

2-3 Basic Design

2-3-1 Design Concept

According to the aforesaid basic concept, this project is to offer appropriate equipment to the designated hospitals in order for them to function fully.

This project is also to improve the functions of the hospitals by arranging the equipment, to reinforce the current secondary health care service, and to establish a comprehensive medical system including a part of the tertiary health care service.

For the implementation of the project, the following points were reviewed:

- 1) Improvement of medical system in West Bank and position of the designated hospitals in line with the National Health Plan (NHP), the top priority project of Palestinian health care administration, should be considered.
- 2) Considering specific goals based on the current technical levels and medical needs (scope of medical treatment and levels), the project should help medical facilities to obtain technical independence and progress.
- 3) Examining the present situations of facilities, medical equipment, workforce, budget and actual functions, additional measures should be minimized in terms of manpower and funds. The project should help the facilities to be independent financially.
- 4) It is important to check environmental problems. It should not cause any problems of environmental pollution resulting from radiation, medical wastes, polluted water and flon gases, and change in the ecology system; it should not give adverse influence to local residents.

- 5) This project should not overlap with equipment donated by other countries, institutions or non-governmental organizations.

2-3-2 Basic Plan

(1) Equipment procurement plan

As already discussed in detail in connection with the contents of the requested equipment in Sub-Section 2-2-3 of Chapter 2, the investigated equipment are as follows: The designated medical equipment which will be procured by this project for improvement amount to 459 types and 668 items. The contents and each quantity are Table 2-3-2 "Medical Equipment to be procured by the project."

Table 2-3-2. Medical Equipment to be Procured

Designated hospitals	Final Requested Equipment		Consultation at the time of B/D				Final Equipment (by draft explanation and analysis)	
	Type	Piece	Equipment in the Minutes of Discussion		Equipment at Supplementary Survey			
1. Jenin	64	105	66	108	66	108	49	64
2. Tulkarem	57	92	59	94	59	94	57	84
3. Watani (Nablus District)	49	108	50	110	50	110	41	54
4. Rafidia (Nablus District)	93	178	97	189	96	188	92	119
5. Ramallah (Nablus District)	100	237	103	235	103	240	89	136
6. Beit Jala (Bethlehem District)	65	128	65	129	65	129	51	76
7. Bethlehem	24	28	34	38	34	38	4	4
8. Hebron	70	154	74	154	74	154	63	97
9. MOH, Central Workshop (Ramallah District)	5	7	6	7	6	7	13	44
TOTAL:	620	1,037	554	1,057	553	1,061	459	668

Note) The final requested equipment list was obtained from MOH in September, 1997. The order of priority for the equipment was confirmed by MOH through research and consultation on the designated facilities (refer to the preceding clause "Contents of Requested Equipment"). After analysis in Japan, the procured equipment were finally decided: Equipment being ranked as "A," "B+," and partly "B."

Table 2-3-2 Equipment to be procured

Item No	Department	Description	Total Qty	(1) Jenin	(2) Tulkarim	(3) Watani	(4) Rafidia	(5) Ramallah	(6) Beit Jala	(7) Bethlehem	(8) Hebron	(9) Central workshop
1	Autopsy	Autopsy Instrument set with St. Container	1				1					
2	Autopsy	Post-Mortem Forceps with St. Container	1				1					
3	Autopsy	Post-Mortem Knife set with St. Container	1				1					
4	Cardiac surgery	Coronary Bypass surgical set with St. Container	1					1				
5	Cardiology	Color Doppler ultrasonograph	2			1		1				
6	Cardiology	Holter Analyzer	3			1		1			1	
7	Cardiology	Holter Monitor	3			1		1			1	
8-1	CSSD	Autoclave, Medium size, w/ steam generator	4	1	1				2			
8-2	CSSD	Autoclave, Large size, w/ steam generator	1					1				
8-3	CSSD	Autoclave, Large size	1				1					
9	CSSD	Sealing Machine	5	1	1		1	1	1			
10	CSSD	Tube Washing Machine	5	1	1		1	1	1			
11-1	CSSD	Ultrasonic Cleaner, small type	2	1	1							
11-2	CSSD	Ultrasonic Cleaner, large type	3				1	1	1			
12	CSSD	Water softener (for Autoclave)	3	1	1			1				
13-1	Endoscopy	Colonoscope, fiber type	2		1		1					
13-2	Endoscopy	Forceps for Colonoscope	2		1		1				1	
14-1	Endoscopy	Esophagoscope	2				1					
14-2	Endoscopy	Forceps for Esophagoscope	2				1					
15-1	Endoscopy	Gastroscope	5	1	1	1	1	1				
15-2	Endoscopy	Forceps for Gastroscope	5	1	1	1	1	1				
16-1	Endoscopy	Sigmoidoscope	5	1				1	1		1	
16-2	Endoscopy	Forceps for Sigmoidoscope	5	1				1	1		1	
17-1	Endoscopy	Light source for Fiberscope	7	1	1	1	1	1	1		1	
17-2	Endoscopy	TV, Video set for Fiberscope	5			1	1	1	1		1	
17-3	Endoscopy	Cabinet for Fiberscope	7	1	1	1	1	1	1		1	
17-4	Endoscopy	Washing Instrument set for Fiberscope	7	1	1	1	1	1	1		1	
17-5	Endoscopy	Ultrasonic Cleaner for Fiberscope	1			1						
17-6	Endoscopy	Suction for Endoscope	7	1	1	1	1	1	1		1	
18-1	Endoscopy	Arthroscope, rigid type	1									
18-2	Endoscopy	Forceps for Arthroscope	1									
19-1	Endoscopy	Laparoscope for diagnosis and treatment	3				1	1	1		1	
19-2	Endoscopy	Forceps for Laparoscope (with Forceps for Pediatric)	3				1	1	1		1	
20-1	Endoscopy	Pediatric bronchoscope, rigid	2				1	1				
20-2	Endoscopy	Forceps for Pediatric rigid bronchoscope	2				1	1				
21-1	Endoscopy	Thoracoscope	1					1				
21-2	Endoscopy	Forceps for Thoracoscope	1					1				
22-1	Endoscopy	Uteroscope	2				1		1			

Item No	Department	Description	Total Qty	(1) Jenin	(2) Tulakern	(3) Watani	(4) Rafidia	(5) Ramallah	(6) Beit Jala	(7) Bethlehem	(8) Hebron	(9) Centra. workshop
22-2	Endoscopy	Forcept for Ureteroscope	2				1		1			
22-3	Endoscopy	Surgical set for Ureteroscope	1						1			
23-1	Endoscopy	Light source for Rigidoscope	4				1	1	1		1	
23-2	Endoscopy	TV, Video set for Rigidoscope	4				1	1	1		1	
24	General	E.C.G. One Channel	5	1	1	2				1		
25	General	Electroencephalograph (EEG)	2			1				1		
26	General	Spirometer	1					1				
27	General	Suction Mobil	3	1					2			
28	Gyn. Obst.	Fetal monitor (tococardiograph)	10	2	2		2	2	2			
29	Gyn. Obst.	Vacuum Extractor	6	1	1		2	1	1			
30	Gyn. Obst.	Obstetric delivery table	5	1	1		1	1	1			
31	ICU	Blood Pressure Meter, Automatic/Electric measures	7	1	1			3	2			
32-1	ICU	Central monitor system for 5 beds	1					1				
32-2	ICU	Central monitor system for 6 beds	1			1						
33	ICU	Patient monitor, Bedside type	4						4			
34	ICU	Defibrillator	6	1	1		1	1	1	1		
35	ICU	Electrocardiograph, 3 channels	10	1	1	1	1	1	2	1	1	2
36	ICU	External Pacemaker	5	1		1	1		1		1	
37	ICU	ICU Bed	7			3			4			
38	ICU	Infusion Pump	25				7	7	4		7	
39	ICU	Patient Emergency Cart	6					6				
40	ICU	Pulse Oximeter	19	3	3		4	5	2		2	
41-1	ICU	Respirator for adult/child	10	2		2	2	2	2			
41-2	ICU	Respirator for new-born	2			1		1				
42	ICU	Syringe Pump	14		2		5	3	2			
43	ICU	Ultrasonic Nebulizer	4				1	1	1		1	
44-1	Kidney Hemodialysis	Hemodialysis Machine	18			2		8			8	
44-2	Kidney Hemodialysis	Osmometer	3			1		1			1	
44-3	Kidney Hemodialysis	Electrolyte Analyzer	3			1		1			1	
44-4	Kidney Hemodialysis	pH meter	3			1		1			1	
45	Kidney Hemodialysis	Hemodialysis Chair	9			2		4			3	
46-1	Kitchen	Dish washer	1		1							
46-2	Kitchen	Hot Food Unit	2		2							
46-3	Kitchen	Boiling Pan	1		1							
46-4	Kitchen	Deep Fat Fryers	1		1							
46-5	Kitchen	Tray Cleaning Trolley	5		5							
46-6	Kitchen	Refrigerated Display Unit	1		1							
46-7	Kitchen	Refrigerator, 1400 liter	1		1							
46-8	Kitchen	Walk in cooler freezer	1		1							
46-9	Kitchen	Electric meat minces	1		1							

Item No	Department	Description	Total Qty	(1) Jenin	(2) Tulkaem	(3) Watani	(4) Rafidia	(5) Ramallah	(6) Beit Jala	(7) Bethlehem	(8) Hebron	(9) Central workshop
46-10	Kitchen	Mixing machine	1	1								
46-11	Kitchen	Convection Oven Gas	1	1								
46-12	Kitchen	Gas Range	1	1								
47	Laboratory, B.Bank	Automatic stainer	1								1	
48	Laboratory, B.Bank	Bilirubinometer	6	1	1	1	1	1	1		1	
49	Laboratory, B.Bank	Binocular Microscope	6	1	1	1	1	1	1		1	
50	Laboratory, B.Bank	Blood bag pack (Bio Sealer)	2									
51-1	Laboratory, B.Bank	Blood bank Refrigerator, large	5	1	1	1	1	1	1		1	
51-2	Laboratory, B.Bank	Blood bank Refrigerator, small	1						1			
52	Laboratory, B.Bank	Blood Donor's Chair	3						1	1	1	
53	Laboratory, B.Bank	Blood gas analyzer	4			1	1	1	1		1	
54	Laboratory, B.Bank	Cell washer Centrifuge	5		1		1	1	1		1	
55	Laboratory, B.Bank	Centrifuge up to 12000rpm, 10ml x 24	7	1	1	1	1	1	1		1	
56	Laboratory, B.Bank	Chemistry analyzer	4	1	1	1			1			
57	Laboratory, B.Bank	Cryotome (Microtome, Freeze Type)	1				1					
58	Laboratory, B.Bank	Cytospin	1				1					
59	Laboratory, B.Bank	Electrophoresis equipment	2				1	1				
60	Laboratory, B.Bank	Embedding Machine	1				1					
61	Laboratory, B.Bank	Fume hood (draft chamber)	1				1					
62	Laboratory, B.Bank	Hematology Blood Cell Counter	7	1	1	1	1	1	1		1	
63	Laboratory, B.Bank	Knife Sharpener	1				1					
64	Laboratory, B.Bank	Microtome	1				1					
65	Laboratory, B.Bank	Multi-heads Microscope, with camera	1				1					
66	Laboratory, B.Bank	Platelet Shaker with Incubator	2				1	1				
67	Laboratory, B.Bank	Refrigerated centrifuge	2					1			1	
68	Laboratory, B.Bank	Automatic embedding machine (Tissue Processor)	1				1					
69	Laboratory, B.Bank	Water Bath	1				1					
70	Laboratory, B.Bank	Water Distiller (automatic) 4L/h	11	1	1	1	2	2	2		2	
71-1	Laundry	Washing machine (large)	1				1					
71-2	Laundry	Washing machine (Small)	1				1					
71-3	Laundry	Fiat work ironer	1				1					
71-4	Laundry	Drying Tumbler	1				1					
71-5	Laundry	Cotton press for trousers	1				1					
71-6	Laundry	Cotton press for sheets, gowns, etc.	1				1					
71-7	Laundry	Vacuum Iron Board	1				1					
72-1	Maintenance	Soldering-desoldering station	3									3
72-2	Maintenance	Avometer	10									10
72-3	Maintenance	Complete tool kit	4									4
72-4	Maintenance	Analog IC tester	3									3
72-5	Maintenance	Digital IC tester	3									3

Item No	Department	Description	Total Qty	(1) Jenin	(2) Tulakem	(3) Watani	(4) Rafidia	(5) Ramallah	(6) Beit Jala	(7) Bethlehem	(8) Hebron	(9) Central workshop
72-6	Maintenance	Lens and lamp	3									3
72-7	Maintenance	Clamp multimeter	3									3
72-8	Maintenance	Storage cabinet	3									3
72-9	Maintenance	Digital earth tester	1									1
72-10	Maintenance	ECG simulator	5									5
72-11	Maintenance	Defibrillator tester	2									2
72-12	Maintenance	Electro surgical unit tester	2									2
72-13	Maintenance	Oscilloscope	2									2
72-14	Maintenance	Power Supply	1									1
72-15	Maintenance	Function generator	1									1
73	Neuro-Surgery	Cranotomy instrument set with St. container	1					1				
74-1	Operating Room	Anesthesia machine	7	1			1	2			3	
74-2	Operating Room	Anesthesia monitor	7	1			1	2			3	
74-3	Operating Room	Ventilator for Anesthesia machine	7	1			1	2			3	
75	Operating Room	Electric surgical unit	7	2	1		1	1	1			
76	Operating Room	Operating ceiling lamps. Satellite	10	1	2		2	2			3	
77	Operating Room	Operating table. Hydraulic	6	1	1		1	1			2	
78	Orthopedic	Austin-Moore artificial capital machine set	3				1	1			1	
79	Orthopedic	Kunischer Nail Instrument set with St. Container	3				1	1			1	
80	Orthopedic	Laminectomy Instrument with St. Container	3				1	1			1	
81	Orthopedic	Pneumatic Bone Drill with St. Container	3				1	1			1	
82	Orthopedic	Pneumatic Tourniquet	3				1	1			1	
83	Orthopedic	Total Hip Replacement surgery set with St. Container	1					1				
84	Orthopedic	Wire Tightener	3				1	1			1	
85	Pediatric	Apnea Alarm	15	4	2	1	4	2	2			
86	Pediatric	Infant Incubator, Double Wall	32	4	4	6	4	6	4		4	
87	Pediatric	Oxygen Monitor	7	1	1	1	1	1	1		1	
88	Pediatric	Phototherapy Unit	20	4	3	2	2	3	3		3	
89	Pediatric	Transport incubator	5	1	1	1	1	1	1			
90	Pediatric Surgery	Basic infant surgical instruments set	3	1			1	1				
91	Pediatric Surgery	Basic pediatric surgical Instruments set	6	1	1		1	1	1		1	
92	Pediatric Surgery	Esophageal dilator set	1					1				
93	Pediatric Surgery	Vascular Surgical Inst. set	2				1	1				
94	Pediatric Surgery	Warming Mattress	17	2	2	2	3	3	2		3	
95	Plastic Surgery	Plastic Surgery Instruments set	2				1	1				
96	Radiology	Automatic film processor	7	1	1	1	1	1	1		1	
97	Radiology	CT scanner (Spiral)	2				1					
98	Radiology	Mobile X-ray	5	1	1			1	1		1	
99	Radiology	Ultrasonic equipment, portable	7	1	1	1	1	1	1		1	
100	Radiology	Ultrasound equipment-general use	6	1	1	1	1	1	1		1	

Item No	Department	Description	Total Qty	(1) Jenin	(2) Tulkarem	(3) Watani	(4) Rafidia	(5) Ramallah	(6) Beit Jala	(7) Bethlehem	(8) Hebron	(9) Central Workshop
101	Radiology	X-ray Fluoroscopy	4				1	1	1		1	
102	Radiology	X-ray for general purpose (Bucky)	3		1			1			1	
TOTAL			668	64	74	54	118	136	76	4	96	46

(2) Specifications of main equipment.

Main equipment procured by this project amount to 668 types.

Specifications, standards and purpose of use are in Table 2-3-2 (2).

Table 2-3-2 (2) Specifications of main equipment

No.	ITEM NO.	DESCRIPTION	SPECIFICATIONS	APPLICATIONS	Q'TY
1	4	Coronary Bypass surgical set with St. Container	<ol style="list-style-type: none"> 1) De Bakey Vessel Clamp set 2) Rib spreader set 3) Zenker Retractor set 4) About 62 different types of instruments in all 	A complete set of instruments, including forceps, necessary for coronary bypass operation.	1
2	5	Color Doppler ultrasonograph	<ol style="list-style-type: none"> 1) Element of probe: Convex / Linear / Sector (64Channel) 2) Display mode: B, M, PW, CW, Angio & Color flow 3) Depth of field max. 24cm 4) Image Memory; 63 Frames or more 5) Color doppler ultrasound system with a high Speed processor. 6) Probe Types Phased array sector: 2.0/2.5Mhz, 3.7/5.0Mhz Linear array: 5/7.5/10Mhz Doppler: 1.9Mhz TE : 5/7.5Mhz 7) With VTR with video color printer 8) Monitor : At least 12" Color 9) Gray scales : 256 10) Acoustic zoom: 5 times 11) Upgradable to include digital storage on optical drive in the future. 	Ultrasonic diagnosis of cardiopathy, capable of diagnosis of valvular heart disease, ischemic heart disease, congenital heart disease; measurement of heart structure; evaluation of cardiac functions; and rheometry.	2
3	6,7	Holter analyzer with Monitor	<ol style="list-style-type: none"> 1) System: Digital 2) Induction: 12 induction simultaneous in-phase analysis 3) Discrimination ratio: better than 110 dB Monitor: CCFP 4) Recording printer: thermal array 3,4,6,12ch 5) Holter monitor: Number of channels: 2 ECG channels + 1 body movement channel 	Used for reading and analyzing data from the 24-hour real-time portable electrocardiographic recorder used for patients who may have stenocardia by cardiac arrhythmia.	3
4	8-1	Autoclave, Medium Size, w/steam generator	<ol style="list-style-type: none"> 1) Effective volume: 200 - 250 liters 2) Control: by microprocessor 3) Sterilizing: by high pressure steam 4) Cycle display: LED 5) Temperature display: Digital 6) Protection: By Interlocked door 7) Built-in steam boiler 	Used for sterilizing medical instruments by high-pressure steam to prevent from hospital infection. Capacity is selected based on the quantity of instruments used at the operating room, etc. Automatic operation.	4
5	8-2	Autoclave, Large Size, w/steam generator	<ol style="list-style-type: none"> 1) Effective volume: 400 - 450 liters 2) Control: by Microprocessor 3) Sterilizing: by high steam pressure 4) Cycle display: LED 5) Temperature display: Digital 6) Protection: By interlocked door 7) With steam boiler 	Used for sterilizing medical instruments by high-pressured to prevent from hospital infection. Capacity selected based on the quantity of instruments used at the operation room, etc. Automatic operation	1
6	11-1	Ultrasonic Cleaner, small type	<ol style="list-style-type: none"> 1) Washing tank capacity: 10 liters 2) Table-top type 	Used for washing tools and instruments for examination and medical treatment by ultrasonic waves. A compact type with built-in oscillator.	2
7	11-2	Ultrasonic Cleaner, large type	<ol style="list-style-type: none"> 1) Washing tank capacity: 20 liters 2) Table-top type 	Same as Item No.11-2	3
8	12-1	Water softener (for Autoclave Medium Size)	<ol style="list-style-type: none"> 1) Capacity: approx.30 liters 2) Water flow: approx. 1.0 m³/h 3) Water pressure: approx. 0.5-3.0 kgf/cm² 4) Operating water temperature: approx. 4 - 45°C 	Hard water, when used for the steam sterilizer, release insoluble salts to encrust piping and prevent water flow. The water softener is used for removing these salts from water before being used in the steam sterilizer.	2

9	12-2	Water softener (for Autoclave Large Size)	<ol style="list-style-type: none"> 1) Capacity: approx.50 liters 2) Water flow: approx. 1.50 m³/h 3) Water pressure: approx. 0.5-8.0 kgf/cm² 4) Operating water temperature: approx. 4 - 45°C 	Same as Item No.12-2	1
10	13-1	Colonoscope, fiber type	<ol style="list-style-type: none"> 1) Tip outside diameter: approx. 14 mm 2) Angle of visibility : 140° 3) Up 180°, Down 180°, Right 160°, Left 160° 4) Channel diameter : approx. 3 mm 5) Effective length : approx. 1,675 mm 	Used for examination and diagnosis of the colic disease.	2
11	14-1	Esophagoscope	<ol style="list-style-type: none"> 1) Tip outside diameter: approx. 9 mm 2) Angle of visibility : 120° 3) Up 210°, Down 90°, Right 100°, Left 100° 4) Channel diameter : approx. 2 mm 5) Effective length : approx. 1,025 mm 6) Rigid type 	Used for examination and diagnosis of the esophageal disease.	2
12	15-1	Gastroscope	<ol style="list-style-type: none"> 1) Tip outside diameter: approx. 10 mm 2) Angle of visibility: 120° 3) Up 210°, Down 90°, Right 100°, Left 100° 4) Channel diameter: approx. 3 mm 5) Effective length: approx. 1,025 mm 	Used for internal medicine, mainly for the purpose of gastropathic diagnosis.	5
13	16-1	Sigmoidoscope	<ol style="list-style-type: none"> 1) Tip outside diameter: approx. 12 mm 2) Angle of visibility: 120° 3) Up 180°, Down 180°, Right 90°, Left 90° 4) Channel diameter: approx. 3 mm 5) Effective length: approx. 630 mm 	Used for direct observation, photography, biopsy, and polypectomy of disease-prone areas of colon, such as rectum and lower digestive system extending from sigmoid flexure to jejunum.	5
14	19-1	Laparoscope for diagnosis and treatment	<ol style="list-style-type: none"> 1) Telescope: angle of view: 0° (1) Diameter: 3.0mm approx. (2) Length: 250mm approx. 2) Outer diameter of trocar: 4.0mm approx. 3) Type: Laparoscopic treatment in surgical department. 	Used for diagnosis of intraperitoneal organs such as liver and gall bladder.	3
15	20-1	Pediatric bronchoscope, rigid	<ol style="list-style-type: none"> 1) Telescope: Length; Approx. 200, 250, 300 mm (3 types) 2) Guiding Piece: Included 3) Adapter from bronchoscope to any type of pediatric respiration equipment. 4) Prismatic light deflector with fiber-optic light cable 5) Rubber telescope guide for use with telescope or optical forceps 	Used for endoscopic diagnosis and biopsy of bronchial diseases.	2
16	22-1	Ureteroscope	<ol style="list-style-type: none"> 1) Telescope: angle of view: 0° 2) Ureter-Dilator: Approx.9, 10.5, 12, 13.5 Fr 3) Dilation Sheath with lock stop cock: Approx.25Fr 4) Guide Wire 5) Uretero-Renoscope, 10Fr, 0°, graduated, 10, 10.5, 12, 13Fr, Length approx. 40cm 	Used for urology: examination of urethra and urinary bladder; surgery of urinary bladder (biopsy sampling of tumor, electrocoagulation, etc.). This device consists of an outer tube, an optical observation tube and a bridge.	2
17	25	Electro-encephalograph (EEG)	<ol style="list-style-type: none"> 1) Number of channels: 14Ch 2) Measuring program memory: provided. 3) Light irritator: provided. 4) CMRR: Electrode junction box at least 100 db approx. 5) Recorder: included 6) Digital Signal processing 	Used for measuring the electric potential generated in the brain and for diagnosis of encephalopathy. A 14-channel device is selected which can cover general diagnostic needs on a basic level. Measuring programs (recipes) can be stored for automatic measurement. The device is also equipped with a widely accepted light irritator as an indispensable accessory for encephalography.	2

18	26	Spirometer	<ol style="list-style-type: none"> 1) Measuring range: Flow: 0.1~12.0 L/sec Volume: 0~10 L 2) Measuring items: VC , FVC , MVV 3) with Recorder 	Apparatus for examining respiratory functions; capable of measuring and recording ventilation capacity, forced respiration curve, flow volume curve, etc.	1
19	28	Fetal monitor (tococardiograph)	<ol style="list-style-type: none"> 1) Measuring items: Heart beat of fetus, labor pains 2) Measuring system: Pulse Doppler 3) Oscillating frequency: approx. 1 - 2 MHz Heart beat counting range: 50 - 210BPM 4) Recording range: 50 - 210BPM 	Used at the labor room and delivery room for monitoring fetus and pregnant women. Essential for the safety of delivery. Used for the measurement of heartbeat of the fetus. This is the pulse Doppler system that is known for having little or no influence on the mother's body and fetus. A model enabling external measurement of a birth pang in a manner which does not affect the body of the pregnant woman will be selected. It will also be equipped with a recorder.	10
20	30	Obstetric delivery table	<ol style="list-style-type: none"> 1) Manually-operated hydraulically-driven type 2) Height adjustment: approx. 65 - 90 cm 3) Trendelenburg 15' and reverse trendelenburg 9' 4) Material/Finish: Steel made with the major part baked-on melamine resin finish the moving part with chrome plated and the base covered with stainless steel plate. 	Provided with a table and basic functions necessary for delivery.	5
21	32-1	Central monitor system for 5 beds	<ol style="list-style-type: none"> 1) Measuring items : Cardiogram, heart beat, frequency of respiration, body temperature, IBP, NIBP, SpO₂ 2) Central monitor#1: Color 3) Bedside monitor #5: Color Trend display times : 24H/8H/1H Modular capable of taking other parameters subject to the provision of more add-ons in the futur 4-wave Display 4) Pacing pulse display: available 5) Communication : Direct wire connection 6) Coverage : up to 8 patients 	A system used in the nurse station to monitor and record data (cardiogram, pulse rate, respiration rate, body temperature and blood pressure) sent out from bedside monitors of ICU / CCU. It is provided with a warning device that is activated when abnormalities are detected.	1
22	32-2	Central monitor system for 6 beds	<ol style="list-style-type: none"> 1) Measuring items : Cardiogram, heart beat, frequency of respiration, body temperature, IBP, NIBP, SpO₂ 2) Central monitor#1: Color 3) Bedside monitor #6: Color Trend display times : 24H/8H/1H Modular capable of taking other parameters subject to the provision of more add-ons in the futur 4-wave Display 4) Pacing pulse display: available 5) Communication : Direct wire connection 6) Coverage : up to 8 patients 	A system used in the nurse station to monitor and record data (cardiogram, pulse rate, respiration rate, body temperature and blood pressure) sent out from bedside monitors of ICU / CCU. It is provided with a warning device that is activated when abnormalities are detected.	1
23	33	Patient monitor, Bedside type	<ol style="list-style-type: none"> 1) Measuring items: Cardiogram, heart beat, frequency of respiration, body temperature, NIBP, SpO₂ 2) Monitor: Color 3) Battery pack 4) Upgradable to central monitor system subject to equipped extra accessories 	A bedside monitor to be installed near a specific patient for monitoring cardiogram, heartbeat, frequency of respiration, body temperature, blood pressure, etc. It is capable of being connected to the central monitor system.	4

24	34	Defibrillator	<ol style="list-style-type: none"> 1) Energy setting level: approx. 2 - 360J 2) Paddle: External (Adult , Child) 3) Cardiographic function: provided. 4) Recharging time: approx. 5 sec. 5) Printer built-in type 6) ECG synchronized system 	An emergency device indispensable for resuscitation of patients suffering from cardiac standstill or ventricular fibrillation. It is equipped with a basic cardiographic function, and is mounted on a cart.	6
25	36	External Pacemaker	<ol style="list-style-type: none"> 1) Sensitivity: 1 mV 2) Selectable Pacing Rate Mode (normal, double and quadruple): 30~720ppm 	A device to give electrical stimulation to either cardiac ventricle or atrium or to both in order to stabilize pulse beat and maintain cardiac functions against brady cardiac arrhythmia.	5
26	41-1	Respirator for adult/child	<ol style="list-style-type: none"> 1) Operating: In response to volume and pressure 2) Running mode: SIMV, IMV, ASSIST, PEEP, CPAP, PRESSURE SUPPORT, FLOW AND PRESSURE TRIGGERING PCV, MMV 3) Ventilation rate: 0 - 40 times/min. 4) Tidal volume: 50 - 1,300ml (Sigh: 100 - 2,600ml) 5) Maximum flow: 5 - 65 lit./min. 6) Accessory: heater humidifier 	A device used for treatment of a patient suffering from difficult breathing or for the respiratory control after an operation. The device can be used for adults and children. It is equipped with a nebulizer as accessory.	10
27	41-2	Respirator for new-born	<ol style="list-style-type: none"> 1) Mode: CMV, IMV, ZEEP, PEEP/CPAP, PCV, TIME-CYCLING FLOW GENERATOR TYPE 2) Tidal volume: approx. 0 - 999 ml/min I/E ratio: approx. 1 : 0.5-1 : 99 3) O2 blender: approx. 21~100% 4) Display: Digital 5) Heater Humidifier: provided. 	A device used for treatment of patients suffering from difficult breathing or for the respiratory control after an operation. Used for controlled respiratory to assist infant patients who are capable of spontaneous respiration.	2
28	44-1-1	Hemodialysis Machine Type-A	<ol style="list-style-type: none"> 1) Dialysate dilution method: Continuous dilution by displacement pump 2) Dialysis method: Single Pump 3) Dehydration controller: provided. 4) Dialysate supply volume: approx. 500 ml/min. 5) Disinfection method: Chemical 6) Sensor: Bubble, blood leakage, & negative pressure 7) Monitor <ol style="list-style-type: none"> (1) Arterial pressure (2) Venous pressure (3) Temperature (4) Blood feed rate (5) Dialysate flow rate (6) Dialysate pressure 8) Dialysis fluid : Acetate and Bicarbonate 9) Double needle. 10) Alarm : Venous pressure, Arterial pressure guard, Temperature, Dialysis fluid, Ultrafiltration control, Blood leakage detection 11) Na infusion unit: Included 12) Ultra-filtration mechanism: Included 	Haemodialyzer used for patients suffering from chronic and acute liver diseases, eliminating impurities in blood. The equipment to be procured is a single pump type suitable for chronic cases.	16
29	44-1-2	Hemodialysis Machine Type-B	<ol style="list-style-type: none"> 1) Same as Item No. 44-1a, but with Single & Double Needle (Double pump). 	Haemodialyzer used for patients suffering from chronic and acute liver diseases, eliminating impurities in blood. The equipment to be procured is a double pump type suitable for chronic cases.	2
30	46-1	Dish washer	<ol style="list-style-type: none"> 1) High-performance washing pump 2) Single-tub type 3) Capacity: at least 50 dishes 	Automatic washer capable of washing dishes efficiently.	1
31	46-2	Hot Food Unit	<ol style="list-style-type: none"> 1) Number of pots: 3 	Used at the kitchen for warming soup, etc.	2

32	46-8	Walk in cooler freezer	1) Capacity: approx. 3 m ³	Freezing refrigerator, a prefabricated slim type, supplied with shelves, trays, baskets, etc. to keep the patient food cool.	1
33	47	Automatic stainer	1) Slide Capacity : 60 slides 2) Steps : 50 steps/program 3) Step Time: 1 - 99min. at approx. 1min. for each station	A histological specimen dewatered, degreased, cleared and impregnated with paraffin can be wrapped in paraffin embedding medium and a paraffin block simultaneously. This system is suitable for staining specimen embedded in slide, which can streamline a complex series of embedding operations.	1
34	53	Blood gas analyzer	1) Specimen: Blood 2) Measuring Parameters: pH pO ₂ pCO ₂ Na K Ca Cl Hct 3) With capillary adapters 4) With maintenance-free electrodes	Used for analyzing the concentration of O ₂ , CO ₂ , etc. in blood in order to assess whether respiratory functions are working in order.	4
35	54	Cell washer Centrifuge	1) Samples : 12 2) Speed range : approx. 2000 - 3000 rpm 3) Time setting : approx. 15 - 60 sec. 4) Usage 3 modes (Blood grouping, cross matching or cooms testing, and cell washing)	A centrifuge used for preparatory processing of blood cells before the antigen - antibody reaction test.	5
36	56	Chemistry analyzer	1) Number of measuring items: 24 or more 2) Processing capacity: 120-180 specimens per hour 3) Monitor : 9" (monochrome) 4) A biochemical analysis system capable of full-automatic measurement of 24 major biochemical characteristics, including Uric acid, Albumin, GPT, Amylase, Apolipoprotein, GOF, Total bilirubin, Calcium, Cholesterol, Cholinesterase, CK, Creatinine, Serum iron, Glucose, G-GT, HBDH, LDH, Magnesium, Inorganic Phosphor, Total protein, Triglycerides, Alkaline Phosphatase, BUN.	A biochemical analysis system, necessary for clinical tests: diagnosis of patient conditions, measurement of important biochemical elements such as GOT, GPT, GLU, etc.	4
37	57	Cryotome (Microtome, Freeze type)	1) Freezing chamber temperature: -5 - -30°C 2) Slice thickness controller: 0 -20 μm 3) Maximum cutting dimensions: 50 x 50mm	This system has been introduced to meet the needs of quick histological diagnosis during an operation. Histological specimen is quickly frozen and sliced in a cryogenic box. Temperature change is constant. The system is easy to operate, and allows direct application of the specimen to a slide glass and easy staining of the specimen.	1
38	59	Electrophoresis equipment	1) Measuring items : Serum protein, L.D.H, A.L.P, Lipo-protein, Cerebrospinal fluid 2) Measurement speed: approx. 600~900 mm/min. 3) Measurement time: 20 tests / 5 min. 4) LED Display	Automated system of fractionation and examination of serum proteins. It performs automatically all the complex jobs of skilled technician from serum sampling, application to supporting medium, electrophoresis, and recording of measured data.	2

39	61	Fume hood (draft chamber)	<ol style="list-style-type: none"> Overall dimensions: approx. 1200(W)x750(D)x2300(H)mm Air velocity: approx. 0.4 m/s Airflow rate: approx. 19 m³/min. Fluorescent light: provided. 	A local ventilating system for removing toxic gases, fumes, odors and other air pollutants. Used for laboratories.	1
40	62-1	Hematology blood cell counter (18 parameters)	<ol style="list-style-type: none"> Measurement item: WBC, W-SCR, W-MCR, W-LCR, W-SCC, W-MCC, W-LCC, RBC, Hgb, Hct, MCV, MCH, MCHC, RDW-CV or RDW-SD, PLT, PDW, MPV, P-LCR (Total 18 parameters) Included 3 Histograms Measuring time: 45-60 sec / specimen. 	A basic analyzer used for hematological examination, including measurement of quantity and class of red and white blood cells, platelets, hemoglobin, etc., being useful for diagnosis of blood diseases, such as anemia, leukemia, hemophilia, etc.	1
41	62-2	Hematology Blood cell counter (8 parameters)	<ol style="list-style-type: none"> Measurement item: Leukocyte Count, Hemoglobin, Hematocrit, Erythrocyte Count, mean Erythrocyte Volume, Mean Erythrocyte Hemoglobin, Mean Erythrocyte Hemoglobin Concentration, Platelet (Total 8 parameters) Measuring time: 45-60 sec / specimen. 	A basic analyzer used for hematological examination including measurement of quantity and class of red and white blood cells, platelets, hemoglobin, etc., being useful for diagnosis of blood diseases such as anemia, leukemia, hemophilia, etc.	6
42	67	Refrigerated centrifuge	<ol style="list-style-type: none"> Speed: approx. 6,000 rpm. Capacity: 6 blood bags Rotor: Swing bucket rotor for 6 blood bags Including Tube rack for 15 ml glass tube 	Used mainly for separation of blood. Main application is to separate plasma and platelets for transfusion from whole blood.	2
43	68	Automatic embedding machine (Tissue Processor)	<ol style="list-style-type: none"> Type: Rotary Paraffin impregnation time: approx. 20hours Number of station : 12 Timer: Photo electric control for 24 hours with 12 movable control stops. 	Histological specimens sampled are put into a basket and automatically processed through uptaking alcohol, xylol, and molten paraffin for the purpose of paraffin impregnation.	1
44	71-1	Washing machine (large)	<ol style="list-style-type: none"> Capacity: approx. 30 kg x 2 sets Functions: Washing and dewatering Electrically operated 	Equipment used for washing and dewatering bedding (sheets, bedspread, pillowslips, and other items of hospital linen), clothes, etc.	1
45	71-2	Washing machine (small)	<ol style="list-style-type: none"> Capacity: approx. 15kg x 2 sets Functions: Washing and dewatering Electrically operated 	Equipment used for washing and dewatering bedding (sheets, bedspread, pillowslips, and other items of hospital linen), clothes, etc.	1
46	71-3	Flat work ironer	<ol style="list-style-type: none"> Roll dimensions : Heating; approx. 400 dia. x 2900(L) mm Press; approx. 140 dia. X 2900(L) mm Speed: 2 - 7 m/min. Return method 	Equipment used for pressing clothes and linens using heated rolls.	1
47	71-4	Dryer Tumbler	<ol style="list-style-type: none"> Capacity: approx. 15 kg x 2 sets Drying process: Tumbling drum type Electrically operated 	Used for drying clothes and linens by revolving with hot air.	1
48	71-5	Cotton press for trousers	<ol style="list-style-type: none"> Dimensions: approx. (W) 1300 x (D) 1000 x (H) 1200 mm 	Equipment used for pressing trousers, etc. efficiently	1
49	71-6	Cotton press for sheets, gowns, etc.	<ol style="list-style-type: none"> Dimensions: approx. (W) 800 x (D) 1000 x (H) 1200 mm 	Equipment used for pressing white gowns, working wear, etc. efficiently.	1
50	73	Craniotomy instrument set with St. container	<ol style="list-style-type: none"> Complete set of forceps Complete set of fixtures and others (about 50 instruments in all) 	A complete set of instruments necessary for basic craniotomy.	1

51	74-1	Anaesthesia machine	<ol style="list-style-type: none"> 1) System: To include anti-hypoxic device with automatic shut-off 2) Evaporator (2 or more units can be used): Halothane and Isoflurane 3) Artificial Respirator: Provided 4) CO₂ Absorber 5) Flowmeter unit with N₂O automatic shut-off mechanism. 6) Digital O₂ monitor: provided 7) scavenging system 	Equipment used for general anesthesia for an operation. It provides all the basic functions required, including manual controls of oxygen and nitrous oxide. It is also equipped with an artificial respirator because anesthesiologist will find it difficult to secure respiratory function of a patient under the long hours operation.	7
52	74-2	Anaesthesia monitor	<ol style="list-style-type: none"> 1) Color 2) Battery pack 3) ECG-RESP. 4) NIBP 5) SpO₂ 6) Heart rate 7) Temperature 		7
53	74-3	Ventilator for Anaesthesia machine	<ol style="list-style-type: none"> 1) Time cycled, volume controlled 2) Volume monitoring 3) Alarms: Ventilator failure, Set volume not delivered, low O₂ Supply Pressure, Low Airway Pressure 4) Controlled Parameter ranges: 5) Minute Volume: Adult bellows 20 to 30 l./min 6) Respiratory rate: 6 to 40 breaths per minutes 		7
54	75	Electric surgical unit	<ol style="list-style-type: none"> 1) Type: Unipolar, bipolar 2) Output circuit: Ungrounded type 3) Functions: Cutting, coagulation, mixing, bipolar 4) Output: Incision - 350 W : Coagulation - 130 W : Mixing: - 250 W : Bipolar - 50 W 5) High frequency: max. 150 mA 6) Low frequency: max. 1uA 7) Safety circuit: provided 8) Electrode for Infant 9) Output controller: 3, independently adjustable 	Basic surgical instruments used for incision, homeostasis and coagulation during the operation. It is a floating type.	7
55	76	Operating ceiling lamps, Satellite	<ol style="list-style-type: none"> 1) Type: Satellite type 2) Light intensity : 2 main light each of about 80,000 Lux. 	Luminaire to ensure irradiation with heat-less and shadowless light of proper color temperature and illumination in the operating room.	10
56	77	Operating table, Hydraulic	<ol style="list-style-type: none"> 1) Electro-hydraulic type 2) Elevation : Approx. 70 - 100 cm 3) Trendelenburg: $\pm 30^\circ$ 4) Lateral tilt: $\pm 30^\circ$ 5) Back section : 90° up / 40° down (approx.) 6) Electrical movement: Table top, Trendelenburg, Column base 7) Kidney Bridge included 8) Number of sections: 5 	Used for placing a patient on the table for an operation. Unlike an ordinary bed, the operating table can be tilted and rolled to adjust the position of the patient for ease and safety of the operation.	6
57	78	Austin-Moore artificial capital machine set	<ol style="list-style-type: none"> 1) Austin-Moor type: Complete set of about 15 instruments 	Used for artificial capital surgery.	3
58	89	Transport incubator	<ol style="list-style-type: none"> 1) Temperature setting: approx. 24 to 39°C 2) Alarm: Low temperature, high temperature, low battery, heater overheat (audible & visible alarm) 3) Configuration: Light, rechargeable battery, stand 4) Temperature measurement: Air temperature and Skin Temperature 	Used for transportation of a new-born baby (premature) between medical facilities or within a hospital. The temperature is maintained using a battery-powered heater. The incubator is mounted on a cart which can be fitted with an oxygen cylinder.	5

			5) Temperature Control: Air Temperature 6) O2 cylinder included		
61	96	Automatic film processor	1) Film size: approx. 4" x 5" to 14" x 17" 2) Processing capacity: approx. 220 films/h 3) Developing rate: approx. 90 sec./pc. 4) Automatic transfer system	A system for automatic development, fixation, washing and drying of X-ray films and other sensitized medical films for image analysis.	7
62	97	CT scanner (Spiral)	1) Spiral Scan 2) Scan time: 0.6 sec (partial scan 220° to 240°) 1 - 4sec (full scan) 3) Reconstruction time: 3.5 sec (spiral) 4) X-ray detector: more than 800 channels 5) X-ray tube anode heat capacity: at least 2MHU 6) Laser imager: provided 7) X-ray tube housing capacity: at least 2.5MHU 8) Spatial resolution: more than 12lp/cm (axial & spiral) 9) Gantry aperture: at least 700mm dia. 10) Generator: High Frequency, Slip-ring mounted 11) Gantry tilt for lower back positions approx. +/-30°	Used for X-ray tomography of human body. Since the whole body is the subject of tomography, this CT scanner can be used for diagnosis of: tumor, hemorrhage in the skull; tumor in abdominal organs, degeneration of muscular tissue, etc.	2
63	98	Mobile X-ray	1) Inverter type : High frequency generator 2) Tube voltage : approx. 40 - 125KV 3) Tube current : approx. 50 - 400mA 4) X-ray tube : approx. 90-120KHU 5) Traveling : Hand-operating 6) Maximum rating : approx. 30KW 7) X-ray setting range : min. 0.5-100mAs in at least 20 steps	Used for serious cases who are too infirm to go to the X-ray examination room. Since the whole body is the subject of examination, simple radiography is done for each bodily part. The system is provided with a radiographic.	5
64	99-1	Ultrasonic equipment, portable	1) Display modes: B-mode, M-mode, B/M-mode 2) Scanning method :Convex, Linear 3) Observation monitor: 9" (Monochrome) 4) Probe: Dual Frequency Type 5) Approx. 3.5 - 5.0 MHz Convex Probe 6) Approx. 5.0 - 7.5 MHz Endocavity Probe (Transvaginal / Endorectal)	Ultrasonic waves are irradiated upon the human body, and echoes are analyzed to obtain an image of internal structures. Namely, by detecting and observing the echoes, we can interpret the morphology of a specific lesion or the characteristics of affected tissue, etc., which enables us to diagnose the patient.	7
65	100-1	Ultrasonic equipment, general use	1) Display modes: B-mode, B/B-mode, M-mode, B/M-mode 2) Scanning method :Convex/Linear/Sector 3) Observation monitor: 9" (Monochrome) 4) Probe: Dual Frequency Type 5) Approx. 3.5 - 5.0MHz Convex Probe 6) Approx. 5.0 - 7.5MHz Endovaginal probe 7) Approx. 6.0 - 8.0MHz Linear Array (6cm) 8) Gray scales: 256 9) 2 digital memories 10) Image storage on 3.5" diskette	Ultrasonic waves are irradiated upon the human body, and echoes are analyzed to obtain an image of internal structures. Namely, by detecting and observing the echoes, we can interpret the morphology of a specific lesion or the characteristics of affected tissue, etc., which enables us to diagnose the patient.	6
66	101	X-ray Fluoroscopy	1) Under-table tube (with automatic under-table collimator) and Over-table tube on telescopic ceiling stand (with manual over-table collimator) 2) X-ray tube : approx. 250 - 300KHU 3) X-ray generator: High frequency, Microprocessor control. More than 50 kW 4) Focal range of about 0.6 - 1.2mm. 5) Automatic exposure control on vertical bucky, spot film device and table bucky 6) Trimode 9" Image intensifier 7) Table top Movement: (1) Longitudinal (+60/-40) (2) Lateral (+/-10)	Used for diagnosis of respiratory and digestive organs, chest, myelography; radioscopy examination and rapid radiography of joint cavities and bones, etc. For obtaining clear images from the radiography, the system is provided with a high-frequency generator.	4

			(3) Tilting (+90 /-15) 8) Vertical Bucky stand : Included		
67	102	X-ray for general purpose (Bucky)	1) Floating top bucky table 2) Table top longitudinal movement; approx. +/- 50cm 3) Table top lateral movement: approx. +/- 12cm 4) High frequency generator : at least 40KW, 5) X-ray tube : 200KHU or more 6) Vertical bucky stand : Included 7) Beam Limiting Device: Included (manual collimator) 8) Automatic exposure controls on vertical bucky and table bucky.	Will be installed at the X-ray room. This system is used for simple radiography of the whole body of a patient. The radiograms obtained are used for diagnosis of bone fracture, pulmonary disease, cardiovascular disease, encephalopathy, etc. For obtaining clear images, the radiographic table and stand employed will be the Bucky type.	3

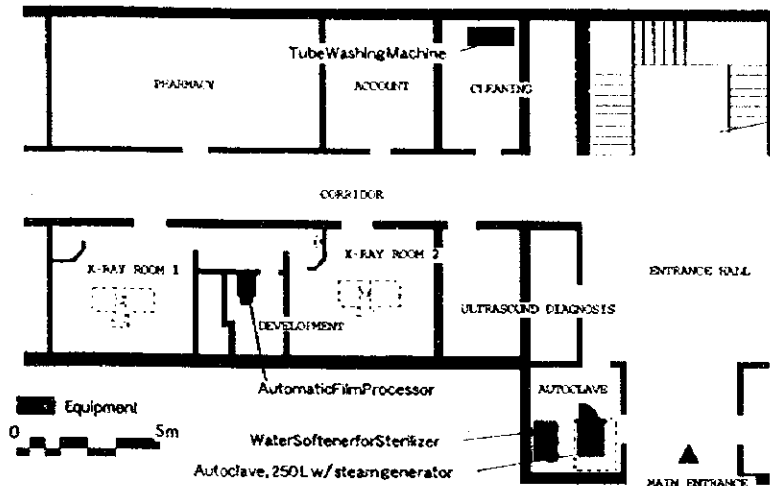
(3) Installation Plan for Major Equipment

The equipment required installation work under this project will be arranged as following installation plane at each designated site.

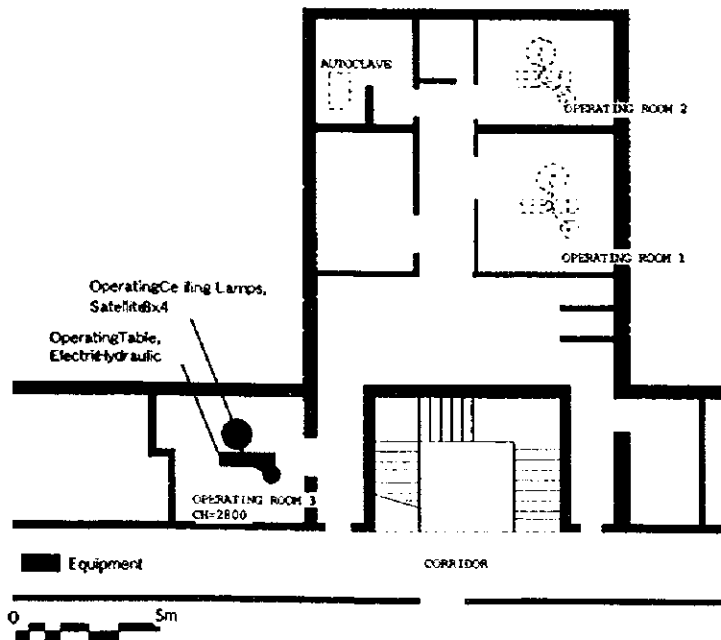
1) Jenin Hospital

① Radiology and CSSD

(X-ray for general purpose , Automatic film processor, Ultrasonic cleaner , Tube Washing machine, etc)



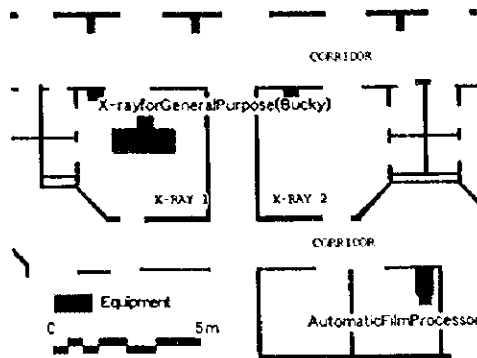
② Operating Room (Operation Ceiling Lamps, Operation Table etc)



2) Tulkarem Hospital

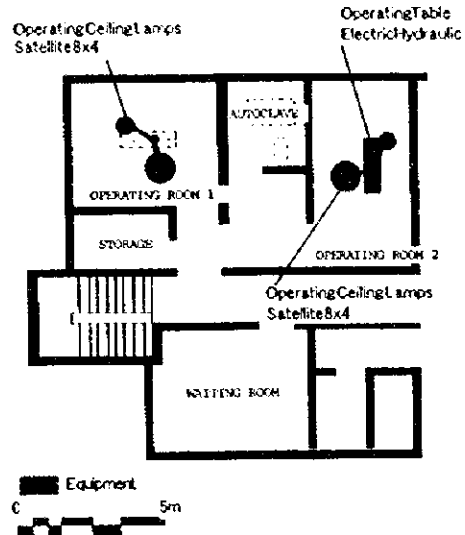
① Radiology

(X-ray for general purpose,
Automatic film processor)



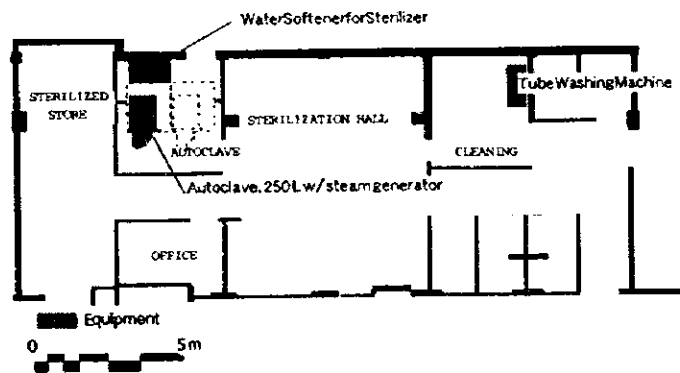
② Operating Room

(Operation Ceiling Lamps,
Operation Table etc)

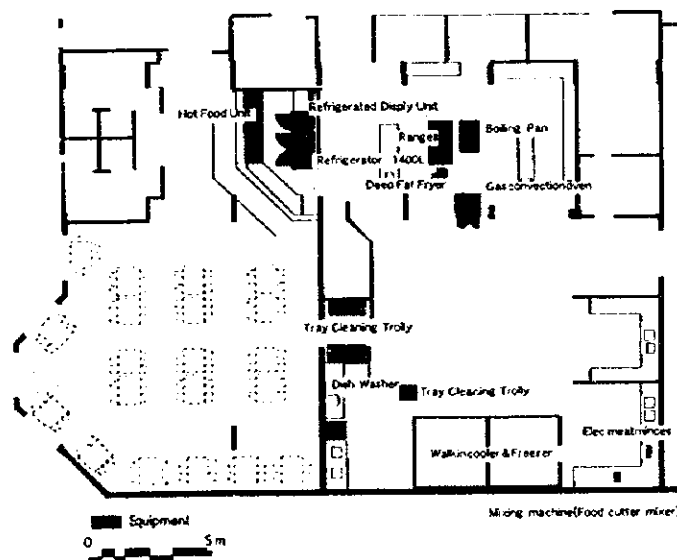


③ CSSD (Autoclave,

Ultrasonic cleaner unit,
Tube washing machine etc)

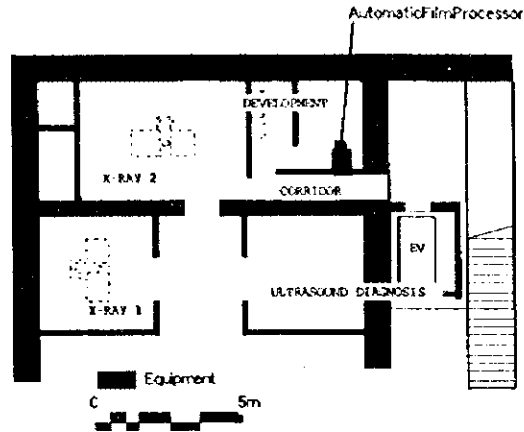


④ Kitchen

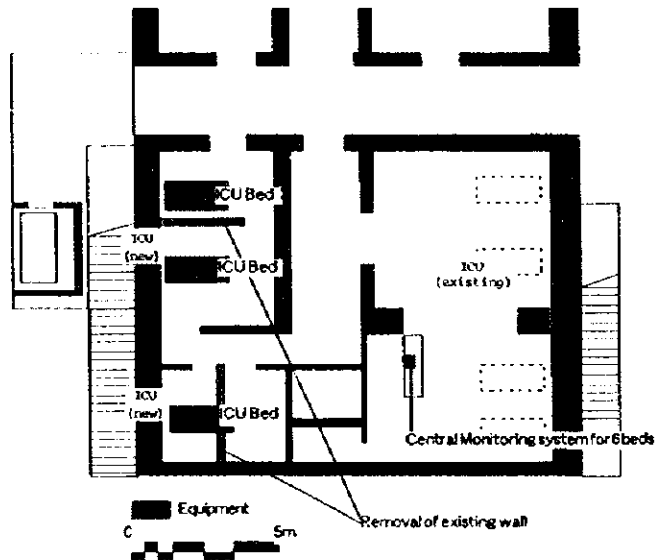


3) Watani Hospital

① Radiology (Automatic film processor, etc)

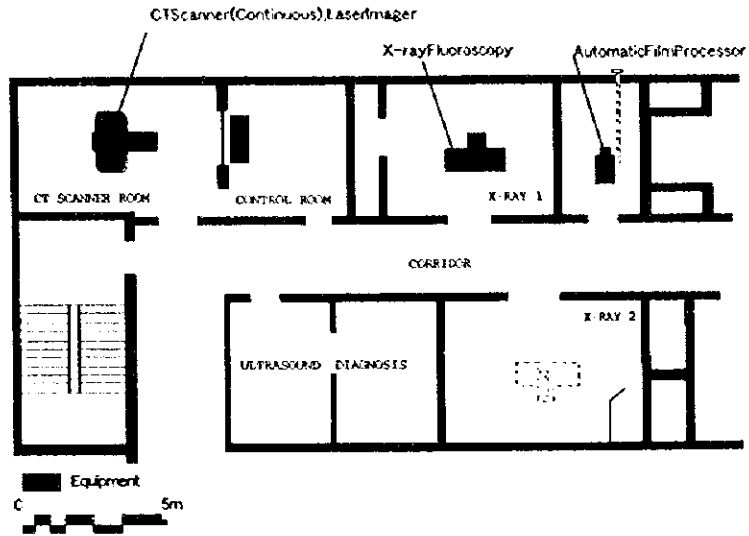


② ICU (Central Monitoring System, ICU Bed, etc)



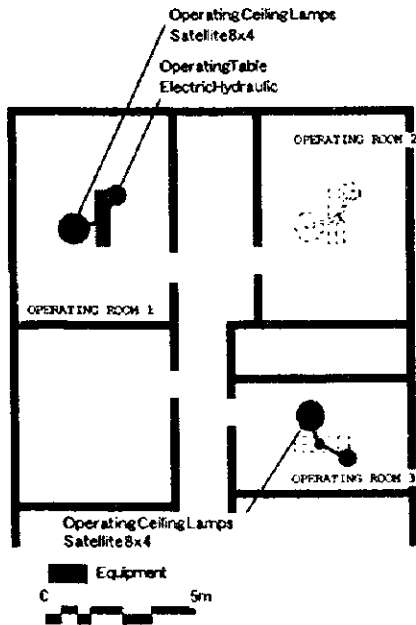
4) Rafidya Hospital

① Radiology (CT Scanner, X-ray for general purpose, Automatic film processor)



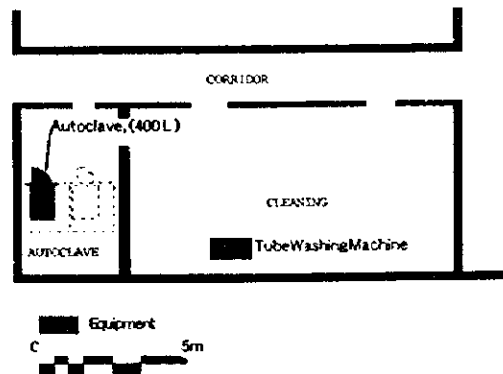
② Operating Room

(Operation Ceiling Lamps,
Operation Table, etc)

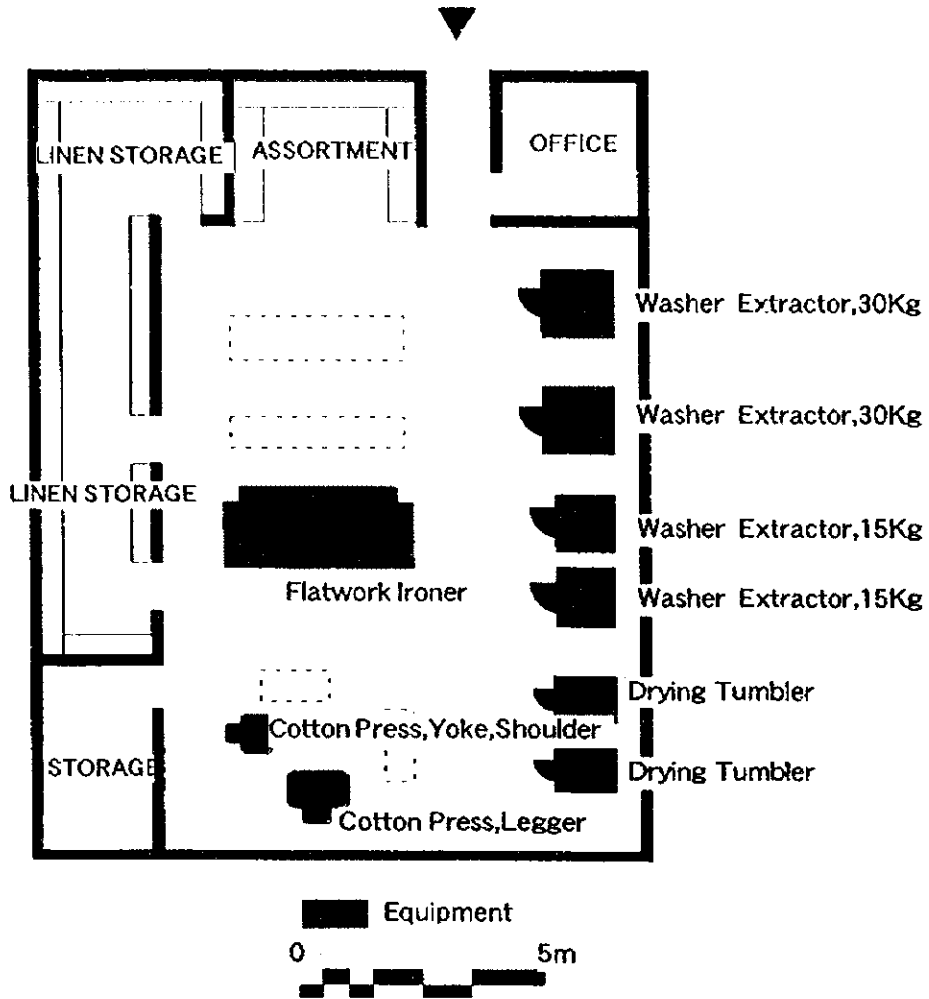


③ CSSD

(Autoclave,
Ultrasonic cleaner unit, etc)

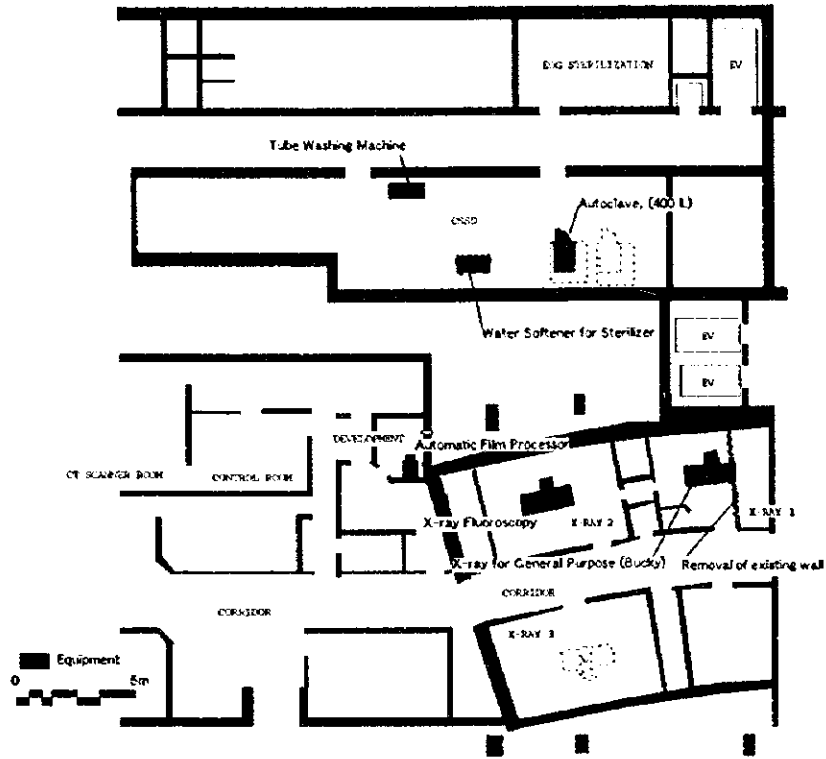


④ Laundry

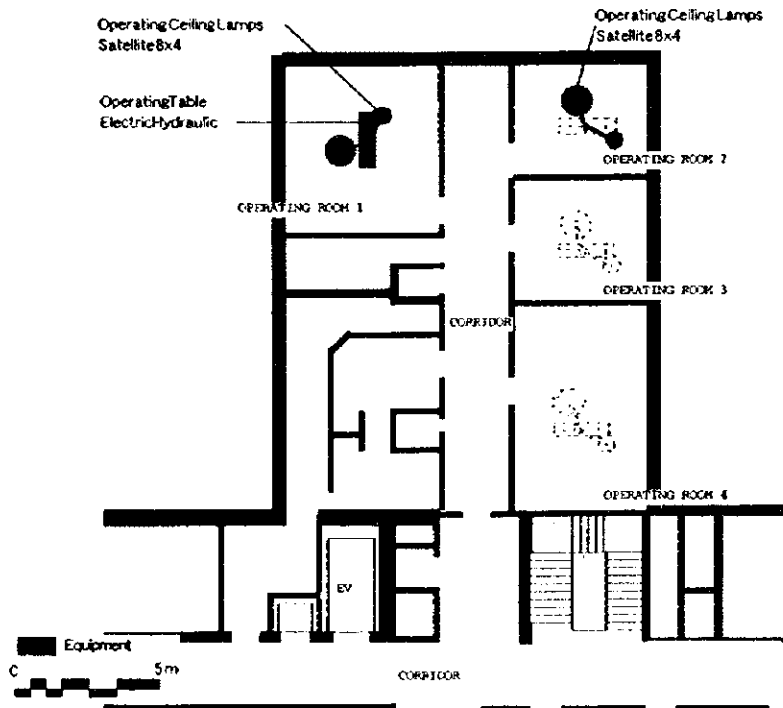


5) Ramallah Hospital

- ① Radiology and CSSD (X-ray for general purpose, Automatic film processor, Ultrasonic cleaner, Tube Washing machine, etc)

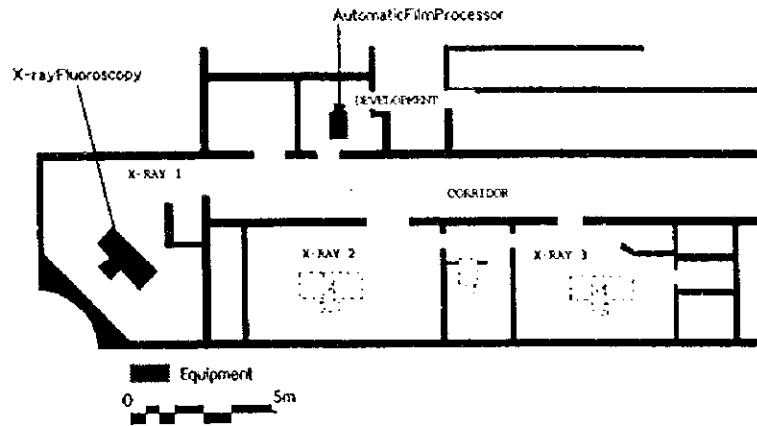


- ② Operating Room (Operation Ceiling Lamps, Operation Table, etc)

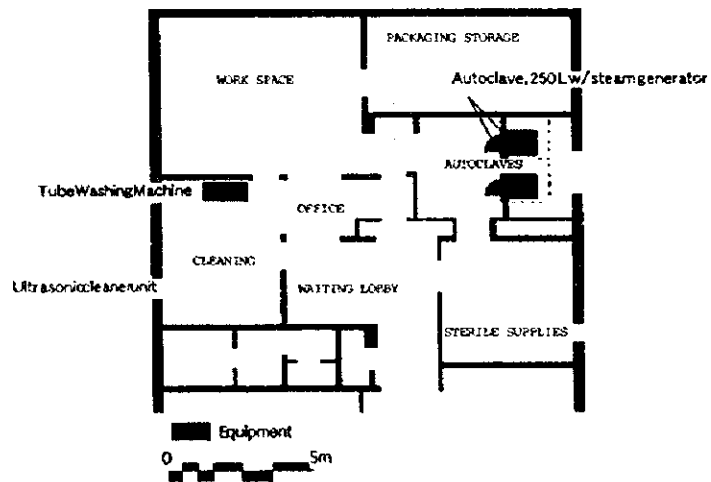


6) Beit Jala Hospital

① Radiology (X-ray for general purpose, Automatic film processor, etc)



② CSSD (Autoclave, Ultrasonic cleaner unit, Tube washing machine , etc)

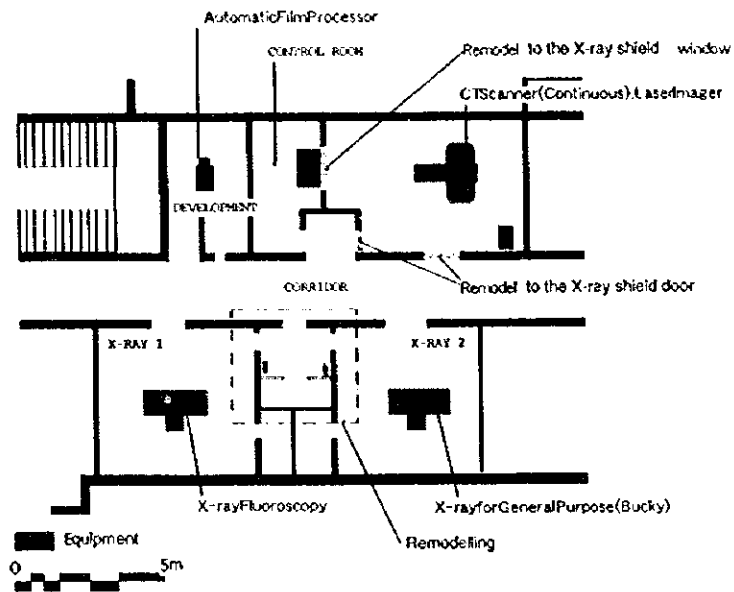


7) Bethlehem Hospital

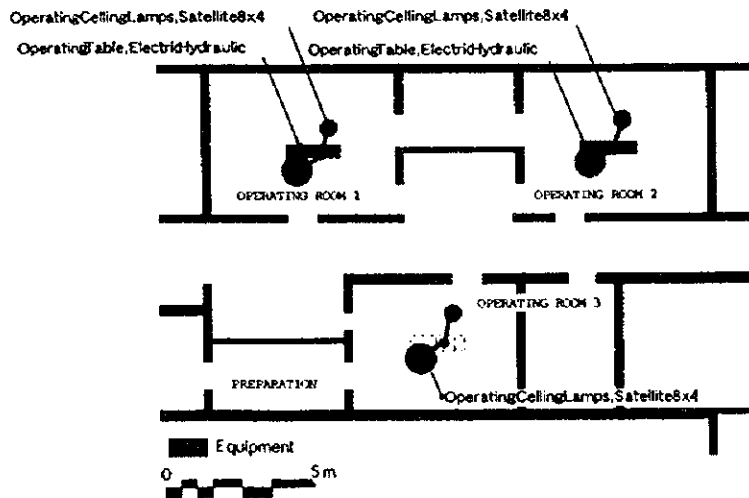
Procured equipment are Electrocardiograph , Electroencephalograph and Difibrirator. There are no installation required equipment in this hospital, but must be prepare for sound and vibration proofing room

8) Hebron Hospital

① Radiology (CT Scanner, X-ray for general purpose, Automatic film processor)



② Operating Room (Operation Ceiling Lamps, Operation Table, etc)



2-4 Implementing System of the Project

2-4-1 Organization

The implementing organization of this project is the Ministry of Health (MOH) of the Palestinian Authority, and the designated medical facilities are eight hospitals: Jenin, Tulkarem, Watani, Rafidia, Ramallah, Beit Jala, Bethlehem and Hebron Hospitals and the Central Workshop.

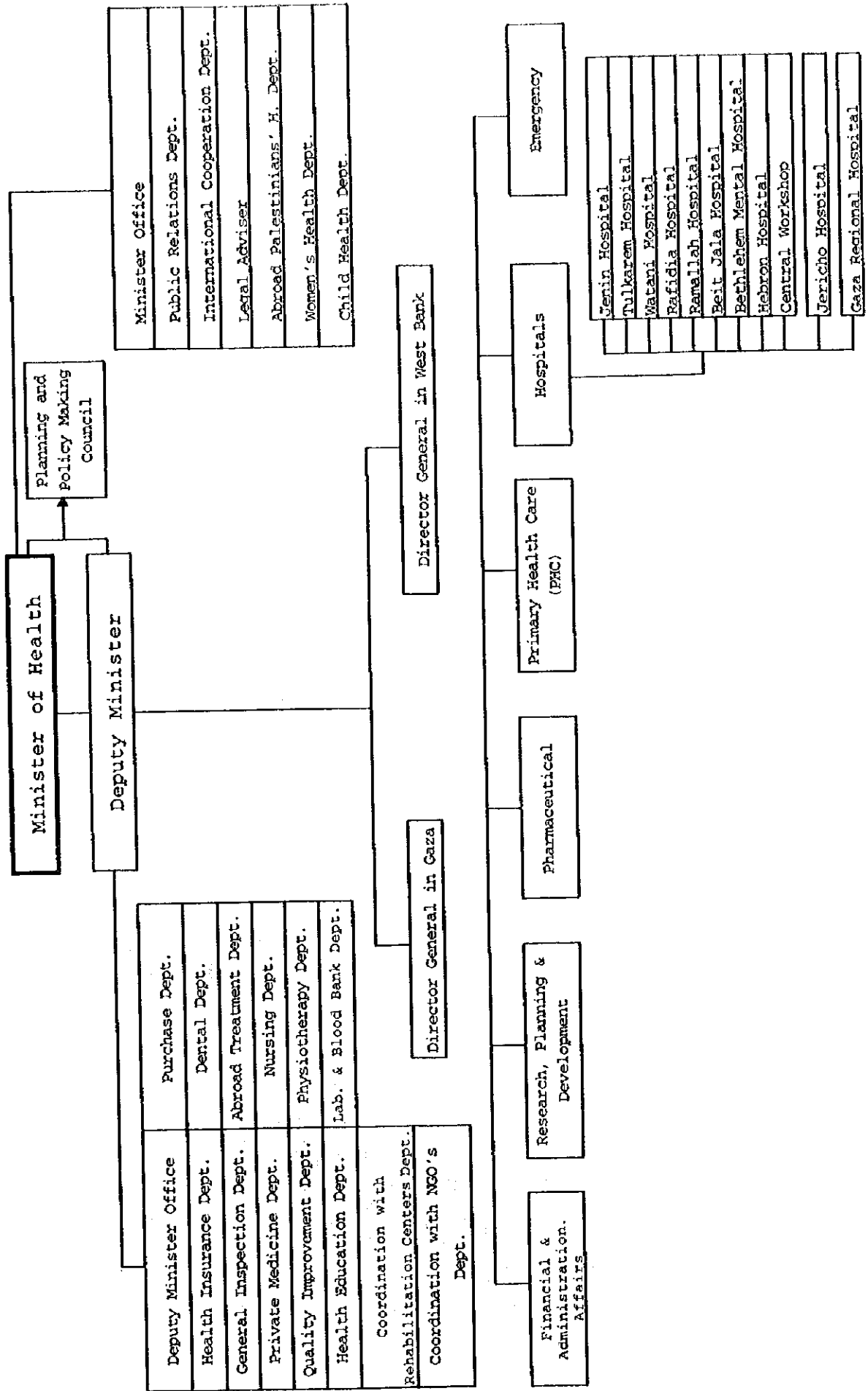
The Ministry of Health, headed by the Minister of Health, consists of its headquarters in Gaza and two regional offices in Gaza District and in Nablus. Gaza and West Bank have been doing different health care services respectively. In this regard, adjustment has been done in order to establish an equal comprehensive medical system.

After the provisional autonomy has been come into effect, health care services in regions have been expanded while the referral system has been reinforced for the eight designated hospitals. Medical structure which leads to the better medical services and effective hospital management has been built up.

Ministry of Planning and International Cooperation (MOPIC) will handle actual procedures of grant-aid projects from foreign countries.

The organization chart of the Ministry of Health, Palestinian Authority, is in Figure 2-4-1.

Figure 2-4-1 PALESTINIAN AUTHORITY - MINISTRY OF HEALTH ORGANIZATION CHART



2-4-2 Budget

① Budget of MOH

The Gaza and Jericho Agreement was concluded in May, 1994, and Palestinian Authority (PA) has started. In August, 1994, self-government in five fields (direct taxation, education/culture, social welfare, tourism and health care) has started in West Bank.

Annual budgets of PA are made up per ministry and approved after consultation with the Ministry of Finance.

Because a statistics department has not been established, figures of annual budget of the Ministry of Health (MOH) are based on the questionnaires and hearing at the time of research. The recent three years' budget results of MOH are as follows:

(Unit: US\$ '000)

	1995	1996		1997
Budget of MOH	73,481	76,457		95,443
Personnel		35,934	47%	
Medicines and consumables	(N.A.)	20,643	27%	(N.A.)
Maintenance		9,940	13%	
Abroad treatment		9,940	13%	
Revenue				
Ordinary revenue (tax, etc.)		48,168	63%	
Health insurance	(N.A.)	20,644	27%	(N.A.)
Medical treatment		7,645	10%	

② Health insurance system

MOH has been making efforts to increase its individual assets of the annual budget; ratio of health insurance income and medical treatment fees paid by patients should account for 40% or over for the fiscal 1995. The result in 1996 accounted for 37%.

In order to assure a revenue source for the future, MOH has been emphasizing the health insurance system. 176,510 households have registered the system in 1996: 69% of residents in Gaza District and 40% of residents in West Bank. Total health insurance income accounted for 27% of the total budget for the 1996 fiscal year.

The health insurance system is in the process of establishment; public servants of Palestinian organizations and workers in Israel are obligated to join the system while other Palestinians are asked to join it voluntarily.

MOH is planning to increase the number of households joining the health insurance system in order to obtain sufficient health insurance income and use it as the constant revenue source. Therefore, medical environment should be improved to attract non-members of the system. It hopes that the improvement of medical environment of public hospitals will help this, and this project will be of assistance to assure the revenue source of the health care sector for the long-term period.

③ Budget for the designated facilities

MOH will decide and allocate the budget for the designated hospitals of this project. The hospitals do not buy consumables and medicines themselves; the Finance Department of MOH is in charge of the purchase instead. Medical treatment income is once pooled as the income of MOH, and then to allocate in case of need.

Above-mentioned abroad treatment fees mean the referral treatment of diseases needing advanced treatment (the heart disease, the brain disease, the eye disease and visually handicapped) in other countries such as Israel, Jordan and Egypt because the current medical facilities in Palestine cannot offer the tertiary medical care. Annual expenses for the referral treatment accounted for 13% of the total budget in 1996, which burdens the budget. MOH is planning to

reduce the costs by reinforcing the existing facilities in order for them to offer the tertiary medical service.

Recipient countries of the referral in 1996 are as follows:

Recipient Country	West Bank		Gaza District		Whole Palestine	
	No.	%	No.	%	No.	%
Israel	732	21.1	501	18.5	1,233	20.0
Jordan	608	17.5	519	19.2	1,127	18.3
Egypt	0	0	814	30.1	814	13.2
Private hospitals including NGO	2,130	61.4	872	32.2	3,002	48.6
TOTAL:	3,470	100.0	2,706	100.0	6,176	100.0

2-4-3 Personnel and Technical Level

The health care system in West Bank consists of 1) the primary health care (PHC) at health posts, health clinics and health centers, 2) the primary health care service by advanced PHC, 3) the secondary and a part of the tertiary health care services at Ramallah, Jenin, Rafidia, Hebron and Jericho Hospitals, and 4) the tertiary health care services at Makassed Hospital (NGO), and hospitals in neighboring countries like Israel, Jordan and Egypt.

The technical level of medical personnel is high in general although the slight difference between their skills is shown according to countries where they have trained. Doctors tend to train advanced medical science in Europe, USA and the Middle East, and they are capable of conducting high-level medical treatment. Nurses and paramedical staff also trained to be good medical personnel at home and abroad. There will be no problem in their skills for using the procured equipment of the project.

As for maintenance, each hospital has maintenance staff. Under the present condition, maintenance is done only for facility equipment. However, as importance of maintaining medical equipment has been recognized, each hospital has contacted with agents handling medical equipment in Palestine in cooperation with engineers of the Central Maintenance Department of MOH.

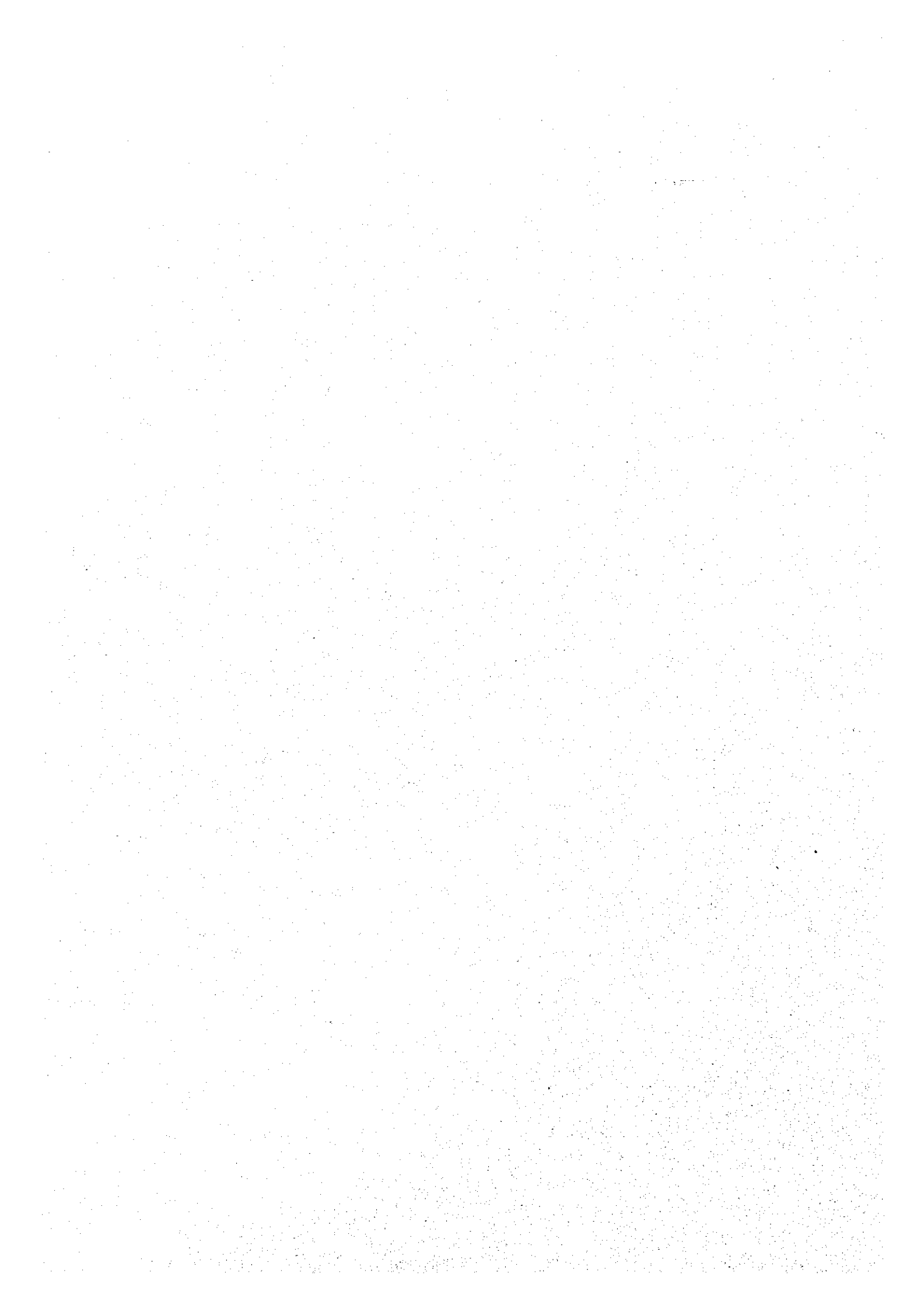
This project includes maintenance tools for the medical equipment which will be procured to the Central Maintenance Department.

The present medical personnel in Palestine in 1996 are as follows:

	West Bank	Gaza District	Whole Palestine	Per 10,000 residents
Doctors	475	627	1,102	4.9
Nurses	1,090	1,002	2,092	9.2
Paramedical	363	407	770	3.4
Administrative staff	803	1,071	1,874	
TOTAL:	2,731	3,107	5,838	

Human resources in medical care field in Palestine are one of the prior matters. After the take-off of the autonomy, Palestinian people must improve and develop its medical facilities independently. And as Palestinians who lived outside have returned to their homeland and the number of population has increased, medical facilities and training of medical personnel should be improved urgently.

CHAPTER 3. IMPLEMENTATION PLAN



CHAPTER 3. IMPLEMENTATION PLAN

3-1 Implementation Plan

3-1-1 Implementation Concept

This project will be implemented officially in accordance with the grant aid framework of the Government of Japan after approval of the Government of Japan and the conclusion of exchange of notes (E/N). Prior to the implementation, the Japanese consultant company will be contracted by the Palestinian side, and the detail design work of equipment will start. After completion of the detailed design, a Japanese supplier which will be chosen by tender for the project will implement the actual work of equipment procurement and installation. The contracts on the consultation and the equipment procurement will come into effect after approval of the Government of Japan.

For the implementation of the project conducted within the framework of the Japan's grant aid, the following items should be considered:

- (1) The work schedule should be confirmed by both Japanese and Palestinian staff in charge. Both sides should clarify the scope of work and the starting and completion dates to avoid setting complicated construction plans.
- (2) Some of the designated hospitals are presently under extension and renovation work or under planning. The construction work will be completed soon, except extension work of the laundry of Rafidia Hospital. The progress should be paid a close regard in order not to overlap this project. The conditions are as follows:

HOSPITAL.	DETAILS OF CONSTRUCTION WORK	RELEVANCE TO THIS PROJECT
Jenin Hospital		
	The third floor has been extended. Construction work of exterior walls, roof, partition walls and wiring was completed in the end of 1997. Construction work of interior and utilities will start as soon as a budget is approved.	No
Tulkarem Hospital		
	UNDP plans to build a 5-story building with 134 beds in the east of the site. At present, exterior walls and partition walls of the basement and floors of the first floor were completed, while interior of the basement has been under construction. Construction of CSSD, kitchen and a machinery room was completed in the end of 1997. Construction work of X-ray room, blood bank and outpatients consultation rooms will start in the beginning of 1998, which will be completed in July, 1998.	Yes (CSSD, Equipment for the kitchen)
Watani Hospital		
	Extension work of an outpatients consultation ward is about to start, which will be completed within 1998.	No
Rafidia Hospital		
	A new building with the laundry which will cover 600 beds for the hospitals will be constructed, which will take three months.	Yes (The laundry room)
Ramallah Hospital		
	An emergency ward has been constructed in the east of the site, while foundation work of the second floor has been done.	No
Beit Jala Hospital		
	A central material room of the first floor had been under construction, which was completed in the end of 1997. Pediatrics and maternity departments will be completed in August, 1998.	Yes (CSSD)
Bethlehem Hospital		
	No plan	NO
Hebron Hospital		
	A new ward will be constructed in the north of the site; leveling of ground has been done. However, a concrete schedule of the construction has not been fixed. Repair work for installation of CT scan is necessary.	Yes (CT room)

- (3) As to CT scans, X-ray units, steam sterilizers and theater lights that need installation work, layout for the installation should be planned in advance and submitted to the Palestinian side. If improvement work becomes necessary, the primary work for power supply, water supply and drainage, and renovation of rooms will be done on the Palestinian side.
- (4) Maintenance of the equipment should be kept a close watch in order to use them effectively for a long time. The Central Maintenance Department of MOH in Ramallah is handling the maintenance system of public hospitals and medical equipment in West Bank. Its roles include staff assignment, repairs of equipment, purchase of equipment (procurement of replacement parts) for each hospital. For better utilization of the equipment, the maintenance system should be well-planned and systematic for daily, monthly and regular inspections. Therefore, the system should be improved in terms of a maintenance contract of high-priced equipment (CT scans, ultrasonic diagnosis machines, hemodialysis machines, central patient monitors, etc.) with an agent/agents in Palestine, and training of maintenance staff.
- (5) At the time of procurement of the equipment, it must take enough time for installation, operational instructions, maintenance instructions and training so that the equipment will be delivered smoothly.

3-1-2 Important Points for Implementation

Taking into account that the designated facilities are hospitals conducting daily medical activities in practice, the procurement schedule, route, places for safekeeping and delivery and installation procedures should be duly considered through the consultation with each designated facility so that the daily medical activities may not be disturbed. In case of renewal especially, sufficient consultation should be made to avoid long unavailability of equipment caused by the removal, and prompt installation will be required for the stable medical activities.

3-1-3 Scope of Works

The scope of responsibility of the Japanese side in accordance with the grant aid scheme of this project covers the procurement and subsequent installation of medical equipment for the eight medical facilities and the Central Workshop. The scope is limited to as described below:

1. Supply of the equipment that is shown in the aforementioned equipment plan list.
2. Ocean transport and land transport expenses and domestic transport expenses to the designated facilities.
3. Expenses for installation of equipment (expenses for dispatch of engineers, local workers, tools, and measuring meters).
4. Expenses required for carrying out test runs, guidance for operations, inspections and maintenance management relating to the whole procured equipment.

3-1-4 Progress Management Plan

(1) Implementation system

This project is implemented by the following four parties:

- 1) Project implementing body

The implementing organization for this project is MOH, and the designated facilities of the project are eight hospitals and the Central Workshop. The deputy minister of MOH is in charge of actual work of the project.

2) Consultant

When the project is implemented through the Japanese grant aid program, it is stipulated by its rule that a Japanese consultant gives instructions, advice, and coordination from a fair standpoint throughout the steps of design, tender, and implementation based upon the contract with the implementing organization of Palestinian Authority, and the consultant performs necessary work for smooth implementation of the project. It should be noted that recommendation by the consultant are subject to the prior approval of MOH.

The specific tasks are as follows:

- * Detailed design
Preparation of tender documents for equipment procurement (tender conditions documents, equipment specifications).
- * Implementation of tender and procurement contract
Preparation of procurement contract draft, examination on the contents of equipment installation work report, and selection of procurement agents (public announcement of tender, tender and tender evaluation, contract negotiation and contract witnessing) subject to the prior approval of MOH.
- * Inspection and approval of work execution drawings
Inspection and approval of equipment specifications report, work execution drawings, and work execution plans submitted by the procurement agent subject to the prior approval of MOH.
- * Report on work progress
Report on the progress of work execution to the implementing body and the related organizations.
- * Cooperation in payment procedures
Investigation of bills relating to the remuneration to be paid after shipment and cooperation in these procedures subject to the prior approval of MOH.
- * Consulting work
Witnessing of various works from the beginning through the completion.

3) Equipment procurement agent

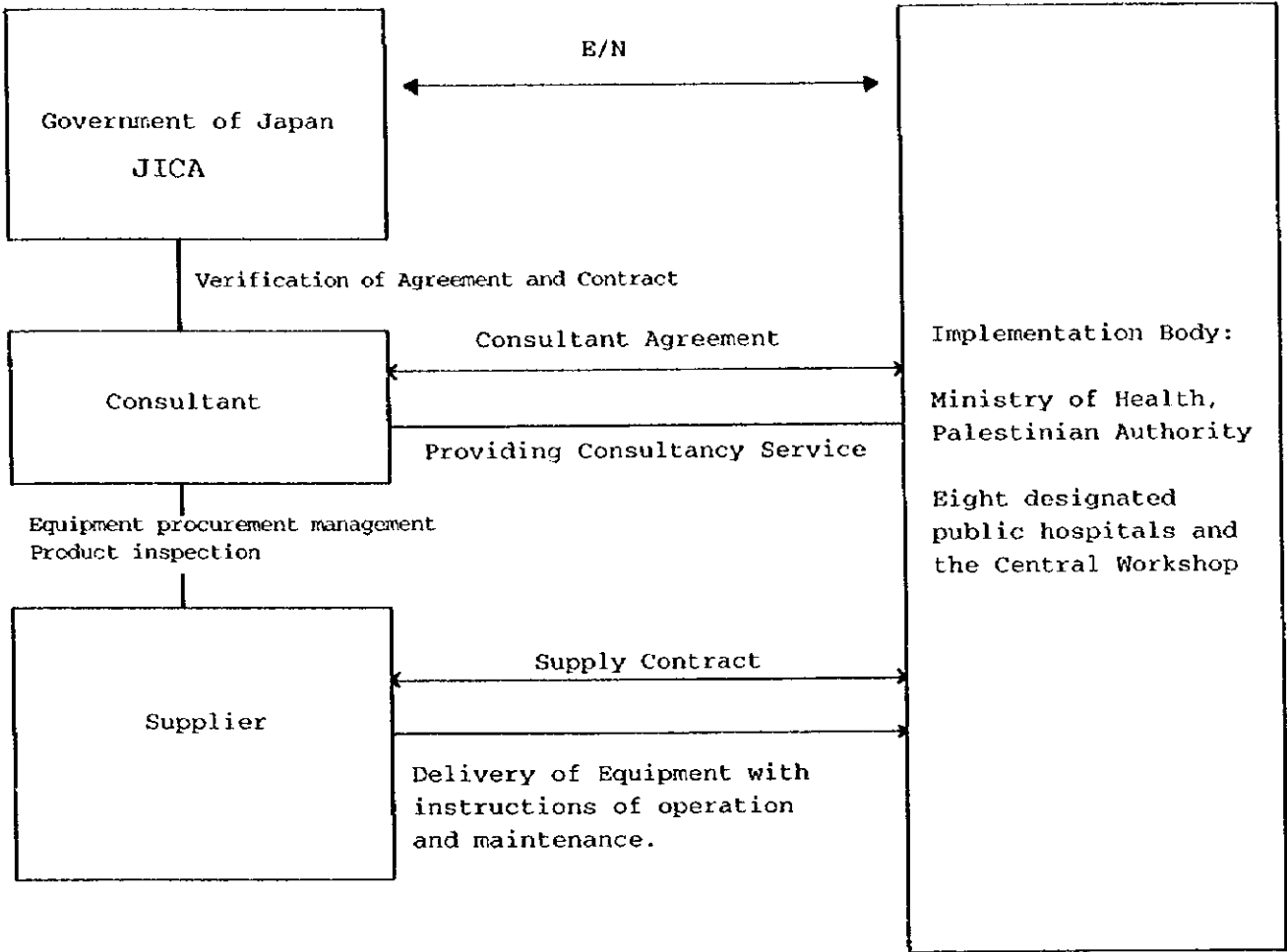
Procurement of equipment is implemented by a Japanese agent (trading company) who will be selected by tender. The agent, based upon the contract with the Palestinian side, is responsible for manufacturing, supply, bringing-in, and installation of equipment, and gives instructions on equipment operations and maintenance management to the Palestinian side before delivery.

4) JICA

Japan International Cooperation Agency (JICA) leads the consultant and the procurement agent so that the project can be implemented properly in accordance with the Japan's grant aid system. Moreover, JICA consults with the implementing organization as required to further the project.

The implementation flow chart is as follows:

Implementation flow chart



(2) Implementation design and supervision

The consultant, based on the contract with the Palestinian side, performs the implementation design and supervision for the project. The implementation design is made to determine detailed specifications and prepare the tender documents comprised of specifications, tender guidance, draft of equipment procurement contract and others based on the basic design study. The supervision is made to assure the work of the procurement agent is implemented in accordance with the contract, and to give instructions and advice and to coordinate from a fair standpoint to promote the project.

The supervision consists of the following:

1) Stage of implementation design

Preparation of implementation design documents, tender, and contract documents.

2) Stage of tender

Implementation of tender, evaluation of the contents of tender, and conclusion of contract.

3) Stage of work execution

Supervision of work execution (inspection and approval of equipment specifications, supervision of shipment, ocean transport, and inland transport, instruction and supervision of installation, and supervision of works to be shouldered by the partner country), report on the work execution progress, and issuance of certificates. (The consultant, upon confirming that the equipment installation is completed and the contract conditions are conformed, witnesses delivery of the equipment and completes its duty after obtaining acknowledgment of receipt of the equipment from the Palestinian side.)

Besides the above-mentioned work, the consultant reports on the progress, payment procedures, and completion of delivery and other necessary matters to those concerned of the Government of Japan.

(3) Personnel plan

Those who will be engaged in the consulting operation for the implementation design and the supervision of the work execution are as follows:

1) Project manager: 1 person

The project manager will supervise the whole consulting operation.

2) In charge of medical equipment plan: 2 persons

The persons in charge of medical equipment plan will analyze the planned equipment and make out specifications. They will confirm the facilities at the site and supplement the basic design study.

3) Facility plan: 1 person

The person in charge of facility plan will confirm the places where the equipment should be installed properly.

4) Cost estimation : 1 person

The cost estimator will confirm total costs of the project to compare with the B/D study.

3-1-5 Equipment Procurement Plan

The equipment for this project are expected to be procured through a Japanese trading company. For the equipment procurement plan, the following points should be considered:

- 1) Types of equipment should be generally used at the designated facilities, and specifications and grades should be mostly standardized.

- 2) Maintenance of the equipment should be fully considered. MOH requested that main equipment be maintained by manufacturers' agents in Palestine. The Palestinian medical equipment market is led by international aid organizations and support organizations of each country, and not all the manufacturers' agents are established there. All major equipment should select manufacturers who have its local agent in Palestine. As for non-major items that may not have an established local agent, a local maintenance company should be appointed.
- 3) As for the maintenance system, the Maintenance Management Center in Ramallah is handling in cooperation with the maintenance department of the hospitals. With this project as a start, MOH is planning to strengthen the maintenance system. Therefore, we would like to transfer the technology to the Palestinian side at the time of provisions and during the one-year warranty period.

Since most of the equipment will be renewed, it is rational and economical to refer to grades and specifications of the existing equipment.

3-1-6 Project Implementation Schedule

(1) Implementing process

When this project is approved by a Cabinet meeting of the Government of Japan and the E/N relating to the implementation is concluded between both relevant countries, the project will be carried out in the following procedures:

1. Conclusion of E/N between both governments.
2. Conclusion of agreement between the implementing organization and the Japanese official foreign exchange banks on payment of the grant aid fund from the Japanese side required for the project (Banking Arrangement).

3. Conclusion of the consultancy contract between the implementing organization and the Japanese consultant.
4. Verification of the above-mentioned contract by the Government of Japan.
5. Payment by the implementing organization and issuance of authorization to pay for the consultancy.
6. Implementation design and preparation of tender documents by the consultant.
7. Approval of the tender documents by the implementing organization and preparation of tender by the consultant.
8. Implementation of tender and evaluation of tender.
9. Conclusion of agent contract (sales contract) relating to equipment procurement between the implementing organization and a Japanese trading company.
10. Verification of the above-mentioned contract by the Government of Japan.
11. Issuance of authorization to pay according to the agent contract (sales contract) by MOH of the Palestinian Authority.
12. Approval of manufactures (Based upon the prior approval of MOH, the consultant examines and approves the specification documents to be submitted by supplier, gives necessary instructions subject to the prior approval of MOH.
13. Equipment witnessing inspection. (The consultant witnesses factory inspection before shipment as required and approves the inspection as the representative of MOH of the Palestinian Authority).

14. Work execution management. (In accordance with the contract, the consultant as the representative of MOH scrutinizes and approves documents of equipment, inspects and approves the equipment, supervises shipment, inland transportation, installation, and work execution shouldered by the partner country.)
15. Progress management (The consultant supervises work progress so that the equipment procurement contract can be completed within the period stated in the Exchange of Notes, and gives necessary directions to the supplier.)
16. Final inspection and test runs (In the presence of an authorized representative of MOH, the consultant makes work completion inspection and commissioning of the procured equipment, and confirms the performances described in the specification documents. Then, the consultant submits a certificate of completion to MOH.)
17. Completion and delivery

(2) Period of implementation

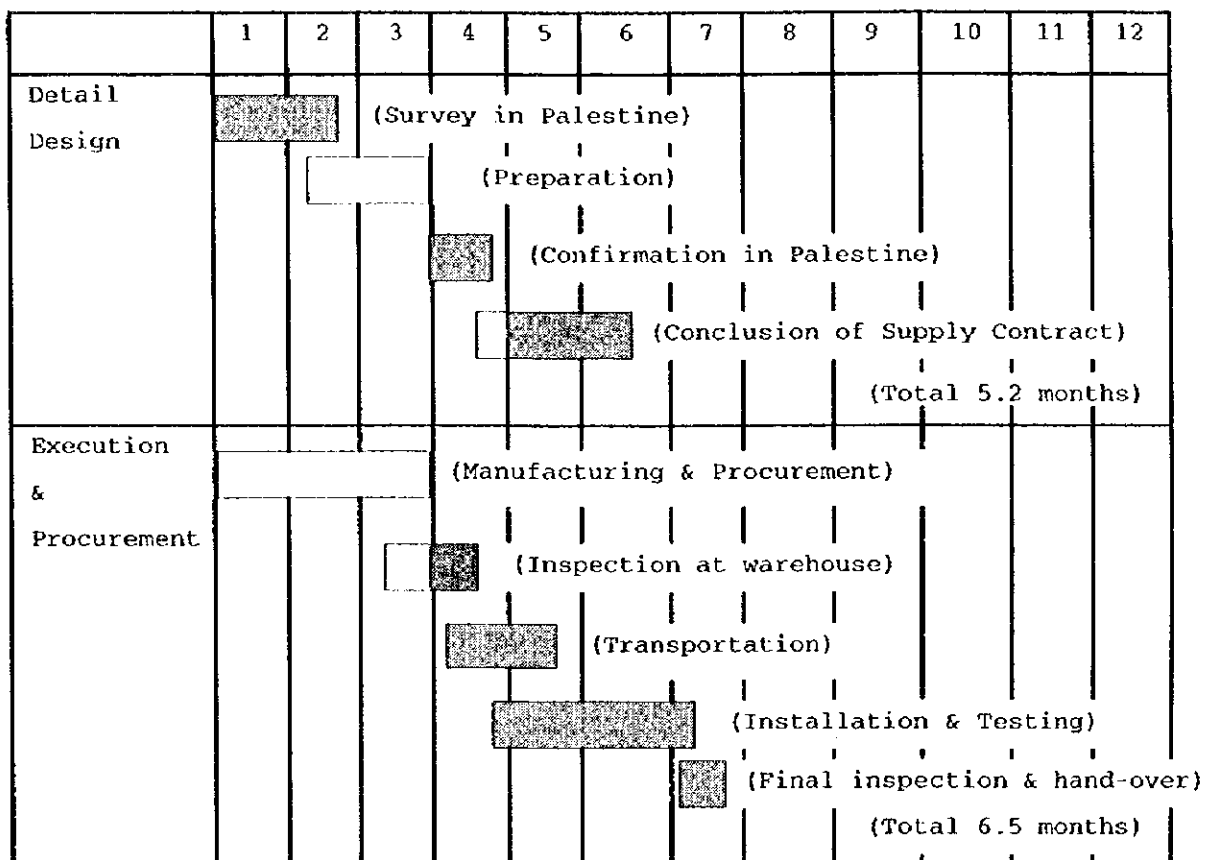
After the conclusion of the Exchange of Notes, the period required for each task on the Japanese side is roughly as follows:

Table 3-1-6 Period of Implementation and Content of Work

Content of Work	Phase
1. Conclusion of consultancy agreement and discussion of detail design	Approx. 1.3 month
2. Preparation of detail design and of tender documents	1.8
3. Approval of tender documents	0.8
4. Tendering, Conclusion of Contract and Approval	1.3
5. Manufacturing of equipment	3.0

6. Transportation	1.5
7. Installation (includes initial test, adjustment, operation guidance, training, maintenance instruction and confirmation of hand-over)	3.0
Total	11.7 month

Fig. 3-1-6 Work execution



3-1-7 Obligations of Recipient Country

1. During the implementation period of the project, the Palestinian side should accommodate a place to use for a temporary office for this project in the designated facilities.
2. The infrastructures (electric power, water supply, drainage, and other facilities) that are needed for the project should be provided or improved before installation of the equipment, and the existing equipment should be removed from the place where the new equipment will be installed.
3. Necessary conveniences for customs clearance and domestic transport should be provided for the equipment.
4. Payments of customs duties and other taxes should be exempted for the Japanese people who reside in Palestine to implement this project.
5. With respect to the bringing-in of equipment and the service provision required for the implementation of the project by the Japanese people, necessary conveniences for their stay in Palestine should be provided and full considerations should be taken for their security.
6. In accordance with the agreement with the banks concerned, the Palestinian side should pay the bank handling charges and the payment authorization commission to the Japanese bank that handles the foreign exchange.
7. The equipment procured through the grant aid program should be maintained properly and used effectively. For this purpose, necessary budget and personnel should be assured.

3-2 Operation and Maintenance Costs

1) Equipment

The maintenance for equipment is one of the very important factors for stable activities of the facilities. Since some medical equipment are fragile, vulnerable to temperature and humidity and easily affected by the environment, systematic maintenance management is necessary. In general, maintenance needs daily inspection which is carried out by personnel in charge of equipment operation, and emergency inspection at the time of

failure which is carried out by engineers who have skills and expertise as well as the regular inspection which is carried out once or twice a year. For daily inspection, a person in charge of each equipment should be assigned and he/she should carry out the inspection with responsibility according to the inspection manuals specified the inspection items and frequency.

EQUIPMENT	DESCRIPTION	INTERNAL MANAGEMENT	OUTSIDE ORDER
ME Equipment	Bedside Monitor, Electrocardiograph, Defibrillator	Regular cleaning, Inspection 1/month	Annual contract, Regularly
General Equipment (Theater)	Anaesthesia machine, Ventilator, Operating table, Operating lamp, etc.	Regular cleaning, Inspection 2/month	On call base, 2 times/year
Lab. Equipment	Blood gas analyzer, CO ₂ Incubator, Centrifuge, etc.	Regular cleaning, Inspection 4/month	Annual contract, Regularly
X-ray, ultrasound Concerned Equipment	X-ray unit, Ultrasound, etc.	Regular cleaning, Inspection 2/month	Annual contract, Regularly
Instruments	Stethoscope, Sphygmomanometer, Operating instruments, Bed, Sterilizer, etc.	Regular cleaning, Inspection 1/month	On call base
Optical Concerned Equipment	Endoscopy, Microscope, etc.	Regular cleaning, Inspection 1/month	On call base, 2 times/year
Maintenance Equipment	Washing machine, Instrument set, etc.	Regular cleaning, Inspection 1/month	On call base, 1 time/year
Others	Ambulance, etc.	Regular cleaning, Inspection 1/month	On call base, 1 time/year

2) Consumables and replacement parts

The inventory management of replacement parts and consumables for the designated hospitals should be carried out with joint efforts of clinical/laboratory department and administrative department. The clinical/laboratory department checks the stock inventory for proper use, while the administrative department orders necessary consumables to each department without delay. Basically consumables and replacement parts can be procured in Palestine.

Expenses of agents and consumables accounted for 1.9% of the MOH total outlay in 1996.

3) Estimate of maintenance expenses

The Central Workshop of MOH controls budgets of the designated hospitals, and it assigns maintenance staff for each hospital. The Workshop has a maintenance system to inspect and repair equipment used at the designated facilities as well as it purchases replacement parts for the facilities. At the time of research on the basic design, we checked the present conditions of the maintenance system. As a whole, maintenance is done sufficiently, even though it takes a long time to do due to the limited budget.

Annual maintenance budget for the designated facilities in 1996 was US\$682,000 (approximately 86 million yen), which accounted for around 7% of the total maintenance budgets of MOH (approximately US\$10 million).

Estimate of yearly maintenance expenses for each designated facility is as tabulated below: Please note that it includes all replacement parts for equipment needing maintenance services, while reagents and consumables are excluded because they are presently procured.

(US\$)

HOSPITAL	REPLACEMENT PARTS	REAGENTS AND CONSUMABLES	TOTAL
1. Jenin	5,400	7,200	12,600
2. Tulkarem	6,900	4,600	11,500
3. Watani	4,200	100	4,300
4. Rafidia	7,600	9,200	16,800
5. Ramallah	16,700	7,300	24,000
6. Beit Jala	6,300	19,800	26,100
7. Bethlehem	100	-	100
8. Hebron	18,600	21,200	39,800
9. Central Workshop	1,200	700	1,900
TOTAL:	US\$67,000	US\$70,100	US\$137,100

Comparison between the estimate of maintenance expenses for the project and the 1996 maintenance budget is shown in the following table: Please note that MOH divides budget items into two parts: consumables/reagents and maintenance. (Please refer to the Article 2-4-2.)

	1996 MAINTENANCE COSTS FOR EIGHT HOSPITALS IN WEST BANK (US\$)	EXPENSES NEEDED FOR THE PROJECT (US\$)	RATIO (%)
Replacement parts	(*1) 682,000	67,000	9.82
Consumables	(*2) 1,416,000	70,100	4.95
TOTAL:	2,098,000	137,100	6.53

Note) *1. Maintenance costs for nine hospitals of the 1996 budget of MOH.

*2. Consumables and reagents for nine hospitals of the 1996 budget of MOH.

Necessary maintenance costs after the implementation of the project amount to US\$2,235,000 after adding the 1996 maintenance costs to the new maintenance costs; total maintenance costs will increase by around 7% (replacement parts increase by around 10%, consumables around 5%) compared to the 1996 outlay. Since MOH considers the improvement of medical equipment for the designated facilities as the most important project of

the Palestinian Authority, it can be judged that the Authority will be able to allocate the budget for maintenance services after implementing the project.

Detailed Maintenance Cost in each designated Hospital

1 Jenin Hospital

Item No.	Description	Quantity	Unit price	All Maintenance cost/year
8	Autoclave, (250 Liter or more)	1	\$1,064	\$1,064
51	Gastroscope	1	\$3,244	\$3,244
53	Sigmoidoscope	1	\$3,482	\$3,482
71	E.C.G. One Channel	1	\$324	\$324
79	Obstetric Delivery table	1	\$98	\$98
16	Electrocardiograph, 3 channels	1	\$411	\$411
41-1	Respirator Infunt	2	\$1,716	\$3,431
20	Defibrillator	1	\$499	\$499
36	Centrifuge (10 m lx 24 tubes) up to 12000rpm	1	\$157	\$157
37	Binocular Microscope	1	\$109	\$109
28	Infant Incubator, Double Wall AS	4	\$732	\$2,930
83	Elec. Surgery Unit	2	\$1,723	\$3,445
25	Operating Ceiling Lamps, Satellite 8x4	1	\$983	\$983
26	Anaesthesia Machine with Ventilator, with Monitor	1	\$862	\$862
77	Operating Table, Electric Hydraulic	1	\$840	\$840
4	Mobile X-ray	1	\$4,976	\$4,976
6	Ultrasound Equipment, General Use	1	\$3,849	\$3,849
7	Ultrasonic Equipment, Portable	1	\$1,369	\$1,369
96	Automatic Film Processor	1	\$1,087	\$1,087
	Total	24		\$33,162

2 Turekarem Hospital

Item No.	Description	Quantity	Unit price	All Maintenance cost/year
8	Autoclave, (250 Liter or more)	1	\$1,064	\$1,064
51	Gastroscope	1	\$3,244	\$3,244
71	E.C.G. One Channel	1	\$324	\$324
79	Obstetric Delivery table	1	\$98	\$98
16	Electrocardiograph, 3 channels	1	\$411	\$411
42	Syringe Pump	2	\$605	\$1,209
20	Defibrillator	1	\$499	\$499
36	Centrifuge (10 m lx 24 tubes) up to 12000rpm	1	\$157	\$157
37	Binocular Microscope	1	\$109	\$109
28	Infant Incubator, Double Wall AS	4	\$732	\$2,930
83	Elec. Surgery Unit	1	\$1,723	\$1,723
25	Operating Ceiling Lamps, Satellite 8x4	2	\$983	\$1,966
77	Operating Table, Electric Hydraulic	1	\$840	\$840
2	X-ray for General Purpose (Bucky)	1	\$15,006	\$15,006
4	Mobile X-ray	1	\$4,976	\$4,976
6	Ultrasound Equipment, General Use	1	\$3,849	\$3,849
7	Ultrasonic Equipment, Portable	1	\$1,369	\$1,369
96	Automatic Film Processor	1	\$1,087	\$1,087
	Total	23		\$40,863

3 Watani Hospital

Item No.	Description	Quantity	Unit price	All Maintenance cost/year
51	Gastroscope	1	\$3,244	\$3,244
71	E.C.G. One Channel	2	\$324	\$649
14	Central Monitoring System for 5 beds	6	\$875	\$5,250
16	Electrocardiograph, 3 channels	1	\$411	\$411
41-2	Respirator Infunt	1	\$1,716	\$1,716
44	Hemodialysis Machine	2	\$19,955	\$39,911
36	Centrifuge (10 m lx 24 tubes) up to 12000rpm	1	\$157	\$157
37	Binocular Microscope	1	\$109	\$109
38	Blood Gas Analyzer	1	\$3,802	\$3,802
28	Infant Incubator, Double Wall AS	6	\$732	\$4,395
7	Ultrasonic Equipment, Portable	1	\$1,369	\$1,369
96	Automatic Film Processor	1	\$1,087	\$1,087
	Total	24		\$62,100

4 Rafidia Hospital

Item No.	Description	Quantity	Unit price	All Maintenance cost/year
8	Autoclave, (250 Liter or more)	1	\$1,064	\$1,064
50	Laparoscope	1	\$4,983	\$4,983
51	Gastroscope	1	\$3,244	\$3,244
52	Esophagoscope	1	\$3,334	\$3,334
79	Obstetric Delivery table	1	\$98	\$98
18	Infusion Pump	7	\$605	\$4,233
42	Syringe Pump	5	\$605	\$3,023
41-1	Respirator Infunt	2	\$1,716	\$3,431
20	Defibrillator	1	\$499	\$499
36	Centrifuge (10 m lx 24 tubes) up to 12000rpm	1	\$157	\$157
37	Binocular Microscope	1	\$109	\$109
38	Blood Gas Analyzer	1	\$3,802	\$3,802
28	Infant Incubator, Double Wall AS	4	\$732	\$2,930
83	Elec. Surgery Unit	1	\$1,723	\$1,723
25	Operating Ceiling Lamps, Satellite 8x4	2	\$983	\$1,966
26	Anaesthesia Machine with Ventilator, with Monitor	1	\$862	\$862
77	Operating Table, Electric Hydraulic	1	\$840	\$840
2	X-ray for General Purpose (Bucky)	1	\$15,006	\$15,006
3	CT Scanner (Spiral), Laser Imager	1	\$12,103	\$12,103
6	Ultrasound Equipment, General Use	1	\$3,849	\$3,849
7	Ultrasonic Equipment, Portable	1	\$1,369	\$1,369
96	Automatic Film Processor	1	\$1,087	\$1,087
	Total	37		\$69,714

5 Ramallah Hospital

Item No.	Description	Quantity	Unit price	All Maintenance cost/year
8	Autoclave, (250 Liter or more)	1	\$1,064	\$1,064
50	Laparoscope	1	\$4,983	\$4,983
51	Gastroscope	1	\$3,244	\$3,244
53	Sigmoidoscope	1	\$3,482	\$3,482
54	Arthroscopy	1	\$1,909	\$1,909
55	Thoracoscope	1	\$4,433	\$4,433
79	Obstetric Delivery table	1	\$98	\$98
14	Central Monitoring System for 5 beds	5	\$875	\$4,375
16	Electrocardiograph, 3 channels	1	\$411	\$411
18	Infusion Pump	7	\$605	\$4,233
42	Syringe Pump	5	\$605	\$3,023
41-1	Respirator Infant	2	\$1,716	\$3,431
20	Defibrillator	1	\$499	\$499
44	Hemodialysis Machine	8	\$19,955	\$159,644
36	Centrifuge (10 m 1x 24 tubes) up to 12000rpm	1	\$157	\$157
37	Binocular Microscope	1	\$109	\$109
38	Blood Gas Analyzer	1	\$3,802	\$3,802
28	Infant Incubator, Double Wall AS	6	\$732	\$4,395
83	Elec. Surgery Unit	1	\$1,723	\$1,723
25	Operating Ceiling Lamps, Satellite 8x4	2	\$983	\$1,966
26	Anaesthesia Machine with Ventilator, with Monitor	2	\$862	\$1,725
77	Operating Table, Electric Hydraulic	1	\$840	\$840
1	X-ray Fluoroscopy (with tilting table 15/90)	1	\$5,981	\$5,981
2	X-ray for General Purpose (Bucky)	1	\$15,006	\$15,006
4	Mobile X-ray	1	\$4,976	\$4,976
6	Ultrasound Equipment, General Use	1	\$3,849	\$3,849
7	Ultrasonic Equipment, Portable	1	\$1,369	\$1,369
96	Automatic Film Processor	1	\$1,087	\$1,087
	Total	57		\$241,815

6 Beit Jala Hospital

Item No.	Description	Quantity	Unit price	All Maintenance cost/year
8	Autoclave, (250 Liter or more)	2	\$1,064	\$2,128
52	Esophagoscope	1	\$3,334	\$3,334
53	Sigmoidoscope	1	\$3,482	\$3,482
79	Obstetric Delivery table	1	\$98	\$98
14	Central Monitoring System for 5 beds	4	\$875	\$3,500
16	Electrocardiograph, 3 channels	2	\$411	\$822
18	Infusion Pump	4	\$605	\$2,419
42	Syringe Pump	2	\$605	\$1,209
41-1	Respirator Infant	2	\$1,716	\$3,431
20	Defibrillator	1	\$499	\$499
36	Centrifuge (10 m 1x 24 tubes) up to 12000rpm	1	\$157	\$157
28	Infant Incubator, Double Wall AS	4	\$732	\$2,930
83	Elec. Surgery Unit	1	\$1,723	\$1,723
2	X-ray for General Purpose (Bucky)	1	\$15,006	\$15,006
4	Mobile X-ray	1	\$4,976	\$4,976
6	Ultrasound Equipment, General Use	1	\$3,849	\$3,849
7	Ultrasonic Equipment, Portable	1	\$1,369	\$1,369
96	Automatic Film Processor	1	\$1,087	\$1,087
	Total	31		\$52,021

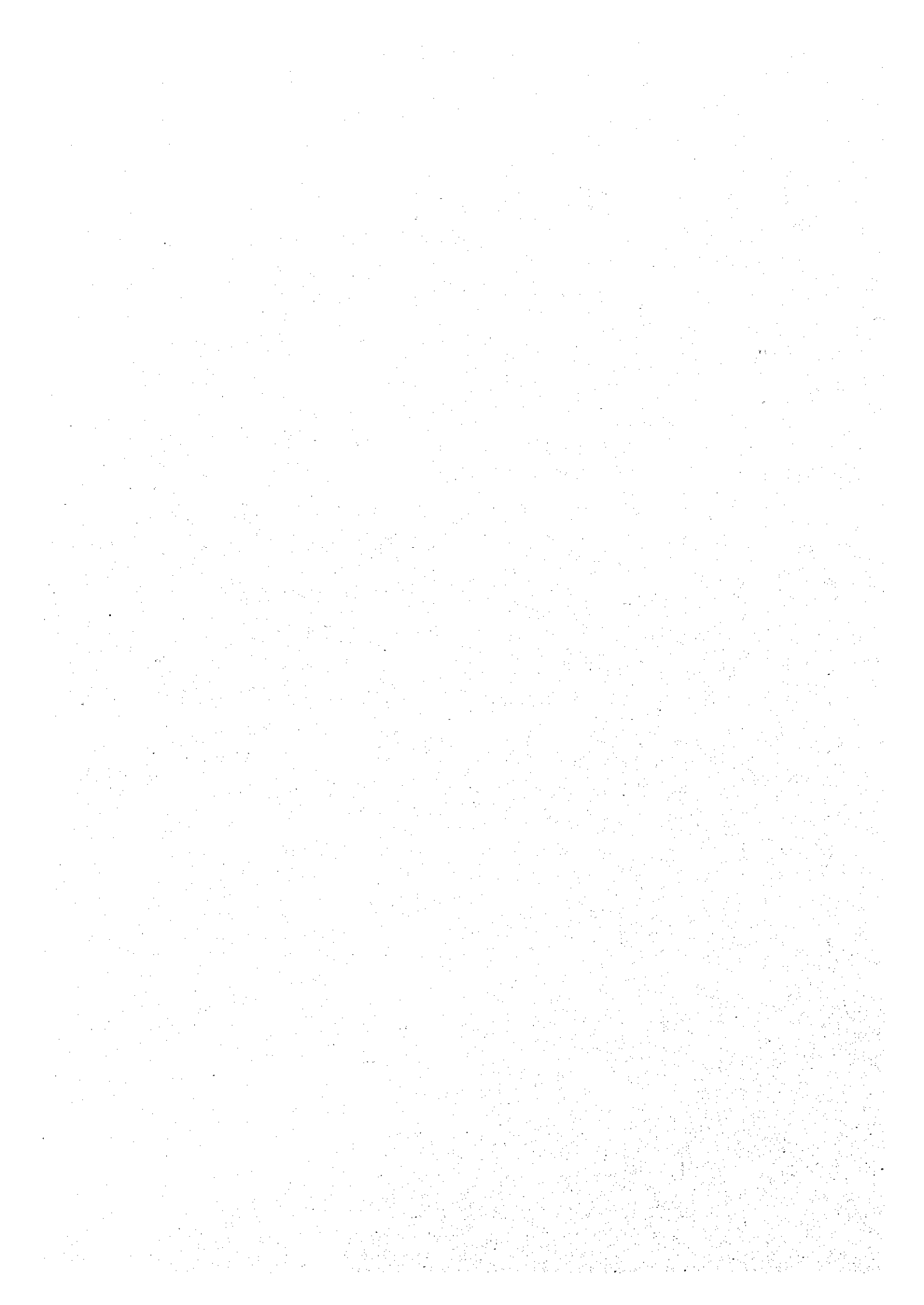
7 Bethlehem Hospital

Item No.	Description	Quantity	Unit price	All Maintenance cost/year
71	E.C.G. One Channel	1	\$324	\$324
16	Electrocardiograph, 3 channels	1	\$411	\$411
20	Defibrillator	1	\$499	\$499
	Total	3		\$1,235

8 Hebron Hospital

Item No.	Description	Quantity	Unit price	All Maintenance cost/year
50	Laparoscope	1	\$4,983	\$4,983
52	Esophagoscope	1	\$3,334	\$3,334
53	Sigmoidoscope	1	\$3,482	\$3,482
54	Arthroscopa	1	\$1,909	\$1,909
16	Electrocardiograph, 3 channels	2	\$411	\$822
18	Infusion Pump	7	\$605	\$4,233
44	Hemodialysis Machine	8	\$19,955	\$159,644
36	Centrifuge (10 m lx 24 tubes) up to 12000rpm	1	\$157	\$157
37	Binocular Microscope	1	\$109	\$109
38	Blood Gas Analyzer	1	\$3,802	\$3,802
28	Infant Incubator, Double Wall AS	4	\$732	\$2,930
83	Elec. Surgery Unit	1	\$1,723	\$1,723
25	Operating Ceiling Lamps, Satellite 8x4	3	\$983	\$2,950
26	Anaesthesia Machine with Ventilator, with Monitor	3	\$862	\$2,587
77	Operating Table, Electric Hydraulic	2	\$840	\$1,679
1	X-ray Fluoroscopy (with tilting table 15/90)	1	\$5,981	\$5,981
2	X-ray for General Purpose (Bucky)	1	\$15,006	\$15,006
3	CT Scanner (Spiral), Laser Imager	1	\$12,103	\$12,103
4	Mobile X-ray	1	\$4,976	\$4,976
6	Ultrasound Equipment, General Use	1	\$3,849	\$3,849
7	Ultrasonic Equipment, Portable	1	\$1,369	\$1,369
96	Automatic Film Processor	1	\$1,087	\$1,087
	Total	44		\$238,716

**CHAPTER 4. PROJECT EVALUATION
AND RECOMMENDATION**



CHAPTER 4. PROJECT EVALUATION AND RECOMMENDATION

4-1 Project Effect

Designated hospitals of the project have been weakening their power of functions because maintenance services for the facilities and equipment had not been done satisfactorily during the time of Israeli Occupation with the result that the facilities and equipment have been getting too old. Meanwhile, Palestinian Authority (PA) is promoting improvement of medical facilities as the important issue of political policies of the Ministry of Health (MOH). By improving the existing public medical facilities, the facilities will retrieve the power of functions and will be able to offer appropriate medical services. Upon considering that renewal and supplement of the equipment by this project will contribute to the offer of appropriate medical services for local residents, it can be judged that the implementation of this project is duly appropriate.

The following effects can be expected by the implementation of this project:

1. Direct effects

This project is to procure medical equipment for the core hospitals which function as the key of health care activities in each area of West Bank. After the PA started, renewal and supplement of equipment will help to revitalize or strengthen medical activities which have been weakened due to shortage of medical equipment at the public medical facilities and will contribute to appropriate medical care. Also, by procuring equipment for the Central Workshop which handles maintenance services for hospitals in West Bank, maintenance services will be strengthened and expanded; thus equipment can be used effectively for a long term.

2. Indirect effects

Implementation of the project will assist to build up a medical service system of Palestine, the most priority task of health care policies based on the National Health Plan (NHP) which PA is presently pushing forwards; i.e., the project will correspond to the immediate improvement of public hospitals in each area of West Bank.

The implementation of the project will also help to improve quality of medical services at the designated facilities; the facilities will be able to treat patients who had been transferred to other advanced medical facilities including hospitals in foreign countries. Also, expenses of medical treatment and transfer will be reduced largely.

4-2 Recommendation

In order to implement the project smoothly and to use procured equipment effectively and continuously, we comment the following proposals:

1. This project is mainly intended to renew the existing equipment, therefore, it is designed to minimize necessary workforce and operational costs (including maintenance costs) for operating the procured equipment. However, since medical services are expected to be more powerful and expandable by procuring the equipment, fees for medical services paid by patients will be appropriated for derivative expenses such as purchase of replacement parts and consumables, and maintenance costs.
2. Maintenance services for medical facilities controlled by MOH are jointly conducted by maintenance staff of the Central Workshop and maintenance staff at each facility transferred from the Central Workshop.

Therefore, improvement of maintenance level and training of maintenance staff are considered as the key point for utilizing the equipment for a long time.

3. In order to clarify problems after the implementation of the project, it is desired that each designated facility should report on medical activities (the number of outpatients and inpatients, the number of examinations including CT and X-ray, the number of operations, etc.), financial status including maintenance costs, operational conditions of procured equipment (frequency of use or maintenance) and should submit the report to the Japanese side regularly.

4. Annual costs of transfer to hospitals in foreign countries for patients who need the tertiary medical care (for cardiac and brain operations, eye diseases, visible or hearing impairments) account for 13% (US\$10 million) of the total budget of MOH in the fiscal 1996. Since the costs put pressure on the total budget, MOH needs to expand the tertiary care service at the existing medical facilities in West Bank to reduce the costs of transfer to outside hospitals.