai Hospital sends maintenance staff to repair equipment. Therefore, all other facilities will benefit through reinforcing this department.

(7) Emergency Transfer Center In Ha Noi

Defibrillator, anesthesia apparatus, ultrasound scanner, ventilator are deleted since they are considered unnecessary for Emergency Transfer Center in Ha Noi that does not provide diagnosis and treatment. Diagnostic instrument set for first-aid treatment and oxygen resuscitator set are included since doctors and nurses will be on the ambulances when an ambulance turns out.

Remarkably superannuated ambulance needs to be replaced. Concerning the inefficiency of current system, radio communication is introduced to improve efficiency. Each ambulance will be equipped with radio system and central radio communication system will be installed in Emergency Transfer Center in Ha Noi. The frequency permission can be easily obtained.

(8) National Institute of Tuberculosis and Respiratory Disease

Cobalt 60 is not included in this project since National Institute of Tuberculosis and Respiratory Disease does not have enough space for placing cobalt 60. It requires reconstruction of existing building in large scale or construction of new building. . Although blood gas analyzer is recognized high in necessity, it shall be deleted due to the difficulty in maintenance. It should be also mentioned that existing blood gas analyzer is not functioning.

Existing equipment for Operation Department and Central Sterilized Supply Department is beyond the usage limit. Necessity and appropriateness of replacement is high. Operating ceiling lamp is not appropriate because of the deterioration of building, it should be replaced by a standing type. Scrub station shall be added for improving sanitation.

National Institute of Tuberculosis and Respiratory Disease is the only institution which has endoscope. Existing equipment is superannuated and needs to be replaced promptly. Judging from their technical ability for operating endoscope, the request is considered adequate.

Concerning maintenance, the request includes some advanced measuring equipment. Basic tools for maintenance and measuring instrument are considered necessary and adequate, while voltage stabilizer (1.5 KVA), transistor and semiconductor tester, circuits evaluator are eliminated because of low frequency of use.

(9) Dong Anh Hospital

Cobalt 60 is deleted since it is considered unnecessary and inadequate. Existing medical equipment is old and short in number as a whole, these equipment should be replaced or increased in number. However, there are many basic equipment which is not listed on the request. The basic instruments for operation and diagnosis are considered necessary to be added.

X-ray apparatus is not appropriate for Dong Anh Hospital locating in the area with low-income people who are unable to pay the film cost. Also, Dong Anh Hospital itself cannot obtain film regularly. In the place of X-ray apparatus, the hospital has been using old-type fluoroscopic apparatus. Since it is frequently broken down, replacement is considered appropriate and necessary.

Thus, requested equipment has high necessity and appropriateness. Since facility for electricity and water is insufficient, power generator for emergency is scheduled to be supplied. Ha Noi People's committee has promised to support the water pipe. This project will provide portable water purifying system for equipment that demands water through scrub station in the operation theater.

3-2-6 Examination of the Necessity of Technical Cooperation

(1) Since most of the equipments supplied by this project are the equipment currently used in Viet Nam, technical cooperation is considered unnecessary. Instead, equipment for maintenance will be installed in each institutions.

(2) Despite having experience of using three CT scanners in Viet Nam, engineers should be trained in Japan in order to use this expensive equipment more effectively. The study team urged the Vietnamese side to select appropriate engineer immediately and to make a request to the government of Japan following the formal procedure.

(3) Bach Mai Hospital may need technical cooperation in conducting sophisticated medical activities using ultrasound scanner with color doppler and ventilator.

(4) Since it was impossible to study actual diagnosis activities in a short period, the basic design study team could not evaluate ability of medical personnel at each institution and did not come to decide in which field technical cooperation is effective. Because medical books are short in number and poor in variety, technical cooperation will be imperative in clinics and research.

(5) Hearing at the project sites reports frank and concrete expectations;

1) Bach Mai Hospital: technical and clinical training of doctor in Japan after the completion of this project, technical training of engineer in Japan after the completion of this project

2) National Institute of Malariology, Parasitology and Entomology: interchange with the Japanese tropical medicine research institution

3) Ha Noi Medical College: training of the Japanese language at the college to learn Japanese medicine

4) Gynecology and Obstetric Hospital in Ha Noi: hospital maintenance, medical treatment for premature baby, perinatal care

Each institution tends to prefer receiving training in Japan rather than dispatching experts from Japan.

In conclusion, technical cooperation is necessary for only CT scanner through training of engineer rather than doctor.

There is a possibility of technical cooperation in the future for how to diagnose by using supplied equipment effectively. For this point, further precise study will be necessary.

3-2-7 Basic Policy of Japan's Grant Aid Assistance

As a result of the above-mentioned examination of the request, the possibility of this project has been ascertained. It has been judged appropriate to implement the project by grant aid assistance from the Government of Japan.

3-3 Outline of the Project

3-3-1 Executing Agency and Management System

(1) Executing Agency

The Ministry of Health is responsible for the administration and execution of the project. The Ha Noi People's Committee will closely cooperate with the Ministry of Health for the execution of the project.

(2) Management System

The Ministry of Health is on the top in the management system. Each institutions is expected to perform the respective task.

(3) Personnel Planning

This project is to improve the insufficient medical services caused by the shortage of basic medical equipment at each nine health institutions. Although some equipment will be increased in number, the replacement of equipment is a main subject of this project. Therefore, those renewed equipment can be handled by the current personnel system. Additional personnel will not be necessary after the completion of this project.

(4)Activity Plan

Medical equipment on this project is basic equipment. Since most equipment is to replace existing equipment, the current activity plan shall remain unchanged.

3-3-2 Outline of the Equipment

The outline of the equipment is shown below. This is based on the results of "3-2 Study of the Request" when this project is executed in the form of grant aid assistance from the Government of Japan.

Table 3-2 Outline of Equipment

1.Hai Ba Trung Hospital

Name of Equipment	Purpose to use
Ventilator	To force the patient to breath while long period
Ventilator portable	To force the patient to breath before or after the operation.
Patient monitor	To monitor ECG, heart rate of the patient.
Duodenofiberscope	To use for diagnosis of the patient with duodenal disease.
Sigmoidfiberscope	To use for diagnosis of the patient with sigmoid disease.
Broncho-fiber scope	To use for diagnosis of the patient with bronchial disease.
X-ray mobile unit	To transfer the equipment near to the patient and take X-ray picture.
Fiber scope washer	To wash fiber scopes automatically.
Large refrigerated centrifuge	To use for producing liquid medicine progress.

2.Ha Noi Medical College

Name of Equipment	Purpose to use
RO system	To collect pure water by Reverse Osmosis Membrane.
Double distillation unit	To collect double distilled water.
Water purification system	To collect purified water by micro filter.
Clean bench	To create clean area by hepafilter.
Educational Medical Books/AV	Books and AV software for students.
Video projector	To use for better explanation in the lecture for students.
Public address system	To use in the auditorium.
TV microscope set	To monitor the picture which is shown by microscope.
Microscope trinocular w/camera	To make lecture easier by the picture.
Fluorescent microscope w/camera	To take picture by FIA and use in the lecture for students.
Deep freezer -85Åé	To keep samples freezed.
Figure Male/Female	To make better explanation in the lecture.
Film developing,magnifying set	To develop pictures which was taken by microscope camera.

3.National Institute of Malariology, Parasitology and Entomology

Name of Equipment	Purpose to use
ELISA reader	To analyze blood in laboratory.
Ultrasound scanner portable	To detect parasite which is staying in human body.
Fluorescent microscope w/camera	To take picture by FIA and use in the lecture for students.
Phase contrast microscope w/camera	To distinguish the objective by phase contrast.
ECG 3ch	To diagnosis the patient with heart disease.
Double lecture microscope	To observe the objective for lecturer and student at once.
Centrifuge	To use in the process of blood separation.
Drying oven	To sterilize the material by electric dry air.
Stereo microscope w/camera	To utilize TV monitor which shows objective of microscope.
TV microscope set	To monitor the picture which is shown by microscope.

4.National Institute of Ophthalmology

Name of Equipment	Purpose to use
Anesthesia apparatus w/ventilator	To force the patient with hole body anesthesia to breath
Patient monitor	To monitor ECG, heart rate of the patient.
Cryosurgery	To use in the operation for cataract, glaucoma, rectal detachment.
Operation microscope	To use in the operation of eye.
Visual electrophysiology test system	To diagnosis of peripheral nerve disease, central nerve system disease.
Slit lamp w/camera	To diagnosis cloud of cornea,cataract.
Projection perimeter	To diagnosis tracoma,optic nerve disease,brain tumor.
Virectomy apparatus	To use pre-treatment before cataract operation.
Auto-refractmeter	To diagnosis the function from retina to central optic nerve.
Cataract set microsurgery	Instrument set for cataract operation.
Steam sterilizer,midium	To sterilize material by high pressure steam sterilizer.
Water distill 20 L/h	To collect distilled water to produce liquid medicine.

5.Gynecology and Obstetric Hospital in Ha Noi

Name of Equipment	Purpose to use
Infant ventilator	To force the infant to breath during operation or for recovery.
Anesthesia apparatus w/ventilator	To force the patient with hole body anesthesia to breath.
Delivery table	Table for delivery.
Fetal monitor	To monitor the fetal during delivery or to diagnosis during pregnancy.
Patient monitor	To monitor ECG, heart rate of the patient.
Steam sterilizer for liquid,large type	To sterilize liquid by high pressure steam sterilizer.
Steam sterilizer,large type	To sterilize material by high pressure steam sterilizer.
Electro surgical unit	To cut and coagulation of the patient during operation.
Scrub station	To supply sterilized water for washing hand before or after operation.
Water distill 30 L/h	To collect distilled water to produce liquid medicine.
Ultrasound scanner	To detect pregnancy earlier and to diagnosis of the condition of fetal.
Power generator	To utilize for emergency electric source.

6.Bach Mai Hospital

Name of Equipment	Purpose to use
Ventilator	To force the patient to breath while long period
Patient monitor	To monitor ECG, heart rate of the patient.
CT scanner	To take Tomography X-ray picture.
X-ray apparatus TV system	To diagnosis gastrointestinal,chest,bone disease.
X-ray machine general diagnostic	To take plain X-ray picture.
X-ray mobile unit	To transfer the equipment near to the patient and take X-ray picture.
Equipped ambulance 4WD	To transfer the patient with heart disease.
Water distill 30 L/h	To collect distilled water to produce liquid medicine.
Ultrasound scanner	To detect pregnancy earlier and to diagnosis of the condition of fetal.
Microscope trinocular w/camera	To make lecture easier by the picture.
Fluorescent microscope	To observe objective by FIA.
Deep freezer -85Åé	To keep samples freezed.
Clean bench	To create clean area by hepafilter.

7.Emergency Transfer Center in Ha Noi

Name of Equipment	Purpose to use
Equipped ambulance	To be equipped for emergency patient.
Central radio communication	To communicate with each ambulance.
Photocopy machine	To use for administrative work.
Repair instrument set for ambulance	To maintain ambulance in good condition.

8.National Institute of Tuberculosis and Respiratory Disease

Name of Equipment	Purpose to use
Major operation table	To utilize for major operation.
Anesthesia apparatus w/ventilator	To force the patient with hole body anesthesia to breath.
Patient monitor	To monitor ECG, heart rate of the patient.
Defibrillator	To recover the stopped heart by electric energy.
Broncho-fiber scope w/camera	To observe the condition of the patient with bronchial disease.
X-ray mobile unit	To transfer the equipment near to the patient and take X-ray picture.
Equipped ambulance	To be equipped for emergency patient.
Steam sterilizer for liquid,large type	To sterilize liquid by high pressure steam sterilizer.
Steam sterilizer,midium	To sterilize material by high pressure steam sterilizer.
Scrub station	To supply sterilized water for washing hand before or after operation.
Water distill 30 L/h	To collect distilled water to produce liquid medicine.

9.Dong Anh Hospital

Name of Equipment	Purpose to use
Electro surgical unit	To cut and coagulation of the patient during operation.
X-ray apparatus TV system	To diagnosis gastrointestinal,chest,bone disease.
Ultrasound scanner	To detect pregnancy earlier and to diagnosis of the condition of fetal.
Steam sterilizer,midium	To sterilize material by high pressure steam sterilizer.
Power generator	To utilize for emergency electric source.
Water distill 30 L/h	To collect distilled water to produce liquid medicine.
Equipped ambulance	To be equipped for emergency patient.
Dental unit	To use for diagnosis and treatment of dental disease.

3-3-3 Operation and Maintenance Plan

Although most of the equipment of this project are basic medical equipment with easy maintenance, it is strongly suggested to rebuild efficient and effective maintenance system in order to solve several problems in the current maintenance system.

(1) Supply System of Spare Parts and Consumables

The contract should oblige suppliers to provide necessary spare parts and consumable for maintenance with charge at least for seven years after guarantee period expires. The supplier should submit a written estimate for spare parts and consumables to the Ministry of Health. The Ministry of Health should allocate the budget for these spare parts and consumables.

(2) Training of Maintenance Staff

The suppliers shall dispatch engineers. After installation engineers shall instruct local staff on the subject such as manipulation of equipment, daily check-up and repair of broken instrument. Also operation manual and maintenance manual that is necessary for carrying out training should be presented to each facilities.

(3) Working out Maintenance Plan

Each facilities shall organize maintenance committee whose role is to plan daily check up, to understand the current condition of all equipment and to report the results to the Maintenance Department regularly. The committee helps to develop the maintenance system which enables each institutions to understand the present condition of maintenance by keeping the daily, weekly, and monthly maintenance record.

3-3-4 Operation and Maintenance Budget

The Operation and Maintenance Budget is estimated as follows.

Table 3-3 : Operation and Maintenance Budget

Item	Amount (Unit : Dong)
1. Reagent	1,312,830,000
2. Consumables	1,153,660,000
3. Spare parts	1,530,790,000
4. Utility	139,090,000
5. Other (cost for repair work)	772,720,000
Total	4,909,090,000

Total Operation and Maintenance cost is estimated around 4.9 billion dong(54 million yen). Since equipment of this project is mainly for replacement, actual increase of the budget is about 980 million dong (10.8 million yen) caused by CT scanner at Bach Mai Hospital, Ultrasound Scanner with color doppler, consumables and spare parts for copy machine that will be installed in all institutions. Although the maintenance cost of all institutions amounts to 10.8 billion dong (120 million yen) as shown in Table 3-1, taking into the consideration of rapid increase in the budget in recent years, the Ministry of Health and the Ha Noi People's Committee can manage the balance.

CHAPTER 4 BASIC DESIGN

CHAPTER 4 BASIC DESIGN

4-1 Basic Design Policy

4-1-1 Decision Policy

The purpose of this project is to improve the level of the medical service at the northern part of Viet Nam and for 2 million residents around Ha Noi City by preparing medical equipment for 9 main institutions in Ha Noi City. The basic design is to be worked out taking into consideration Vietnamese natural and social conditions as well as the present state of the implementing organization of the project to determine the effective and efficient equipment.

1) The reasonable and necessary basic equipment for clinical and treatment activities is selected as higher priority.

2) The equipment that corresponds to the technique level of medical staff is selected as higher priority.

3) The equipment that requires a simple maintenance management is selected as higher priority.

4) The equipment that doesn't require maintenance expense as much as possible is selected as higher priority.

5) The equipment that doesn't require to improve the facility for setting up selected as higher priority.

6) The equipment that fits with the function and the level of the facility is selected as higher priority.

4-1-2 Design Policy relating to natural condition

Ha Noi city is located in the subtropical zone. The temperature difference is big. Summer starts around May and the average temperature becomes over 27°C. The humidity rises in June and July and the unbearable hot continues. The typhoon often visits with heavy rain in July and August. It is comparatively comfortable to live in from the mid-October to the beginning of December. The light rain continues and the temperature sometimes falls around 10°C from the end of December. The humidity is

high and rises over 80% through the entire year. Table 4-1 shows the average temperature (°C) and the average humidity (%).

Table 4-1 : Average Temperature (°C) and humidity (%) in Viet Nam

month	1	2	3	4	5	6	7	8	9	10	11	12
Average Temperature	16.6	17.1	19.9	23.5	27.1	28.7	28.8	28.3	27.2	24.6	21.2	17.9
Average Humidity	80	84	88	87	83	83	83	85	85	85	81	81

The equipment selected in this project is bearable for this condition. Most of equipment are able to bear the temperature but should be considered some measures against the humidity. The X-ray equipment will be set up with the dehumidifier.

4-1-3 Design Policy relating to the facility and architectural condition

Generally, the superstructure of the local buildings is weak on ceiling, wall, and floor and mostly unable to install heavy equipment. The floors of most institutions in this project are in subsidence, therefore, comparatively light equipment will be installed . For example, several medium and small high pressure steam sterilizer will be installed instead of a large high pressure steam sterilizer. However, a large high pressure steam sterilizer will be installed in the Gynecology and Obstetric Hospital in Ha Noi because the new sterilizer will replace with the old one. There is no problem in this case.

Because of the weak ceiling structure, the operation light will be selected the floor type in spite of the ceiling type. For example, the existed operation light ceiling type of National Institute of Tuberculosis and Respiratory Disease will be replaced the floor type because the ceiling is 5 ~ 6 meter high and a weak structure. However, the existed operation light ceiling type of the Gynecology and Obstetric Hospital in Ha Noi will be replaced the ceiling type because there is no problem about height and structure of the ceiling.

The electric power has a problem about power cut but no problem about the facilities of the institutes. However, it is possible for some institutes that have operation rooms to need the emergency power, therefore, power generators are included in the equipment list for Gynecology and Obstetric Hospital in Ha Noi and Dong Anh Hospital.

The water supply has a problem about its insufficiency of water supply from outside of institutions but has to wait completing the infrastructure. Under such a circumstance, each institutions prepares grand water, water pond, and rain water for the insufficiency of city water but the quality of water has a problem. The result of water examination executed by the study term is shown in Table 4-2.

Table 4-2 Water Analysis

No.	Item	Sample Name				
		Hai Ba Trung	Medical College	Malariology	Gyn&Obst.	Bach Mai
1	Turbidity	3	1	9	0	1
2	Color	27	14	47	2	12
3	Smell	Abnormal	Abnormal	Abnormal	Normal	Abnormal
4	Taste	******	******	******	Normal	******
5	pH	7.3	7.1	7.4	7.8	7
6	Organic matter	7.7	19	7.4	2.1	20.5
7	Nitrite and Nitrate-Nitrogen	5.12	7.82	4.02	0.72	7.64
8	Chlorine Ion	28	20	22	24.7	25
9	General Bacteria	1.1X10^4	6	2.7X10^2	2.6X10^4	2.7X10^3
10	Coltis Germ		(+)	(+)	(-)	(+)
	Judgment	Inadequate	Inadequate	Inadequate	Inadequate	Inadequate
	Sample Place	Stored water	Well water	Tap water	Tap water	Stored water

No.	Item	Sample Name				Standard
		Emergency Center	Ophthalmology	Tuberculosis	Dong Anh	
1	Turbidity	2	0	0	1	Below 2 degree
2	Color	17	1	2	7	Below 5 degree
3	Smell	Normal	Normal	Abnormal	Abnormal	Normal Smell
4	Taste	Normal	Normal	******	******	Normal Color
5	pH	6.8	7.7	7.9	6	5.8-8.6
6	Organic matter	2.8	1.9	2.7	1.9	Below10mg/L
7	Nitrite and Nitrate-Nitrogen	1.41	1.56	2.03	0.6	Below10mg/L
8	Chlorine Ion	10.3	31.3	37.3	20.7	Below 200mg/L
9	General Bacteria	0	3.1X10	2.1X10^2	4.4X10^2	Below 100/1ml
10	Coltis Germ	(-)	(-)	(+)	(+)	Not detected
	Judgment	Inadequate	Adequate	Inadequate	Inadequate	
	Sample Place	Tap Water	Operation Room	Operation Room	Well Water	

4-1-4 Design Policy relating to locally available equipment

Viet Nam hardly produces medical equipment or apparatus but bed, stretcher, instrument cabinet. Most of medical equipments are imported from Eastern Europe and China but the quality is doubtful and no local agents to maintain the equipment are there. For the reasons, the equipment in this project is basically supplied from Japan but there are many local agents for photocopy machines and personal computers and also they ensure the maintenance and the supply route for parts of the equipment. Therefore, only these equipments are supplied in the local side. Also, consumables such as various catheter and blood bag are supplied with Vietnamese expense in the scheme of the Japan's Grant Aid cooperation project.

The radiography room of Bach Mai Hospital needs to be improve to install the equipment but it is not included in the scheme of the Japan side. The construction is judged to be completed in the Vietnamese side including expense. As a matter of fact, the Department of Radiography and CSSD were completed for their improvement by the Vietnamese side. Judging from the scale and the required technique of the improvement for Bach Mai Hospital, the Vietnamese side is able to do this.

4-1-5 Design Policy relating to the maintaining and managing ability of executing organ

Most equipment in this project is aimed to be replaced with existing equipment so the local side would have no troubles with new equipment. As for CT scanner, however, some full-time engineers will take the training session for maintaining and managing in Japan. The training session on other equipment will be given to engineers when equipment is installed.

The manufacturer that has local agenct in Ha Noi city and prepares the maintenance system has advantage of the equipment selected for this project.

4-1-6 Design Policy relating to the level and the scope of equipment

Considering overall condition of medical activities in Ha Noi City and the northern part of Viet Nam, the equipment is selected on the following policies as well as policies mentioned above.

1) Spare-parts for 2 years after the equipment is installed are the object in this project so that the expense for maintenance can be saved.

2) Apparatus relating to equipment such as automatic voltage regulator and radiation shield is the object in this project so that the equipment can be made good use of.

3) The equipment is selected after considered the technical level of maintenance and management of each institution and a budget to maintain as well as the level of medical technique in Viet Nam.

4) Instruction Manual, Repair and Maintenance Manual, and the related data for each institute are prepared. Also, the list of agents, manufacturers, and names of persons who are in charge is drawn up for replaced parts and consumables so as to help the maintenance system.

4-1-7 Policies Concerning Implementation Schedule

In this project, some equipments require to modify institutions and others don't require to modify institutions. In the case of improving, it will take from several months to one year to draw, approve, and make a budget for a plan. So, this project is divided into the first phase and the second phase. At the first phase, the equipment that doesn't require to modify a institute but the urgency is supplied. At the second phase, the equipment that require a comparatively long time for supply or to improve a institution is supplied.

At the first phase, the equipment, which is emergency needed for the operation department, the department of outpatients, the department of endoscopy, and the emergency department, is supplied to 8 institutions excluding the Emergency Transfer Center. At the second phase, the equipment is supplied to 9 all institutions. The equipment is for the department of radiography, CSSD, require to improve buildings, and take a long time for supply. And also it includes the equipment that is excluded at the first phase.

4-2 Condition of the Basic Design

After the purpose of use for the equipment, the environment of use, and the basic lines of condition are considered, this project is made so as to fit into the condition described below.

1) The equipment in this project is primarily a Japanese product. There is no consideration for products made in third countries.

2) The parts for replacement and consumables of the grant equipment must be supplied for 8 years after the equipment are delivered.

3) The manufacturers and suppliers for the main equipment must give the technical guidance (operation, maintenance) to medical staff in each institute.

4-3 Basic Plan

4-3-1 Plan for Equipment

The equipment is determined based on a policy to improve basic medical equipment for the nine institutions. It is advantage to be determined that the equipment can be maintained in Viet Nam and its spare parts and consumables are continuously procured by the Viet Nam side. The outline of the equipment in this project is described by each institute as follows.

(1) Hai Ba Trung Hospital

This institution is a general hospital and has 18 clinical departments such as the internal department, the department of surgery, the department of pediatrics, and the department of gynecology and obstetrics. There are 600 beds. The Japanese Grant Aid of 1992 supplied equipment to mainly the X-ray department and the Central Sterilized Supply Department. Since the infectious disease department and the laboratory, which were out of the previous Grant Aid Project, need to be more strengthened, this project emphasizes the equipment relating to these departments.

The main equipment in this project is followed: ventilator, patient monitor, duodenofiberscope, sigmoidfiberscope, broncho-fiber scope, endocystoscope system, laparoscope set, X-ray mobile unit, fiberscope washer.

(2) Ha Noi Medical College

Three fifth of doctors in the country were graduated from this college until 1993. There is no affiliated hospitals. The clinical practice is conducted at out institutions such as Bach Mai Hospital and Hai Ba Trung Hospital. The basic medical science is the main subject of educational activities. Considering the contents of educational activities, the project primarily provides the audiovisual equipment for lecture, the basic laboratory equipment for experiment.

(3) National Institute of Malariology, Parasitology, and Entomology.

This is the leading research center to control Malaria. The clinical department gives a simple diagnosis. There is no beds. There are the department of epidemiology, the department of clinical research and experiment, and the training department. The project primarily replaces worn-out equipment for research and training, and additionally provides insufficient equipment.

(4) National Institute of Ophthalmology

This is a leading institution for provision, treatment, and research in the ophthalmology field. The Minister of Health holds an additional post of the Director. There are the clinical department, the paramedical department, and the department of administration. The clinical department is divided into the clinical section, the section of outpatient, and the section of inpatient. This hospital has the comparatively high technique, and its buildings and facilities are good condition. The project replaces worn-out equipment and provides deficient number of equipment.

(5) Gynecology and Obstetric Hospital in Ha Noi.

The hospital gives medical service mainly on the gynecological disease and the delivery. This is a special hospital on the maternal and child health care. There are 12 departments including outpatient, infectious disease, delivery, operation, and ICU. Since the operation equipment is conspicuously worn-out and insufficient, the equipment for the department of operation is emphasized to be provided in the project.

(6) Bach Mai Hospital

This is the top referral hospital in the northern part of Viet Nam and the final acceptable hospital for patients in other institutes. Also, this is a general hospital that has 960 beds and 1,300 staffs. There are 12 departments including the department of internal medicine which is main in the hospital, the department of surgery, and the gynecology and obstetric department, the blood transfusion center, and 6 laboratories in the same site. This project provides the equipment to the X-ray section, the biochemical section, and the emergency and ICU section that are urgently needed.

(7) Emergency Transfer Center in Ha Noi

The center has no clinical department but gives first aid at a spot and transfer a patient to a closest hospital. The staff members are is in a 24-hour system and rush to the spot with a doctor and a nurse when an ambulance is requested. The project replaces worn-out ambulances, installs the radio system so as to make their activities effective, and provide tools to maintain and repair vehicles.

(8) National Institute of Tuberculosis and Respiratory Disease

The diagnosis, treatment, and research in the department of respiratory disease as well as clinical practice for students in Ha Noi Medical College are done in this institute. There are 432 beds. The clinical department is divided into the department of surgery, the internal department, and the department of pediatrics. The paramedical department has the pulmonary function test section and the endoscopy section. Although this is only the institutions that holds broncho-fiberscopes in Ha Noi city, the equipment is already worn-out and insufficient on quantity and variety. The project renews the equipment in the three departments described above and provides the patient monitors in the operation rooms.

(9) Dong Anh Hospital

This is a general hospital in the Dong Anh Province and has 9 departments including the department of surgery, the internal department, the department of pediatrics, and the department of gynecology and obstetrics. There are 200 beds. Since the indispensable equipment and apparatus are worn out and insufficient, the project provides basic equipment and apparatus.

4-3-2 Layout Plan

The list of equipment each institutions in the project is shown in Table 4-3.

1. Hai Ba Trung Hospital

Code	Equipment	Q'ty
5	Ventilator	1
6	Ventilator portable	1
9	Patient monitor	2
12	Recovery bed	4
14	Suction unit	2
21	Oxigen inhalar apparatus	2

33	Operation glove set	1
34	Carlen's sonde	20
35	Liver biopsy needle (Menghini)	10
36	Instrument set for piercing membran	30
37	Instrument set for piercing pneural membran	30
39	Duodenofiberscope	2
40	Endocystoscope system	2
41	Sigmoidfiberscope	2
43	Broncho-fiberscope	1
45	Laparoscope set	1
47	Endoscopy support	6
48	Cabinet for fiberscope	4
64	Ultrasonic neblizer	3
80	Syringe set	1
111	Automatic voltage regulator	12
115	X-ray mobile unit	1
130	Sterilizing material set	1
156	Tool set (B)	1
158	Oscilloscope	1
160	Fiberscope washer	3
161	Binocular microscope	4
174	ELISA reader	1
176	Large capacity refrigerated centrifuge	1
178	Centrifuge	1
179	Hematocrit centrifuge	1
184	Spectrophotometer	1
186	Glucosemeter of serum	1
188	Refrigerator	1
199	Incubator	1
200	Drying oven	2
212	Glassware set	3
234	Graduated pipette (1,2,5ml)	200
264	Automatic voltage regurater	15
265	Photocopy machine	1

2. Ha Noi Medical College

Code	Equipment	Q'ty
69	Electrocardiograph 3ch	1
80	Syringe set	1
111	Automatic voltage regulator	1

131	Autoclave,80L	3
134	RO system	1
139	Double distillation unit,1.2L/h	1
140	Water purification system	5
141	Clean bench	2
147	Educational Medical books/AV soft	1
148	Video projector	1
149	Audiovisual education set	7
150	Public address system	2
151	Epidiascope	2
152	Overhead projector	15
153	Slide projector	15
154	VCR for edit	1
155	Screen	15
156	Tool set (B)	1
158	Oscilloscope	1
161	Binocular microscope	65
162	TV microscope set	3
163	Microscope trinocular w/camera	2
165	Flourescent microscope	1
166	Flourescent microscope w/camera	1
167	Inverted microscope	1
170	Stereo microscope	15
177	Refrigerated centrifuge	1
178	Centrifuge	5
180	Cryostat microtome	2
182	Deep freezer -85℃	1
184	Spectrophotometer	3
185	CO2 incubator	2
187	Paraffin bath	2
188	Refrigerator	2
189	Magnetic stirrer	3
190	Mixer	8
192	Staining set	8
196	Hot plate	1
197	PH meter	4
199	Incubator	1
200	Drying oven	8
201	Ultrasonic pipette washer	1
203	Disk electrophorasis apparatus	1

204	Differential leucocyte counter	1
205	Paraffin molds frame	1
207	Slide box	150
208	Petri dishes set	100
209	Carrel bottle set (tissue culture)	20
210	Glass bottle set (blood culture)	20
211	Roux bottle set (tissue culture)	20
212	Glassware set	12
213	Electronic balance	4
214	Hemoglobin meter	1
215	Muffle furnace	1
216	Slide oven	1
217	Ultraviolet sterilization lamp	1
222	Microtome	3
223	Water bath,shaking	4
224	Water bath	1
226	Small disccecting instrument set	8
228	Paraffin spreading apparatus	1
230	Pipette set	150
233	Autopipette1-10 Micro L	4
235	Autopipette 10-50 Micro L	4
236	Autopipette 1000-5000 Micro L	4
237	Autopipette 200-1000 Micro L	4
238	Autopipette 50-200 Micro L	4
239	Dispenser 0.2-1 ml	50
240	Dispenser 0.4-2 ml	50
241	Dispenser 1-5 ml	50
242	Dispenser 2-10 ml	50
243	Male figure	2
244	Female figure	2
245	Torso and head model	2
246	Nervous system model	4
247	Brain model	4
248	Eyeball model	4
249	Bronchus and blood vessel model	4
250	Embryological specimens set	2
251	Skelton model	4
252	Ear model	4
253	Adult skull model	4
254	Larynx model	4

255	Heart model	4
256	Stomach model	4
257	Respiratory organ model	4
258	Display case for model	8
259	Doppler debitmeter	1
260	Spirometer	1
261	Film developing,magnifying set	1
262	Thermo couple,thermister set	1
263	Dehumidifier	8
264	Automatic voltage regulator	175
265	Photocopy machine	1

3. National Institute of Malariology, Parasitology and Entomology

Code	Equipment	Q'ty
69	Electrocardiograph 3ch	2
75	Sphygmomanometer aneroid type	10
76	Stethoscope	10
111	Automatic voltage regulator	2
131	Autoclave,80L	2
144	Ultrasound scanner portable	1
152	Overhead projector	4
153	Slide projector	1
155	Screen	2
156	Tool set (B)	1
158	Oscilloscope	1
161	Binocular microscope	86
162	TV microscope set	1
164	Double lecture microscope	10
166	Flourescent microscope w/camera	1
169	Phase contrast microscope w/camera	1
170	Stereo microscope	20
171	Stereo microscope w/camera	1
172	Stereo microscope w/TV	1
173	Drawing set of microscope sample	4
174	ELISA reader	1
178	Centrifuge	4
188	Refrigerator	5
195	Refractometer for salt	5
197	PH meter	7
198	Portable PH meter	10

200	Drying oven	5
204	Differential leucocyte counter	2
212	Glassware set	2
213	Electronic balance	4
217	Ultraviolet sterilization lamp	3
225	Rotary vacuum evaporator	1
227	Hemacytometer,Neubauer set	4
229	Hemometer,Sahli	2
263	Dehumidifier	3
264	Automatic voltage regulator	154
265	Photocopy machine	1
266	Personnel computer	2

4. National Institute of Malariology, Parasitology and Entomology

Code	Equipment	Q'ty
4	Anesthesia apparatus with Ventilator	1
9	Patient monitor	2
14	Suction unit	3
33	Operation glove set	1
34	Carlen's sonde	100
80	Syringe set	1
83	Cryosurgery unit	2
84	Operational microscope	1
85	Visual electrophysiology test system	1
86	Slit lamp with camera	2
87	Slit lamp	10
88	Projection perimeter	2
89	Virectomy apparatus	1
90	Ophthalmometer of Javal	5
91	Synoptoscope	2
92	Diathermy unit full system	2
93	Autorefractmeter	2
94	Co-ordinator	1
95	Cataract set microsurgery	10
96	Clear jelly operation instrument set	1
97	Glaucoma surgery set	5
98	Retinal detachment surgery set	2
99	Iris hook and lens manupilator	10
100	Keratoplasty set	4
101	Inter ocular lens forceps	10

102	Forceps corneal suturing	10
103	Scissors Iris	10
104	Scissors,corneal Vannas	10
106	Aspiration irrigation unit Simcoe	10
107	Trial lens set	2
108	Indirect ophthalmoscope	3
109	Ophthalmoscope	10
110	Three mirror universal contact lens	12
111	Automatic voltage regulator	43
127	High pressure steam sterilizer,midium	2
138	Water distill 20L/h	1
156	Tool set (B)	1
158	Oscilloscope	1
161	Binocular microscope	1
184	Spectrophotometer	2
200	Drying oven	1
212	Glassware set	3
213	Electronic balance	1
214	Hemoglobin meter	1
264	Automatic voltage regulator	5
265	Photocopy machine	1

5. Gynecology and Obstetric Hospital in Ha Noi

Code	Equipment	Q'ty
1	Major operation table	4
2	Operation light,stand type	5
4	Anesthesia apparatus with Ventilator	1
5	Ventilator	3
7	Infant ventilator	1
8	Electro surgical unit	3
9	Patient monitor	3
11	Pulse oximeter	1
12	Recovery bed	10
13	Oxigen resuscitation set	2
14	Suction unit	7
20	Instrument tray stand	5
22	Instrument tray table	15
23	Double basin with stand	3
26	Laryngoscope set for adult	3
27	Laryngoscope set for Infant	2

30	Ambu bag for adult	2
32	Ambu bag for neonate	4
33	Operation glove set	1
34	Carlen's sonde	100
45	Laparoscope set	1
46	CO2 gas insufflator	1
49	Gyne/obs examining set	1
50	Caesarean operatiion set	10
51	Gyne operating instrument set	10
52	Delivery table	6
53	Fetal monitor	2
54	Stereoscope colposcope	7
55	Gynecological examination table with unit	10
56	Infant incubator	10
58	Vacuum extractor	2
59	Abortion aspirator	2
60	Infant warmer	10
61	Phototherapy unit	2
62	Doppler fetus detector	10
63	Stretcher adjustable height	7
69	Electrocardiograph 3ch	1
70	Examination light	10
72	Drying oven	5
74	Instrument boiling sterilizer	10
75	Sphygmomanometer aneroid type	30
76	Stethoscope	30
79	Wash basin	10
80	Syringe set	1
81	Revolving stool	10
82	Wheel chair	5
111	Automatic voltage regulator	26
121	Equipped Ambulance	1
125	High pressure steam sterilizer for Liquid,large	1
126	High pressure steam sterilizer,large	1
127	High pressure steam sterilizer,midium	2
132	Dressing drum 36 Dia.	40
133	Instrument box for sterilizer	20
135	Scrub station	3
136	Operation light ceiling type	4
137	Water distill 30L/h	1

143	Ultrasound scanner general	1
144	Ultrasound scanner portable	2
152	Overhead projector	1
155	Screen	1
156	Tool set (B)	1
158	Oscilloscope	1
159	Power generator	1
161	Binocular microscope	5
175	Urine analyzer	1
178	Centrifuge	2
179	Hematocrit centrifuge	1
184	Spectrophotometer	1
188	Refrigerator	4
193	Staining jar	50
199	Incubator	1
200	Drying oven	4
212	Glassware set	3
213	Electronic balance	1
214	Hemoglobin meter	1
221	Billirbin meter	1
222	Microtome	1
224	Water bath	1
227	Hemacytometer,Neubauer set	6
231	Micropipette set	3
264	Automatic voltage regulator	20
265	Photocopy machine	1
266	Personnel computer	2

6. Bach Mai Hospital

Code	Equipment	Q'ty
5	Ventilator	10
9	Patient monitor	10
10	Defibrilator	3
11	Pulse oximeter	8
24	Electric scale for ill patient	1
25	Intratracheal anesthesia set	4
33	Operation glove set	1
34	Carlen's sonde	100
43	Broncho-fiberscope	2
44	Oesogastro intestinal fiberscope	2

47	Endoscopy support	2
48	Cabinet for fiberscope	2
80	Syringe set	1
111	Automatic voltage regulator	32
112	CT scanner	1
113	X-ray apparatus TV system	2
114	X-ray machine general diagnostic	2
115	X-ray mobile unit	1
116	Automatic film development machine	1
119	Survey meter	2
120	Equipped Ambulance 4WD	1
122	Ambulance	1
129	Ultrasonic washer	1
131	Autoclave,80L	1
137	Water distill 30L/h	1
140	Water purification system	1
141	Clean bench	3
142	Ultrasound scanner w/color doppler	1
143	Ultrasound scanner general	1
157	Tool set (A)	2
158	Oscilloscope	1
160	Fiberscope washer	1
161	Binocular microscope	10
163	Microscope trinocular w/camera	2
165	Flourescent microscope	1
167	Inverted microscope	1
168	Phase contrast microscope	1
174	ELISA reader	1
175	Urine analyzer	1
177	Refrigerated centrifuge	3
178	Centrifuge	6
179	Hematocrit centrifuge	2
181	Deep freezer -30℃	1
182	Deep freezer -85℃	2
183	Aggregometer	1
184	Spectrophotometer	2
185	CO2 incubator	2
188	Refrigerator	5
191	Swing mixer	1
197	PH meter	1

199	Incubator	1
200	Drying oven	1
202	Electrophorasis apparatus	2
206	Timer	1
212	Glassware set	3
213	Electronic balance	2
218	Heating block	1
219	Direct reading balance	1
220	Shaker	1
222	Microtome	1
224	Water bath	3
232	Autopipette100,200,500 Micro L	6
264	Automatic voltage regulator	54
265	Photocopy machine	1

7. Emergency Transfer Center in Ha Noi

Code	Equipment	Q'ty
121	Equipped Ambulance	5
123	Repair-instrument set for Ambulance	1
124	Central radio communication unit	1
264	Automatic voltage regulator	1
265	Photocopy machine	1

8. National Institute of Tuberculosis and Respiratory Disease

Code	Equipment	Q'ty
1	Major operation table	2
2	Operation light,stand type	2
4	Anesthesia apparatus with Ventilator	2
6	Ventilator portable	2
8	Electro surgical unit	2
9	Patient monitor	2
10	Defibrilator	2
11	Pulse oximeter	4
14	Suction unit	10
15	Low pressure continuous suction unit	10
16	Instrument for suture of vascular	1
17	Instrument for thoracic operation	4
24	Electronic Scale for Ill Patient	1
30	Ambu bag for adult	10
33	Operation glove set	1

34	Carlen's sonde	100
38	Needles for pleural biopsy	10
42	Broncho-fiberscope with camera	2
47	Endoscopy support	2
48	Cabinet for fiberscope	1
66	Bacuum pump	3
68	Electrocardiograph 1ch	2
69	Electrocardiograph 3ch	4
80	Syringe set	1
111	Automatic voltage regulator	20
115	X-ray mobile unit	2
121	Equipped Ambulance	1
125	High pressure steam sterilizer for Liquid,large	1
127	High pressure steam sterilizer,midium	1
135	Scrub station	1
137	Water distill 30L/h	1
143	Ultrasound scanner general	1
156	Tool set (B)	1
158	Oscilloscope	1
160	Fiberscope washer	1
163	Microscope trinocular w/camera	1
178	Centrifuge	1
179	Hematocrit centrifuge	1
184	Spectrophotometer	1
197	PH meter	1
202	Electrophorasis apparatus	1
212	Glassware set	3
213	Electronic balance	1
233	Autopipette1-10 Micro L	2
235	Autopipette 10-50 Micro L	2
238	Autopipette 50-200 Micro L	2
260	Spirometer	1
264	Automatic voltage regulator	9
265	Photocopy machine	1

9. Dong Anh Hospital

Code	Equipment	Q'ty
1	Major operation table	2
2	Operation light,stand type	2
3	Anesthesia apparatus	2

5	Ventilator	1
8	Electro surgical unit	2
9	Patient monitor	1
14	Suction unit	4
18	Laparotomy instrument set	2
19	Minor surgical instrument set	2
28	Endotracheal set for adult	2
29	Endotracheal set for Infant	3
30	Ambu bag for adult	2
31	Ambu bag for children	3
33	Operation glove set	1
34	Carlen's sonde	100
52	Delivery table	1
57	Small surgical set for peadiatric	2
58	Vacuum extractor	1
62	Doppler fetus detector	1
65	Obstertic forceps	2
67	Laundry machine	2
69	Electrocardiograph 3ch	2
71	Instrument cabinet	5
73	Forceps set for OPD	5
74	Instrument boiling sterilizer	8
75	Sphygmomanometer aneroid type	20
76	Stethoscope	20
77	Pus basin (Large,Midium,Small)	10
78	Clinical thermometer	50
80	Syringe set	1
82	Wheel chair	5
105	Instrument set for Ophthalmology OPD	2
111	Automatic voltage regulator	8
113	X-ray apparatus TV system	1
117	Dark room set	1
118	X-ray film illuminator	3
119	Survey meter	1
121	Equipped Ambulance	1
128	High pressure steam sterilizer for Liquid,midium	1
131	Autoclave,80L	1
135	Scrub station	2
137	Water distill 30L/h	1
143	Ultrasound scanner general	1

145	Dental unit	1
146	ENT examination unit	2
156	Tool set (B)	1
159	Power generator	1
161	Binocular microscope	3
178	Centrifuge	1
179	Hematocrit centrifuge	1
194	Blood sedimentation set	2
200	Drying oven	1
204	Differential leucocyte counter	3
212	Glassware set	3
227	Hemacytometer,Neubauer set	3
229	Hemometer,Sahli	2
264	Automatic voltage regulator	5
265	Photocopy machine	1

4-3-3 Architectural Construction accompanied with Equipment setting up.

Since this project basically replace existing equipment, the equipment is considered so as to be set up in the existing institutions . Some the department of radiology and CSSD are under improvement. The architectural construction for each department is hardly needed but Bach Mai Hospital is needed it for CT scanners.

The items requiring to improve the CT scanner room in Bach Mai Hospital are as follows

1) To obtain a room for the CT scanner .

2) To wire to a distribution board of electricity (60KVA single wiring work).

3) To construct a radiation shield made of 2 mm thick lead board and a room partition (including lead glass for patient monitor.)

4) To wire the earth.

4-4 Implementation Plan

4-4-1 Implementation Policy

(1) Implementation organ

The Ministry of Health in Viet Nam is the organ that implements this project, and the Ha Noi People's Committee assists it. There are 9 institutions pursued by this project including 5 health institutions managed by the Ministry of Health and 4 health institutions managed by the Ha Noi People's Committee. Director Ngo Van Hop of International Cooperation Department generalizes the project, and the director of each institution takes a charge of a practical business for it.

(2) Consultant

After signing the Exchange of Notes (E/N) between the Government of Japan and the Government of Viet Nam, a Japanese consultant firm signs with the Ministry of Health as a representative of Viet Nam according to the procedure of Japan's grant aid. The contract becomes effective after verification by the Japanese government. The consultant executes the following works based on the contract.

1) Detailed Design stage: To draw up the specification and other technical data.

2) Tendering stage: To decide supplier for providing equipment and to cooperate with the Owner to sign the contract of supply.

3) Supply and Installation stage: To supervise the supplier to install equipment and give guidances for operation and maintenance.

(3) Supplier

The supplier are decided through a tender and contract with the Ministry of Health. The contract becomes effective after verification of the Japanese government. According to the contract, the supplier completes the work of supply, delivery, installation, and guidance for operation and maintenance. After handing-over of the medical equipment, supplier cooperates to establish a system for maintenance and management including supply of parts and consumables and a guidance of technique for medical equipment.

4-4-2 Scope of work

The project is to be implemented jointly by both countries in mutual cooperation. The scope of work that should be carried out by each country is described below.

(1) The scope of work for the Japanese government.

1) To supply the equipment of the project.

2) To transport the equipment by sea and then overland to the project site.

3) To install the equipment.

4) To perform test operation of the equipment as well as to provide guidances for operation, maintenance, and technique.

(2) The scope of work for the Viet Nam government

1) To provide places and facilities necessary for the installation of the equipment.

2) To complete the work for preparing the supply of electricity, gas, and water as well as drainage for installing of some equipment.

3) To provide a temporary storage for equipment until when the installation begins.

4) To provide prompt unloading and custom clearance.

5) To exempt Japanese nationals engaged in the project from paying custom charges and internal taxes.

6) To bear the expense required for Banking Arrangement (B/A) and Authorizations to Pay (A/P.)

7) To give necessary permissions, licenses, and other approvals in order to implement the Grand Aid Project.

8) To bear the expense required for exemption from taxation.

9) To bear all the expense necessary for this project and any other expense to be borne by this Japanese Grant Aid.

10) To provide effective and efficient maintenance for supplied equipment and bear its expense.

4-4-3 Implementation Procedure

This project is implemented in accordance with the system of the Japan's Grant Aid. The Japanese consultant firm signs with the Ministry of Health as an executing organ and executes the detailed design work and supervisory work of this project. This supervisory work is to verify whether the equipment procured and the service carried out by the supplier is in conformity with the contract or not in order to ensure proper execution of the contents of the contract. In addition, the consultant will provide guidance, advice, and adjustments in unprejudiced manner in order to facilitate the implementation of this project. The consultant firm pursues following works below.

(1) Assistance on Tender and Contract.

The consultant firm prepares a set of documents necessary for holding a tender to select a best Japanese supplier who procures and installs the equipment on this project. The consultant executes the following formalities necessary for holding a tender: the tender announcement, the reception of applications from prospective tenders, the pre-qualification, the distribution of tender documents, the reception of tender proposals, and the evaluation of tender results. The consultant gives advises for supplying equipment and drawing up the contract between the Ministry of Health and the supplier.

(2) Advising the Supplier

The consultant offers instructions, advice and adjustments after examining the implementation procedure, the implementation design, the supply of medical equipment, and the installation plan.

(3) Examination and Approval of Execution Drawings

The consultant gives instruction and examination of the drawings, equipment specifications, and other documents, all which are done by the supplier and then approves them.

(4) Confirmation and Approval of Supplied Equipment

The consultant confirms the medical equipment in reference to the supply contract and gives approvals.

(5) Equipment Inspection at Factories

When it is necessary, the consultant attends inspections carried out by the supplier on medical equipment at the manufactures factories in order to assure the quality and performance of the equipment.

(6) Report of the Procedure of Implementation

The consultant grasps the progress of the work and the condition of the project sites and reports to the agent of each country.

(7) Checking and Testing

After conducting inspections and testing on the facility and medical equipment, the consultant confirms in reference to the supply contract and then submits an inspection completion document to the Viet Nam side.

(8) Guidance for Operation and Maintenance

Some equipments are quite complex, so it is necessary for the supplier to provide training on the operation of these items as well as on the trouble shooting and repair techniques during the time for installation, adjustment, and operation. The consultant offers advice and instructions on how to carry out the training session.

4-4-4 Procurement Plan

(1) Separation

This project is divided into the first phase and the second phase. At the first phase, the equipment that is urgently needed or doesn't require installation work and a short time delivery is determined. At the second phase, the equipment that requires construction or a comparatively long time delivery is determined. Table 4-4 shows institutes and departments at each phase.

Table 4-4 Objective Medical Institution and Name of Department

Phase I

Institution	Department
1. Hai Ba Trung Hospital	Communicable Disease Department, Endoscope Unit
2. Ha Noi Medical College	Department of Physiology
3. National Institute of Malariology, Parasitology and Entomology	Outpatient Department
4. National Institute of Ophthalmology	Operating Theater, Outpatient Department
5. Gynecology and Obstetric Hospital in Ha Noi	Operating Theater, Outpatient Department
6. Bach Mai Hospital	Emergency ICU Department
7. National Institute of Tuberculosis and Respiratory Disease	Operation Theater, Endoscope Unit
8. Dong Anh Hospital	Operation Theater, Outpatient Department

Phase II

Institution	Department
1. Hai Ba Trung Hospital	Communicable Disease Department, Laboratory
2. Ha Noi Medical College	Department of Medical Biology&Genetics, Medical Microbiology
3. National Institute of Malariology, Parasitology and Entomology	Department of Research&Experiment, Department of Entomology, Department of Helmintology, etc.
4. National Institute of Ophthalmology	Central Sentrilized Supply Department, Haematology Department, Biochemistry Department, etc.
5. Gynecology and Obstetric Hospital in Ha Noi	Central Sentrilized Supply Department, Haematology Department, Infectious Disease Department, etc.
6. Bach Mai Hospital	X-ray Department, Biochemistry Department
7. Emergency Transfer Center in Ha Noi	Emergency Department
8. National Institute of Tuberculosis and Respiratory Disease	Central Sentrilized Supply Department, Laboratory
9. Dong Anh Hospital	X-ray Department, Laboratory

(2) Unit Price and Maintenance System of Agents in Viet Nam

The unit price of the Japanese equipment including expenses of packing, transportation, insurance was compared with the Vietnamese and the third country's. After the quality of the equipment is ensured, if the unit price on the Viet Nam and the third countries is cheaper and the agent on the Viet Nam has the well maintenance system, these equipments are given the highest priority. The equipment supplied from Viet Nam and the third countries will be the copy machine and the personal computer. These equipments have already become widespread and have no problem about the maintenance system in Viet Nam.

4-4-5 Implementation Schedule

When E/N for execution of this project is signed between both governments, the implementation schedule has three steps of the detailed design study, the tender, and the equipment supply.

(1) Detailed Design Study

After signing the consultant contract between the Ministry of Health and the Japanese consultant firm, the contract is verified by the government of Japan and then the consultant firm begin the detailed design study. The detailed design consists of a drawing, a specification, and a set of tender document. During the time, the consultant discusses about the project site and the equipment with the Viet Nam side. Finally the Viet Nam side approve a set of tender document. The term for the completion of the detailed design study is about three months in the process through the drawing, related works, and approval of a set of tender document.

(2) Tender

A supplier for equipment is selected by a tender. The tender process is announcement of tender, reporting of tender result, appointing supplier, and signing a supply contract, and takes one and a half month.

(3) Equipment Supply

After signing a supply contract, the government of Japan verifies the supply contract, and then the supplier starts work. Considering the condition and the scale of the project, the contract, and weather condition, the implementation plan is expected to complete about seven months for phase I and about nine months for phase II under the condition without uncontrollable accident.

The implementation schedule until completion after signing E/N is shown in Table 4-5

4-4-6 Estimated Project Cost

The construction expense for CT room in Bach Mai Hospital: 92 million dong (1,013,000 yen.)

Following charges and taxes will be added.

1) The procedural expenses for equipment supply.

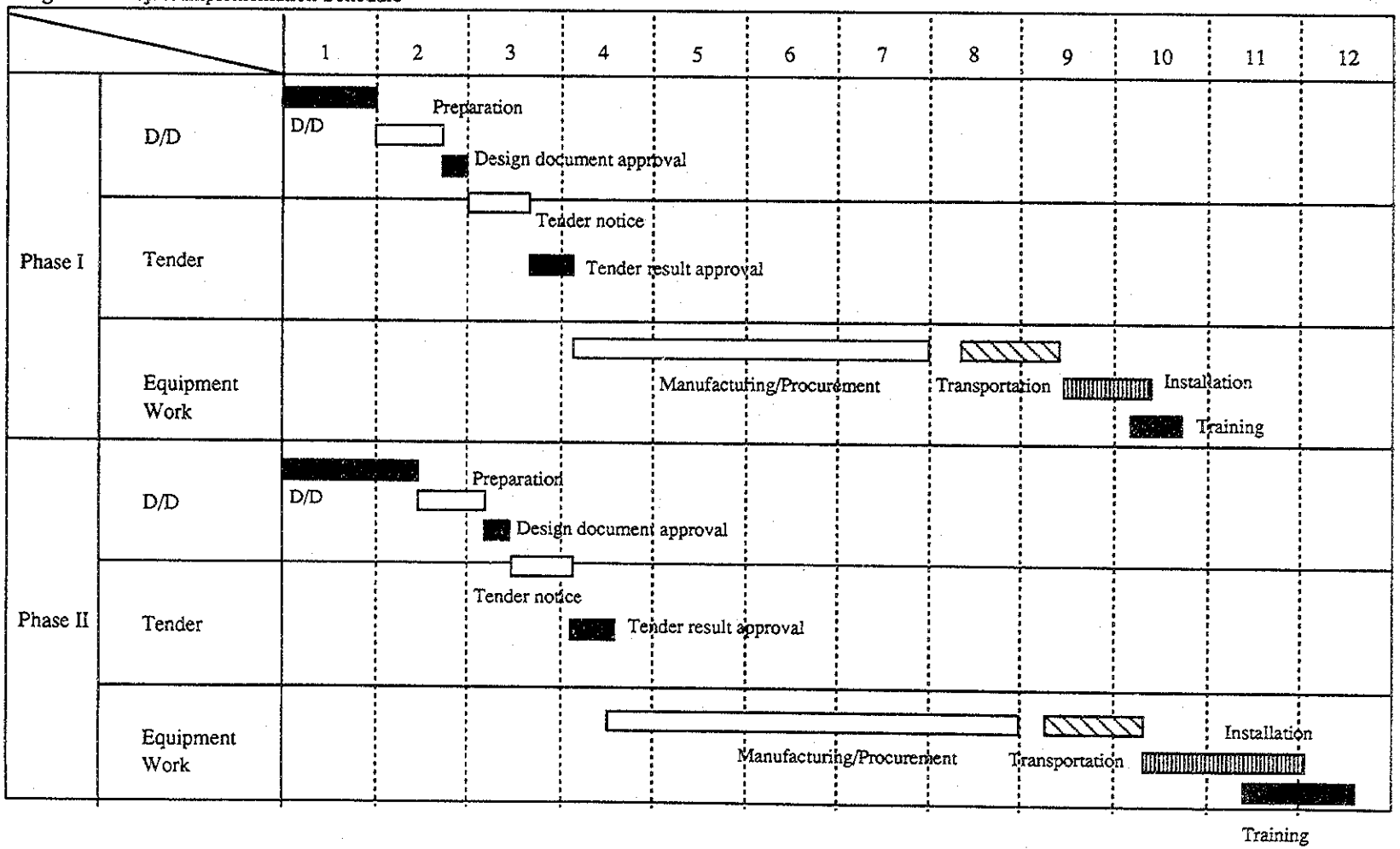
2) The custom tax for imported equipment and material.

3) The charges for Banking Arrangement (B/A) and Authorization to Pay (A/P).

4) The tax-exempt charge for domestic tax and other taxation and necessary expense for value-added tax.

It is necessary for the Government of Viet Nam to conduct budgetary allocations and construction work at appropriate times on the above mentioned matters so that not only this project will be implemented smoothly, but also the medical institutions with the equipment procured on this project can function effectively.

Fig. 4-5 Project Implementation Schedule



CHAPTER 5 EXPECTED EFFECTS OF THE PROJECT AND CONCLUSION

CHAPTER 5 EXPECTED EFFECTS OF THE PROJECT AND CONCLUSION

5-1 Project Evaluation

(1) Expected Effects of the Project

The following tables show positive effects and improvements brought by adequate maintenance and operation conducted by the Viet Nam side after the implemtation of the nine institutions is completed.

1) Hai Ba Trung Hospital

Present state and problems	Measures to be taken in the project	Expected effects and improvements
The Japanese grant aid in 1992 supplied equipment to mainly X-ray Department and Central Sterilized Supply Department. Infectious Disease Department and Laboratory should be more strengthen. Infectious Disease Department needs a distinct plan since this department cannot share equipment and instruments with other departments.	In connection with the previous project, this project is to supply equipment for Infectious Disease Department, Laboratoty, and Endoscope Department. For effective use, equipment is supplied with related instruments and spare parts. In the case of unstable voltage, automatic voltage regulator will be installed.	Hai Ba Trung Hospital will be entirely improved in both previous project and this project, which enables to proceed smooth and prompt diagnosis and treatment. At present, only National Institute of Tuberculosis and Respiratory Disease provide diagnosis with endoscope. With the installation of endoscope in this hospital, more patients will benefit.

2) Ha Noi Medical College

Present state and problems	Measures to be taken in the project	Expected effects and improvements
Not having affiliated hospitals, Ha Noi Medical College conducts clinical practice at other medical institutions. Basic medicine is the main subject of training which is hampered by outdated equipment for lecture and experiment. Audiovisual equipment and laboratory are necessary for lecture and experiment. It is difficult to receive medical books from abroad.	Considering contents of educational activities, the project provides audiovisual equipment for lecture and basic laboratory equipment for experiment. Equipment for research is eliminated due to low necessity. For lecture, the project supplies anatomical models of the human body, various microscopes and medical books. Basic laboratory equipments include freezer, centrifuge, and glass ware set.	Audiovisual equipment for lecture and basic laboratory equipments will enable Ha Noi Medical College to conduct more effective study. Also, not only students but professors will master more advanced medicine through medical books and AV software. Indirectly it will improve the standard of medical technology in Viet Nam.

3) National Institute of Malariology, Parasitology and Entomology

Present state and problems	Measures to be taken in the project	Expected effects and improvements
National Institute of Malari-ology, Parasitology and Entomology is the leading research center to control Malaria that is one of the most severe diseases in Viet Nam. Medical activities, to give a final and conclusive diag-nosis on patients transferred from other hospitals, and to train medical personnel specialized in malaria, are hampered because of equipment that is either outdated or short in number.	This project is to renovate outdated equipment for diagnosis, research, and training as well as to supply equipment that is short in number. In detail, laboratory equipments include various microscopes and ultra sound scanner and centrifuge. Audiovisual equipment for training consists of slide projector and binocular microscope.	More effective diagnosis and training will be possible with renovation of various equip-ments. By more strengthening the institution, being at the leading position of anti- malaria plan, the project directly contributes to control malaria and indirectly con-tributes to nationwide medical activities to instruct medical institutions and train medical personnel.

4) National Institute of Opthalmology

Present state and problems	Measures to be taken in the project	Expected effects and improvements
Medical activities at National Institute of Opthalmology, leading institution for ophthalmological disease, are hampered by the outdated and shortage of equipment although they have proper technique. Especially equipment at Outpatient, Surgical, Centrral Sterilized Supply Department should be improved immediately.	Equipment for Outpatient, Surgical, Centrral Sterilized Supply Department will be replaced. Especially, it is necessary to provide sufficient number of indispensable instruments in Outpatient Department such as basic instrument for diagnosis and treatment as well as forceps for operation. At the Paramedical Department, improvement of laboratory equipment will increase efficiency in producing parenteral fluid.	The project makes it possible for the institution to conduct more smooth and effective diagnosis and treatment to meet the growing number of patients. Especially, with replacing diagnostic instru-ments for outpatient and forceps for operation, more safe and effective diagnosis and treatment will be available.

5) Gynecology and Obstetric Hospital in Ha Noi

Present state and problems	Measures to be taken in the project	Expected effects and improvements
Although this hospital is a referral hospital for mother and child health, diagnosis and treatment is insufficient due to outdated equipment in the Operation Department, Neonatal Department, Infectious Disease Department, and Centrral Sterilized Supply Department. Deterioration of the Operation Department is remarkable. Since electric power for emergency is not installed, patients can be in danger.	Basic equipment will be entirely improved in Operation Department, Neonatal Department, Infectious Disease Department, Centrral Sterilized Supply Department, and Outpatient Department. In Outpatient Depart-ment, patient monitor will be installed. In the case of electric power failure, emergency power generator is included.	The project contributes to proceed smooth diagnosis and treatment and to reduce extra expense and maintenance problem by using outdated equipment. With installation of generator, the institution can keep emergency power in the case of power failure.

6) Bach Mai Hospital

Present state and problems	Measures to be taken in the project	Expected effects and improvements
Although this hospital is a referral hospital in the northern part of Viet Nam, diagnosis and treatment cannot be conducted sufficiently due to outdated equipment in the most basic and important department such as X-ray Department, Biochemical Department, and Emergency/ICU Department. Especially, it is very difficult to diagnose patients with heart diseases because angiography system is broken.	The function of X-ray Department, with the most urgent need, will be improved by installing a CT scanner. Taking account of easy operation and maintenance, collar doppler substitutes for angiography system that requires difficult maintenance. For Biochemical Department, only basic equipment with easy maintenance and urgent need will be installed. For Emergency/ICU Department, only equipments that meet the current condition is selected.	Function of diagnosis will be improved significantly by strengthening X-ray Department that cannot meet the growing number of patients. The Viet Nam side holds the great expectation because this institution will be the only institution where general public can receive treatment with CT scanner. Moreover, strengthening Biochemical Department will improve the function of the institution from different angle. The possibility to save critical conditioned patients will be higher with strengthening ICU Department.