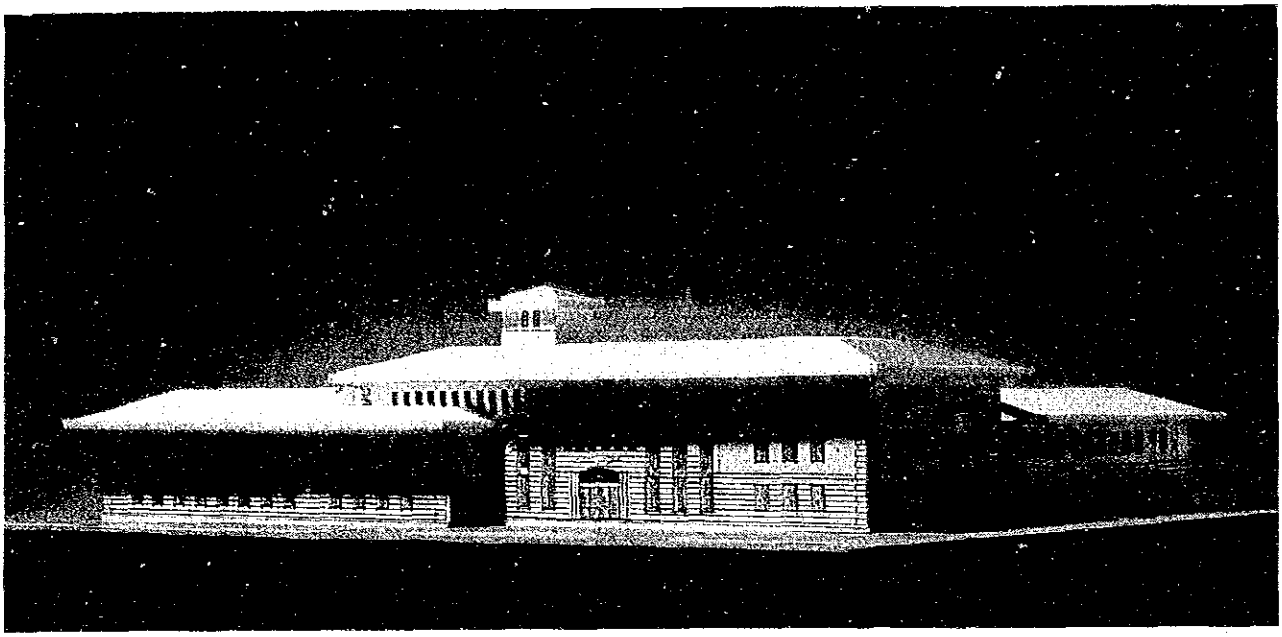
BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR CONSTRUCTION
OF
THE OUT-PATIENT DEPARTMENT,
PHILIPPINE GENERAL HOSPITAL
IN
THE REPUBLIC OF THE PHILIPPINES

JULY, 1987

JAPAN INTERNATIONAL COOPERATION AGENCY



PREFACE

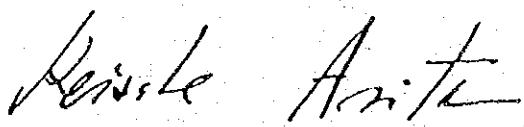
In response to the request of the Government of the Republic of the Philippines, the Government of Japan has decided to conduct a Basic Design Study on the Project for Construction of the Out-Patient Department, Philippine General Hospital and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Philippines a study team headed by Dr. Toru Ise, Managing Director, Experts Dispatch Services Division, International Medical Cooperation Department, National Medical Center, Ministry of Health and Welfare, from March 16 to April 4 in 1987.

The team had discussions on the Project with the officials concerned of the Government of the Philippines and conducted a field survey in Manila. After the team returned to Japan, further studies were made, a draft report was prepared, and for its explanation and discussion of it, a mission was sent to the Philippines. As a result, the present report has been prepared.

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

I wish to express my deep appreciation to the officials concerned of the Government of the Republic of the Philippines for their close cooperation extended to the team.

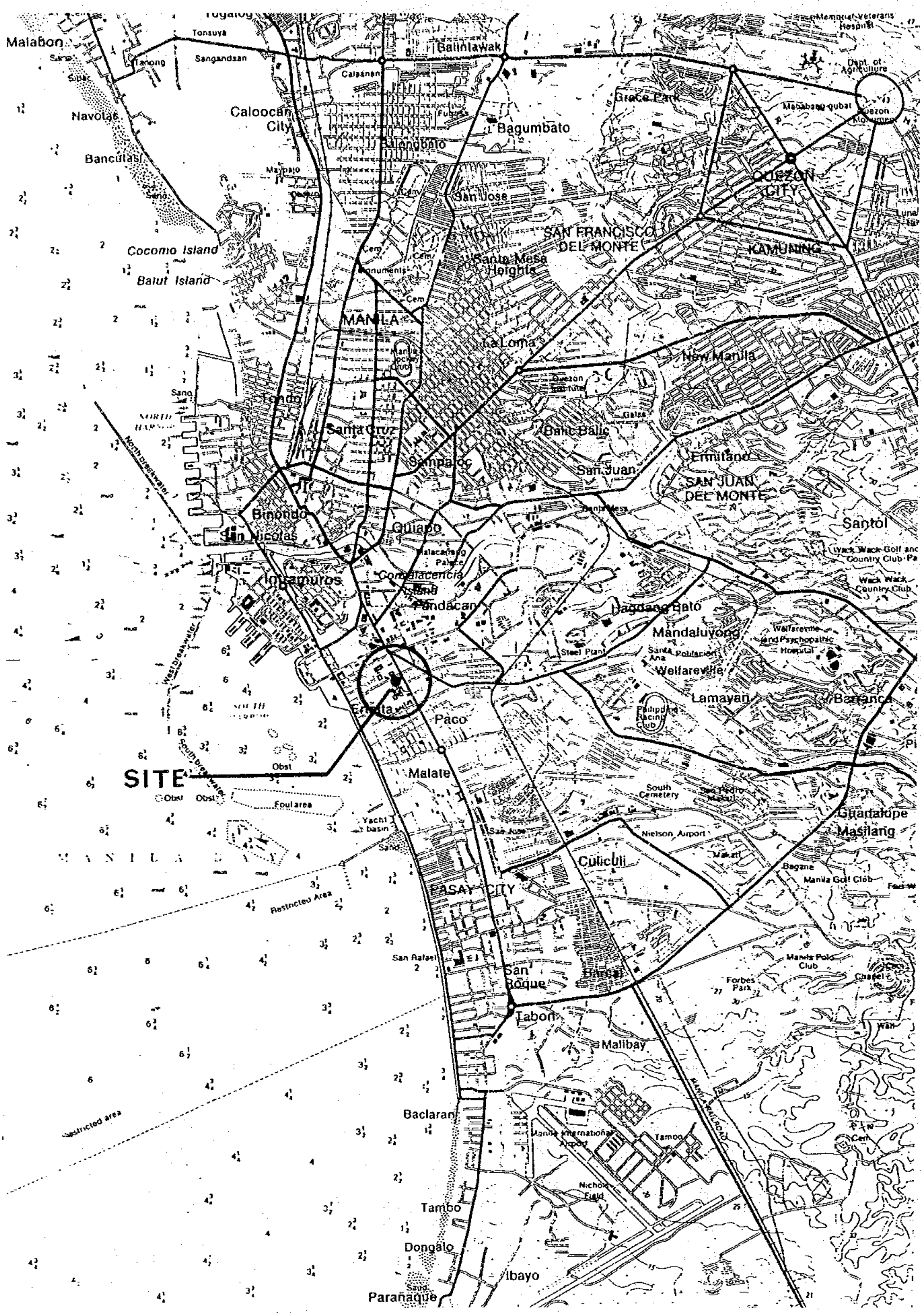
July 1987



Keisuke Arita

President

Japan International Cooperation Agency


SITE
Malabon
Navotas
Caloocan City
Balintawak
Bagumbato
Grace Park
QUEZON CITY
KAMUNING
SAN FRANCISCO DEL MONTE
Santa Mesa Heights
San Jose
Cocomo Island
Balut Island
MANILA
La Loma
New Manila
Tondo
Santa Cruz
Sampaloc
Balic Balic
San Juan
Ermitano
SAN JUAN DEL MONTE
Santol
Binondo
San Nicolas
Quiapo
Intramuros
Pandacan
Hagdang Bato
Mandaluyong
Welfareville
Lamayan
Barranca
Ermita
Paco
Malate
South Cemetery
Guadalupe
Masilang
Culiculi
Nielson Airport
PASAY CITY
Manila Golf Club
San Rafael
San Roque
Bangal
Manila Polo Club
Forbes Park
Tabon
Malibay
Baclaran
Manila International Airport
Tambo
Nichols Field
Dongalo
Ibayo
Parañaque
MANILA BAY
Restricted Area
Foul area
North breakwater
West breakwater
South breakwater
Yacht basin

SUMMARY

Today health and medical care in the Philippines is faced with serious problems such as: infectious diseases, an unsatisfactory sanitary environment, nutritional deficiencies, an increased number of circulatory and digestive diseases which have emerged due to changes in living conditions, regional imbalances in the number of medical workers, and budget deficiencies for medical facilities.

In order to rectify these problems and to provide effective health and medical services to the Philippine people, the Philippine Government has set forth the following major health goals concerning health and medical care in the Medium-term Philippine Development Plan (1987-1992):

1. to improve health and medical care, and nutritional conditions,
2. to give the people effective medical service by the year 2000 through Primary Health Care facilities, and
3. to better the family environment through family planning.

In order to reinforce the Philippine General Hospital so as to improve medical health treatment and health education, the Republic of the Philippines has decided to renew its Out-patient Department facilities, and has called on Japan for Grant Aid Assistance for the implementaion of this project.

The Philippine General Hospital is a hospital affiliated with the medical faculty of the University of the Philippines. Its ambulatory care is regarded as the best in the nation, and it fulfills its duties as a leading institution of medical research and educational services. Its health and medical care services cover not only Metro Manila, but the whole nation. Although given its significant location and role, the Phillipine General Hospital has not been able to meet the nation's needs due to its outdated and insufficient medical facilities and equipment and the yearly increasing number of patients. Thus, improvement is indispensable for the

policy of the Philippine health and medical care.

In compliance with Philippine requests, the Japanese Government decided to send to the site a Preliminary Study Team from Dec. 14 through Dec. 23, 1986. As a result, a Basic Design Study Team was dispatched between March 16 and April 4, 1987.

The results of the field study and its analysis are as follows:

1. Construction of the new Out-patient Department is a part of the extension project and facility improvement project for the Philippine General Hospital.

2. Also a part of the said projects, the construction of the New Central Block, which was suspended during the revolution, has been resumed and is expected to be completed by the end of August 1987.

3. The Out-patient Department of the Philippine General Hospital, which has been characterized as a charity hospital, treats a daily average of 1,000 patients. However, it cannot meet the increasing needs of the patients as its buildings have deteriorated, and its clinical care has been disturbed by its insufficient and deteriorated medical equipment.

4. The Philippine General Hospital cannot provide, even after the completion of the New Central Block, comprehensive services covering medical care, education and research unless it is furnished with a good Out-patient Department.
   Thus, as the Out-patient Department will contribute substantially to the overall Philippine General Hospital, the Japanese Grant Aid Assistance is of significant importance.

After the number of future patients and the budget were estimated, the Study Team judged that it would be appropriate to construct the Out-patient Department for 2,000 out-patients in a day and to provide the necessary medical equipment. The Out-patient Department should serve not only as an out-patient clinic, but also contain the services of medical education and

ambulatory medical treatment activities as this is a hospital affiliated with a university. The following points are considered necessary for more effective medical treatment activities:

1. The project should be compatible with the extension project and facility improvement project of the Philippine General Hospital.
2. The climate, surrounding environmental conditions and the type of out-patient clinic should be taken into account for the construction of this project.
3. The project should have a functional plot plan, taking into account the correlation between the functions of the existing facilities and the internal function of the Out-patient Department.
4. The building should not be complicated the patients, as it is a facility where 2,000 patients come per day.
5. Energy consumption and operation cost should be minimized and maintenance should be easily performed.
6. Medical equipment should be provided, taking into account the Philippine medical technology level and maintenance and operation capacity.

The outline of the project is shown as follows:

a. Facilities

Building Height: OPD Building: 3 stories
Plant Building: 1 story
(only for OPD)

Area: Site Area: 8,500 m^2
Total Fl. Area:
OPD: 10,020 m^2
plant build.: 180 m^2
Total: 10,200 m^2

Structure: Main structure: 2-storied RC, partly 3-storied
Foundation : Mat Foundation

b. Outline of the facilities

There are functionally four sections: consultation, diagnosis, administration and common use.

1) Consultation Section: 2,610 m^2

This section includes various rooms for out-patient consultation: located on the 1st floor are the internal medicine department, obstetrics and gynecology department, orthopedics department, nutrition department, family medicine department, and physiotherapy department; located on the 2nd floor are the surgery department, dermatology department, otorhinolaryngology department, pediatrics department, dentistry department, pain clinic department, and internal medicine (special clinic) department; and located on the 3rd floor is the psychiatry department.

2) Diagnosis Section: 1,630 m^2

Various rooms for diagnosis, examination and operation are included in this section: located on the 1st floor are the rooms for X-ray examination, ultrasonic diagnosis, physiological examination, and endoscope; located on the 2nd floor are the operation department, minor operation department, and anethesia department. Also located on the 2nd floor is the clinicopathology examination room.

3) Administration Section: 960 m^2

In this section, the following rooms are located on the 3rd floor: the medical record room, meeting room, Out-patient Department manager room, Out-Patient chief nurse room, office and staff room. Located on the 1st floor are the registration room and company medical service room.

4) Common use Section: 5,000 m^2

Included in this section are the corridor, stairs, toilet, patients' waiting room and hall.

(1) Radiography department

Radiographic X-ray Unit	Mobile X-ray Unit
X-ray Unit with Mirror Camera	Automatic Film Processor
CT Scanner	Ultrasonic Diagnostic Apparatus
Ultrasonic Diagnostic Apparatus (portable)	(with color doppler)

(2) Endoscopy department

Upper Gastrointestinal Fiberscope	Broncho Fiberscope
Choledocho Fiberscope	Electrosurgical Unit for
Endoscope Disinfection Apparatus	Endoscopy
Colonofiberscope	

(3) Physical test department

Electro Encephalogram	Electromyograph
ECG Stress Test System	Electrocardiograph
Auto Spirometer	

(4) Clinical microscope laboratory

Centrifuge	Binocular Microscope

(5) Haematology laboratory

Auto Blood Cell Counter	Binocular Microscope
Haematologic Centrifuge	

(6) Bacteriology laboratory

Binocular Microscope	Anaerobic Incubator
Biological Clean Bench	Electrophoresis Apparatus

(7) Bio-chemical laboratory

Centrifuge	Glucometer
Flame Photometer	Automatic Chemical Analyzer

(8) Pathology laboratory

Microtome	Binocular Microscope
Automatic Tissue Processor	

(9) Immuno-pathology laboratory

Micro Elisa Machine	Refrigerated Ultra Centrifuge

(10) Laboratory washing room

Distillation Apparatus	Washing Water Still App.

(11) Physio therapy department

Traction Unit	Ultrasonic Therapy Unit
Micro Wave Therapy Unit	Stimulator

(12) Pharmacy

Medicine Refrigerator	Water Distill

(13) Family medicine department

Examining Table	OB-GYNE Examination Table

(14) Internal medicine department

Opthalmoscope	Examination Table
Laryngoscope Set	

(15) Pediatric department

Automatic Infant Scale Set	Infant Height Scale
Opthalmoscope	Nebulizer
Neonatal Stethoscope	

(16) Psychiatry department

Galvanic Current and Faradic App.	Psychological Test Material
Occupational Therapy Unit	

(17) Surgery department

Examination and Treatment Table

(18) Dermatological and urological department

Ultra-violet Apparatus	PUVA Lighting App.

(19) Orthopedics department

Plaster Bandage Table	Gypsum Cutter

(20) Operating complex department

Universal Operating Table	Operating Light
Electrosurgical Unit	Anesthesia Apparatus
Patient Monitor	

(21) Painclinic department

Examination Table	Ice Cube Machine

(22) Opthalmic department

Refracting Unit	Slit Lamp Microscope
Test Chart Remote Control Type	Projection Perimeter

(23) E.N.T. department

E.N.T. Treatment Unit	E.N.T. Treatment Chair
Audiomenter	Impedance Audiometer

(24) Gynecology and obsterics department

Gynecology Examination Table	Gynecological Examination Unit
Doppler Sound Detector	

(25) Dental department

Dental Unit	Dental X-ray Unit
Dental Film Processors	

(26) C.S.S.D.

Steam Sterilizer	Ultrasonic Cleaner
Surgical Glove Conditioner	

(27) Patient record room

Patient Record Reference System

(28) Audio visual room (Conference room)

35mm Slide Projector	Overhead Projector
Video System	

(29) Nutrition clinic department

Weighing Scale/Height Scale	Caliper
Refrigerator	

(30) Out-reached health services

Vehicle for out-reached health services

Based upon these results, the construction of the facilities and delivery and installation of equipment requires a period of 15 months after the Exchange of Notes. The construction cost to be borne by the Philippines are estimated to be 3.17 million pesos (approx. JYen 230 million) which amount is mainly to be used for preparation of site.

The Philippine General Hospital is the implementation body for the project, and the University of the Philippines is responsible for the overall project.

The Out-patient Department is one of the Philippine General Hospital's departments; therefore, there are no medical workers who are engaged exclusively in medical treatment for the Out-patient Department. According to the hospital's calculation, 6 additional doctors and 74 additional nurses are needed for this project. Judging from the current working system, this increased personnel is reasonable, and it is assumed that the personnel required can be satisfactorily secured.

Once the project is executed, an estimated 21 million pesos annually (approx. JYen 155 million) will be needed for maintenance and operation costs.

For this estimation, the Philippine side proposed to earmark approx. 26 million pesos (approx. JYen 192 million) as a budget for fiscal 1989 when the Out-patient Department will be completed. Approx. 13 million pesos (approx. JYen 96 million), which amounts to half of this budget, will be provided by the Philippine Government as a subsidy, and the rest will be covered by the income from patients.

According to the budget for 1987, the subsidy from the government amounts to approx. 120 million pesos (approx. JYen 886 million) for the entire budget of the Philippine General Hospital, of which the Out-patient Department occupies only 6%. Therefore, even if the government subsidy

necessary for the Out-patient Department almost doubles between 1987 and 1989, it can be considered reasonable in relation to the total budget scale of the Philippine General Hospital. Therefore, the Out-patient Department is financially feasible.

The following results can be realized through construction of the Out-patient Department facilities and provision of the medical equipment:

1. By doubling the current scale of diagnosis and by providing ambulatory medical treatment services, medical care and treatment services for regional people will be greatly improved.
2. By fulfilling the referral function of the Out-patient Department it should be regarded as one of the best of its kind in the Philippines.
3. By providing educational facilities in the Out-patient Department which has the characteristics of a charity day-hospital within the Philippine General Hospital, a hospital affiliated with the University of the Philippines, domestic development of the manpower engaged in medical services will be enhanced; thus contributing to the improvement of medical techniques.
4. By utilizing optimal medical equipment, this facility can act as a model hospital for other Philippine public hospitals.
5. As the above points are realized, the improvement of medical techniques in the Philippines and amelioration of sanitation and health in the Philippines can be greatly achieved.

As the implementation of this project will produce great effects, and as the Project is feasible from the viewpoint of maintenence and operation planning, this project can be evaluated as appropriate and can play an important role in the execution of the National Development Project.

In order to further ensure the effects of the execution of this project, the following points will be taken into account by the Philippine side:

1) By completing as quickly as possible the New Central Block now under construction, the central consultation department should be filled.

2) Not only the content of the facilities but the operation and management system should be improved (such as the increased number of medical workers, the reception system, the medical record system, and the extension of clinic time).

3) The income from patients should be increased to secure the budget required for maintenance and operation planning. To achieve this goal, it is better to examine the methods in which diagnosis services will be undergone for patients from every social class, by utilizing a part of the facility, while respecting the Out-patient Department's role as a charity hospital.

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CHAPTER I

INTRODUCTION

CHAPTER 1 INTRODUCTION

According to the Philippine National Development Plan (Medium-term development plan set up in 1986), the Philippine Government aims to improve the living level of the Philippine people and to maintain economic and social growth. Consequently, it plans to stabilize consumer prices, increase income, eliminate regional differences, increase employment opportunities, and to enhance the competitiveness between industrial fields. Further, the government policy is directed at reducing the burden on under-privileged people and enhancing the Philippine living standard.

Concerning health and medical care, the following 3 points are the final goals:

1. to improve its medical health care and nutritional conditions,
2. to give its people effective medical service by the year 2000 through Primary Health Care facilities, and
3. to better the family environment through family planning.

Today health and medical care of the Republic of the Philippines (hereinafter referred to as the Philippines) is faced with serious problems such as: infectious diseases, an unsatisfactory sanitary environment, nutritional deficiencies, an increased number circulatory and digestive diseases which have emerged due to the changes in living conditions, regional imbalances in the number of medical workers, and budget deficiencies in medical facilities.

In order to reinforce the Philippine General Hospital (hereinafter referred to as PGH), to improve medical health treatment and health education, the Philippine Government has decided to renew its services of the Out-patient Department of the PGH, (hereinafter referred to as OPD) and has called on Japan for Grant Aid Assistance for the construction of this project.

PGH is a hospital affiliated with the medical faculty of the University

of Philippines. Its ambulatory cares are regarded as the best in the nation, and it fulfills its duties as a leader for its institution of medical research and educational services. Its services of medical health treatment include not only Metro Manila, but the whole nation. Although given this significant location and role, the PGH has not been able to meet the nation's needs due to its outdated or insufficient medical facilities and equipment and the yearly increasing number of patients.

In response to this request, the Japan International Cooperation Agency dispatched a study team to the site between December 14 and 23 in 1986 and conducted a preliminary survey.

As a result, a basic design study team was despatched, headed by Dr. Toru Ise, International Medical Cooperation Department, National Medical Center, Ministry of Health and Welfare between March 16 and April 4, 1987. This report is a summary of the results of this study.

The results of the field study and its analysis are as follows:

1. The construction of the new Out-patient Department is a part of the extension project and facility improvement project for the Philippine General Hospital.
2. Also a part of the said project, the construction of the New Central Block, which was suspended during the revolution, has been re-started and is expected to be completed by the end of August 1987.
3. The Out-patient Department of the Philippine General Hospital which has been characterized as a charity hospital, treats a daily average of 1,000 patients. However it cannot meet the increasing needs of the patients as its buildings have deteriorated and its clinic care has been disrupted by the insufficient and deteriorated medical equipment.
4. The Philippine General Hospital cannot achieve its goal of all-encompassing service covering medical care, education and research without a good Out-patient Department, even after the

completion of the New Central Block.

Thus, as the Out-patient Department will contribute substantially to the overall PGH, the Japanese Grant Aid Assistance is of significant importance.

After the number of future patients and financial budget were estimated, the Study Team judged that it would be appropriate to construct the Out-patient Department for 2,000 out-patients in a day and to provide the necessary medical equipment, and this Study Report is submitted by establishing the basic design.

The relevant survey schedule and study team member list are described in Appendices.

CHAPTER 2

BACKGROUND OF THE PROJECT

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2-1 National Health and Medical Care Plan

Since 1975, health, nutrition and family planning have not been favorably improved. Average life and infant survival rate decreased in 1975/1980 from the rate of 1970/1975; in 1980, average life was 62 years and infant mortality was 63 per 1,000 births; 10 % of infants die under the age of five.

This seems to be caused by the problems of health and medical care in the Philippines such as; infectious diseases, an unsatisfactory sanitary environment, nutritional deficiencies, an increased number circulatory and digestive diseases which have emrged due to the chanes in living conditions, regional imbalances in the number of medical workers, and budget adefiencies of public medical facilities.

In order to improve the health and sanitary conditions, the national health and medical care plan of the Philippines is being set up in the Medium-Term National Development Plan (1987 to 1992).

This project aims at improving the Philippine people's health, sanitation and welfare through the planning of improved regional sanitary health, eradication of epidemic diseases, the expansion of medical facilities and systems, an improved sanitation system, and increased personnel involved in medical care.

2-1-1 Objectives of the National Health and Medical Care Plan

The following 3 goals for the National Health and Medical Care Plan have been set up by the Philippines:

- Improvement of health, medical care and nutritional conditions of the Philippine people
- Improvement of medical care services for all people by the year 2000 through primary health care (hereinafter referred to as P.H.C.) facilities

. Promotion of family planning for an improved family environment

2-1-2 Schedule of the Goals

In order to achieve these goals the Philippine Government is aiming to improve the P.H.C. plan, health impact plan, meal/nutrition plan, family planning, etc. and to penetrate these plans into the local areas. As a result, the index related to the health and medical care by 1992 is forecast as follows:

Item	1987	1992
Average life	63.7 years	65.2 years
Neonatal mortality rate	54.2/1000 persons	47.8/1000 persons
Infant mortality	4.7/1000 persons	3.7/1000 persons
Crude mortality	7.6/1000 persons	7.0/1000 persons
Birth rate	31.3/1000 persons	28.6/1000 persons
Population growth rate	2.41%	2.21%
Nutrition improved Target	1,784 kcal	1,950 kcal

2-1-3 Policy

For efficient and effective execution of this national health and medical care plan, the Philippines have set up the following policy:

1) In order to effectively execute health, nutrition and family planning, this policy is intended for low income bracket people; children, women, laborers, veterans and aged people.

   a. Countermeasures for diarrhea, tuberculosis, malaria, schistosomiasis and epidemic disease are to be strengthened, thereby decreasing morbidity and lengthening average life.

b. The clinic system organization is disseminated, thus producing a widespread effect at the minimum expenditure.

c. The health insurance institution is developed, thereby reducing medical care expenses borne by patients.

2) Harmony within health, nutrition and family planning sectors and coordination with other sectors is achieved.

a. By improving network service at the regional level, the coordination of the sectors is accomplished, thus producing a greater effect.

b. The clinic system is utilized, making it possible to meet the regional medical treatment needs effectively.

c. By activating sector to sector exchange, service efficiency is achieved.

3) Responsibilities are clearly shared for health, nutrition, and family planning.

4) Usage of intrinsic resources and technology is enhanced.

5) Cooperation with the private sector is strengthened.

6) Preventive medicine is utilized and improved nutrition is realized.

a. This project is to pinpoint diseases such as as diphteria, whooping cough, tetanus, poliomyelitis, measles, and tuberculosis, by improving water supplies, taking proper measures to better sanitation and implementing an action programm. This should encourage the field of preventive medicine.

7) Mother and child health is improved, promoting and strengthening family planning.

a. Infant and mother morbidity is reduced.

8) The position and role of women is strengthened.

a. The decrease in birthrate seems to be helpful in improving the health of mothers as well as infants.

b. The reduced time and labor resulting from smaller families encourage women to participate in regional activities and support them for improvement of their positions.

9) Environmental sanitation and labor safety rules are improved.

a. Environmental sanitation is improved by providing safe supply of water; effective treatment of domestic, agricultural and industrial wastes; industrial hygiene; countermeasures for the outflow of pollutants; and the supply of sanitary toilet facilities.

b. For improvement of the laborer's health, safe working conditions are to be insured and periodical health examinations are made mandatory to help prevent industrial diseases.

10) Increased governmental funds are distributed to health, nutrition, and family planning fields.

a. Development of a better relationship between the central and local governments is achieved, to activate and coordinate the planning.

11) The implementation of the Planning is promoted by utilizing technology and information.

12) Manpower development is promoted.

13) Improvement of services required for health, nutrition and family planning.

Improvement of the PGH, which is associated with U.P. Manila and of which the OPD is one department, contributes significantly to the overall national health and medical care plan.

2-2 Present State of Foreign Assistance Projects

The loan assistance of the Official Development Assistant (ODA) to the Philippines is the second largest, with Indonesia being the largest, among the ASEAN 5 countries. The yen credit project from the Japanese Governemnt amounts to JYen 490 billion (E/N base) as of March, 1986. The Philippines

is the country receiving the largest grant assistance. The Grant Aid totalled approx. JYen 55.1 billion in September, 1986.

On the other hand, in relationship to economic assistance for health and medical care, its ratio is low in comparison with other sectors. The number of projects and amount of assistance are outlined in the table below:

Funding Source	Project Title	Cost(million $) Grant Aid	Loan	Duration
U.S.A	1. Primary Health Care Financing Project	16.5	1.03	1983-88
	2. Population Planning II	29.8	26.9	1980-86
World Bank	1. Schistosomiasis Control I	-	15.7	1977-85
	2. Schistosomiasis Control II	-	1.9	1979-83
	3. Schistosomiasis Control (Samar Integrated Regional Development Project)	-	1.4	1980-84
	4. Schistosomiasis Control (Minfoto Integrated Regional Development Project)	-	0.83	-
	5. Pilot Herbal Arug Production Project	-	0.7	1984-85
	6. Population Planning I	-	23.6	1978-85
	7. Population Planning II	-	34.4	1980-86
Asia Development Bank	1. Schistosomiasis Control (Agusan Irrigation Project II)	-	0.7	1979-82
	2. Schistosomiasis Control (Bukidnon Irrigation ProjectII)	-	0.7	1980-84
	3. Schistosomiasis Control	-	0.42	-

Japan	1. Tropical Medicine Institute Construction Project	11.66	-	1979
	2. Regional Hospital Equipment Upgrading Project	5.3	-	1984
	3. Diagnostic Eequipment for the National Cancer Institute	3.9	-	1980-85
	4. Fellowship Equipment/Material to Regional Institute for Tropical Medicine	1.8	-	1980-85
	5. Integrated Family Planning and MCH Program	4.0	-	1985
	6. Perinatal Mortality Planning and MCH Program	2.3	-	1986
	7. Bureau of Food and Drugs	10.0	-	1986
UNICEF	1. 2nd Country Program for Children	10.0	-	1983-87
WHO	1. WHO Country Program	4.8	-	1984-87
Canada	1. Philippine Immunization Program (Vaccines)	5.0	-	1986-88
Others	1. Bicol Integrated Area Development Project	118.0	-	1981-83

Typical projects excluding the projects from the Japanese Government, include the lending to primary health care, schistosomiasis countermeasures, population control plan and vaccination plan. Top priority is given to environmental sanitation and family planning, and this has produced favorable results.

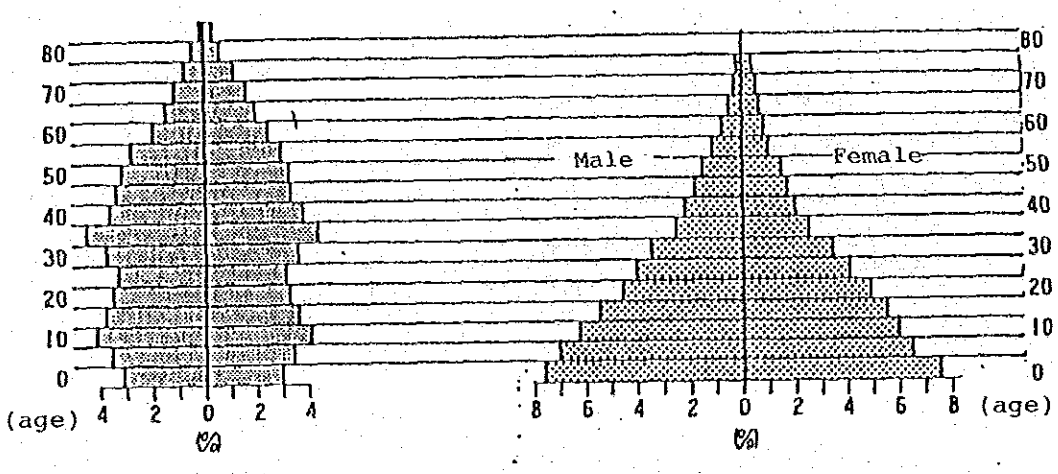
The Grant Aid Projects from the Japanese Government include the construction project for the Research Institute of Tropical medicine (1979), Local Hospital Equipment/Improvement Plan (1984), grant of Medical equipment to the National Cancer Institute (1984) and Bureau of Food and Drugs (1986). Assistance from Japan, including technical cooperation is regarded highly among the Philippines, and has contributed substantially to the improvement of Philippine health and medical care conditions.

2-3 Present State of Health and Medical Care

2-3-1 Population Configuration

The population of the Philippines reached 52,055,000 as of 1983. The population breakdown by sex and age. is respectively shown in Fig. 2-1.

Fig. 2-1 Population Pyramid (In comparison with Japan)



As can be determined from this figure, the population configuration is typical of an increasing population, in which the young generation occupies a greater percentage, in comparison with the older generation, and is differeint from the bell or stationary population type, represented by Japan. The population configuration of the Philippines is called a juvenile type. which is accompanied by a large mortality rate; thus, the population is naturally decreased, and the life of the juvenile configuration is very short.

2-3-2 Health and Medical Care Standards

The Philippine health and sanitary conditions are still at a low. This can been seen in Tables 2-1 and 2-2, when the birth rate and mortality in the Philppines are compared with those of other countries. However, from the trends seen in Fig. 2-2, the high birth rate and high mortality rate have been on the decline since 1975. As the government health and medical care policy is promoted, the Philippine health and sanitary conditions should progressively improve.

Table 2-1 Birth Rate

(Per 1000 persons)

	1970	1975	1976	1977	1978	1980	1984
Entire Philippines	26.2	29.1	30.1	30.3	30.5	a)33.9	b)32.3
MetroManila	(34.6)	(31.8)	33.6	36.3	34.4	-	-
Japan					14.9	13.6	12.5
Thailand						a)31.4	b)28.6
Burma						a)38.5	b)37.9
Malaysia						a)30.8	b)29.2

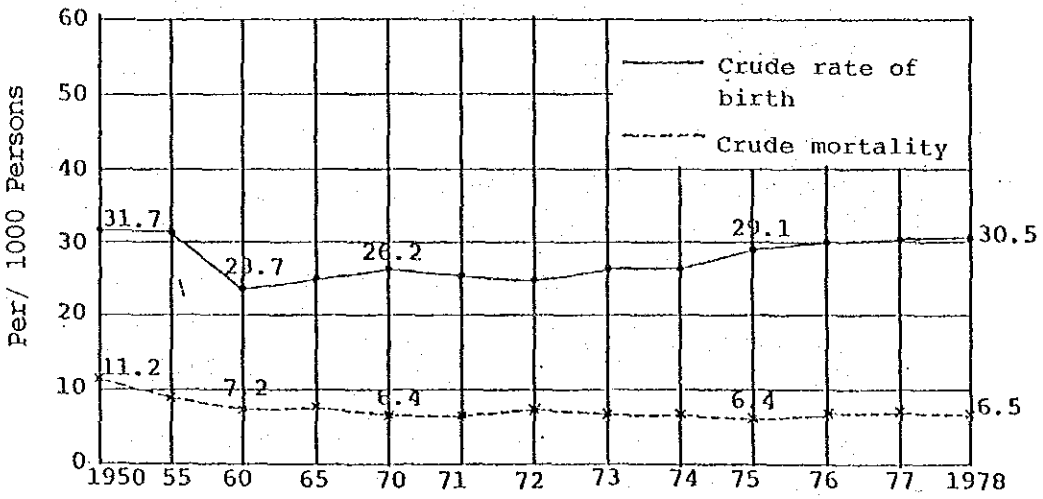
Table 2-2 Mortality

(Per 1000 persons)

	1970	1975	1976	1977	1978	1980	1984
Entire Philippines	6.4	6.4	6.9	7.0	6.5	a).7.9	b) 6.9
MetroManila	(7.3)	(6.8)	7.8	9.1	7.2	-	-
Japan					6.1	6.2	6.2
Thailand						a) 5.3	b) 7.9
Burma						a)14.2	b) 2.7
Malaysia						a) 6.9	b) 6.4

* a) U.N. estimation of 1975 - 1980 (average)
  b) U.N. estimation of 1980 - 1985 (average)

Fig. 2-2 Trends of Birth Rate and Mortality



According to Table 2-3 which shows the number of deaths and mortality by sex and age in the Philippines in 1985, the mortality of infants below the age of four accounts for 37% of the total. Thus, this shows that the medical care facilities at the lower income class have not improved.

Table 2-3 No. of Deaths accoring to Sex, Age and Mortality in the Philippines (1985)

by age	No. of deaths			Mortality		
	Male & Female	Male	Female	Male & Female	Male	Female
Total	297,034	169,332	127,702	100.0	100.0	100.0
Under 1	73,640	41,837	31,803	24.8	24.7	24.9
1 - 4	35,266	19,403	16,803	12.2	11.5	13.2
5 - 9	10,773	6,113	4,660	3.6	3.6	3.6
10-14	5,592	3,221	2,371	1.9	1.9	1.9
15-19	6,908	4,261	2,467	2.3	2.5	2.1
20-24	8,968	5,943	3,025	3.0	3.5	2.4
25-29	8,667	5,685	2,982	2.9	3.4	2.3
30-34	7,932	4,996	2,936	2.7	3.0	2.3
35-39	8,672	5,377	3,295	2.9	3.2	2.6
40-44	9,452	5,963	3,489	3.2	3.5	2.7
45-49	9,907	6,219	3,688	3.3	3.7	2.9
50-54	11,199	7,023	4,176	3.8	4.1	3.3
55-59	11,768	7,372	4,396	4.0	4.3	3.4
60-64	15,538	8,960	6,578	5.2	5.3	5.1
65-69	15,002	8,706	6,296	5.1	5.1	4.9
70-74	14,374	7,773	6,601	4.8	4.6	5.2
75-79	14,524	7,934	6,590	4.9	4.7	5.2
80-84	8,707	3,998	4,709	2.9	2.4	3.7
85 or older	17,758	7,684	10,074	6.0	4.5	7.9
Others	1,387	864	523	0.5	0.5	0.4

Table 2-4 National Health Index (per 1,000 persons)

Index	1978	1979	1980	1981	1982	1983	1984	1978-1984 increase (decrease)
Crude Birth Rate	33.5	32.4	32.3	32.1	31.9	31.7	31.6	(5.67)
Crude Motality	8.5	8.4	8.3	8.1	7.9	7.7	7.6	(10.59)
Mortality of infants	67.9	65.5	63.2	61.9	60.6	59.3	58.0	(14.58)
Nortality of mothers	1.1	1.0	1.0	0.9	0.9	0.8	0.8	(27.27)
Mortality caused by epidemic diseases	254.8	249.3	243.8	239.8	235.9	232.0	227.0	(10.91)
Mortality over 50's	38.5	39.3	40.2	41.2	42.3	43.4	44.6	15.84
Average life	60.9	61.2	61.6	61.9	62.2	62.5	62.8	3.12
Population	45,997,120	47,157,060	48,317,000	49,534,200	50,751,400	51,968,600	53,185,800	15.63

(Source: Ministry of Health)

2-3-3 Disease structure

The causes for diseases in the Philippines are shown in Table 2-5 according to the statistics in 1983, almost all these diseases are infectious diseases.

Table 2-5 Cause of Disease (per 100,000 persons)

Cause of disease	1983 No. of patients	1978-1982 (average) No. of patients
1) Upper respiratory tract disease and asthma	678.1	483.9
2) Diarrhea disease	529.2	451.8
3) Influenza	498.6	440.7
4) Pneumonia	237.5	243.8
5) Tuberculous disease	204.5	233.1
6) Malaria	105.7	79.5
7) Bacillary dysentery	90.8	59.9
8) Measles	84.1	60.2
9) Malignant neoplasm (tumor)	49.7	48.7
10) Whooping cough	33.4	33.0

According to the statistics of 1983, an increase in all diseases except Nos. 4 and 5 was shown, from the average of the 5 years between 1978 and 1982.

The causes of death in the Philippines are in Table 2-6 as follows:

Table 2-6 Cause of Death (per 100 persons)

Cause of death	1983 No. of deaths	1978-1982 (average) No. of deaths
1) Pneumonia	93.6	(94.9)
2) Cardiopathy	62.6	(64.6)
3) Tuberculous disease	55.0	(56.6)
4) Hematic disease	51.9	(42.8)
5) Malignant neoplasm	34.6	(32.6)
6) Diarrhea disease	18.2	(12.2)
7) Measles	17.9	(12.7)
8) Vitamine deficiency and nutritional disturbance	13.6	(15.5)
9) External injury accident	12.2	(20.2)
10) Nephritis and nephrotic syndrome	9.3	(8.9)

Deaths caused by geriatric diseases included No.2, No.4 and No.5.

In Table 2-6, the three largest causes of death; pneumonia, cardiopathy and tuberculous; account for approx. 60% of the total. In comparison, in the Japanese three largest causes of disease, there are malignant neoplasm, cardiac disease and cerebral vessel disease, which account for 60% of the total deaths, the influence of different living surroundings makes a significant difference.

The cause of death of infants is shown in Table 2-7. For infant, the three main causes of death are pneumonia, enteritis, and nutrition deficiency which account for 43.5% of the total. This indicates that their death results from the low-levels of nutrition, sanitation and the low general living conditions.

Table 2-7 Cause of Death of Infants

Cause of death	1972-1976(5 years average) No. of deaths	1972-1976(5 years average) No. of deaths	1972-1976(5 years average) No. of infant deaths	1977 No. of deaths	1977 No. of deaths	1977 No. of infant deaths
Bronchopneumonia	17,200	15.3	25.5	18,070	13.4	23.7
Digesitive function disease	5,801	5.1	8.6	7,862	5.8	10.3
Nutritional disturbance hypoxia	6.599	5.9	9.8	7,354	5.5	9.6
Hypoxia	3,937	3.5	5.8	4,875	3.6	6.4
Tetanus	2,916	2.6	4.3	2,750	2.0	3.6
Congenital heart disease	2,351	2.1	3.5	2,636	2.0	3.5
Bronchitis, Pulmonary tumors, asthma	2,726	2.4	4.0	1,944	1.4	2.5
Acute respiratory infectious disease	1,375	1.2	2.0	1,580	1.2	2.1
Measles	910	0.8	1.3	1,503	1.1	2.0
Purulent meningitis	703	0.6	1.0	985	0.7	1.3

2-3-4 Medical Health Care Facilities

The actual situation of medical care facilities in the Philippines and Metro Manila currently surveyed, is shown in Table 2-10:

Table 2-8 No. of National Public and Private Hospitals and No. of Beds per head of population (1983)

Area, region	Total		National		Private		1983	
	No.of hosp.	No.of beds	No.of hosp.	No.of	No.of hosp.	No.of beds	Pop.	Beds/ Pop.
Nationwide	1,664	76,653	526	44,443	1,138	32,210	52,055,370	1:679
Metro Manila	133	19,183	32	15,523	101	3,660	6.540,181	1:341
1 Ilocos Region	144	5,562	47	2,825	97	2,737	3,754,390	1:675
2 Cagayan Valley	119	3,030	44	1,925	75	1,105	2,398,940	1:792
3 Central Luzon	189	6,675	54	3,943	135	2,732	5,195,858	1:778
4 Southern Luzon	223	7,702	74	4,002	149	3,700	6,703,443	1:870
5 Bicol Region	150	4,987	38	2,060	112	2,992	3,744,151	1:752
6 Western Visayas	77	4,951	45	2,427	32	2,524	4,866,120	1:983
7 Central Visayas	88	6,077	34	3,162	54	2,915	4,031,506	1:663
8 Eastern Visayas	67	2,801	40	1,995	27	806	2,963,455	1:1,058
9 Western Mindanao	75	2,986	30	2,111	45	875	2,734,070	1:916
10 Western Mindanao	135	4,557	42	1,940	93	2,617	3,011,859	1:661
11 Northern Mindanao	184	5,272	27	1,330	157	3,942	3,644,840	1:691
12 Central Mindanao	80	2,875	19	1,200	61	1,675	2,466,559	1:858

(Source: Minstry of Health)

Medical care facilities in Metro Manila make up 8% of the total number of hospitals in the Philippines and 25% of the total number of beds. Thus it is assumed that most of the large hospitals are located in Metro Manila. In addition there are more beds in public hospitals than in private hospitals. This indicates that public hospitals are also centralized in Metro Manila.

The patients who use public hospitals belong mainly to the low income bracket. The standard family has 2 children and an annual income of 21,600 pesos or less (monthly 1,800 pesos). Families below this standard are authorized as charity patients. However, in 1985, the annual average income per family was just 19,993 pesos (approx. JYen 160,000); families with an annual income of less than 40,000 pesos (approx. JYen 320,000) account for 80% of the total families. Judging from this, the number of families which can utilize the private hospitals, in which 100% of the treatment expenses must be paid by the patients, is limited.

Basically, only the consultation fees of first visit and return visit for the charity patients are free of charge. Medical care materials and medicine fees are not free of charge. The typical examination fee for each patient of PGH is shown below.

Table 2-9 PGH Examination Fee Example

Unit: peso (yen)

Examination Item	Normal fee	Charity
X-ray examination fee for Breast: (Normal size 14" x 11" film)	120 (890)	30 (220)
Clinical examination fee: Biochemical examination	54(400) to 99(730)	8(60) to 30(220)
Bacteriological examination	45(330) to 144(1,060)	4(30) to 30(220)
General urine test	10(70) to 45(330)	4(30) to 8(60)
Stool test	21(150) to 54(400)	4(30) to 8(60)

The patients who are not treated as charity patients must pay the aforementioned standard fee. In addition, the medicine fee, injection fee, intravenous drip infusion and other medical material cost must be borne by each non-charity patient.

Table 2-10 shows the number of medical health care facilities controlled by the Ministry of Health. The Philippine medical care facilities are composed mainly of smaller regional hospitals (rural health unit), regional health centers (Barangay health station), and main general and speciality hospitals. According to this table, the number of medical care facilities increased in the 3 years between 1980 and 1983. However, since 1983, it has remained at the same level.

Table 2-10 No. of Medical Health Care Facilities Controlled by the Ministry of Health (1980, 1983, 1984)

Facilities	1980	1983	1984
Total	11,432	12,191	12,191
Hospital	345	367	367
Regional and area hospitals	1,991	1,991	1,991
Regional health centers	7,353	7,991	7,991
Family planning clinics	1,743	1,842	1,842

(Source: Ministry of Health)

Table 2-11 shows the number of hospitals and beds in the Philippines. The number of public hospitals has not changed since 1975 (nearly 350), but in 1979, the number of private hospitals increased from 837 to 1075. The number of beds per 10,000 persons was at a peak in 1977 with 17.7 beds/10,000 persons. This ratio has since been on the decline. This indicates that the increase in beds has not followed the increase in population.

Table 2-11 No. of National Public and Private Hospitals and Beds

Year	No. of hospitals			No. of beds			
	Total	Public	Private	Total	Public	Private	Beds/10,000 persons
1963-64	374	136	238[3]	26,600	15,400	11,200	8.7
1968-69	799	318[2]	418	53,793	34,342	19,451	15.1
1969-70	650	220	430	40,289	19,725	20,564	11.0
1970-71	640	209	431	41,153	20,400	20,753	10.9
1971-72	693	244	449	43,124	21,720	21,424	11.1
1972-73	768	254	514	45,986	22,325	23,661	11.5
1973-74	845	275	570	65,045	39,451	25,594	15.8
1975	969	363	606	69,774	41,692	28,082	16.5
1976	1,036	366	670	75,600	44,525	31,075	17.6
1977	1,150	371	779	79,621	45,161	34,460	17.8
1978	1,165	328	837	66,154	29,975	36,179	14.4
1979	1,410	335	1,075	70,891	31,050	39.841	15.2
1980	1,406	345	1.061	70,129	31,850	38,279	14.7

(Source: Ministry of Health)

2-3-5 Health and Medical Workers

It is absolutely necessary to improve the medical workers both quantitatively and qualitatively, in order to raise the health and sanitary conditions in the Philippines. Therefore, the Philippine Government is making efforts to provide more medical workers; the number of regional medical health care workers was approx. 33.4% in 1984, a favorable increase from the previous figures. The number of doctors controlled by the Ministry of Health was 8,132 in 1984, an increase of approx. 10% compared with the 1982 level. However, the number of medical engineers, pharmacists, nutrition technicians, sanitary trainers is apt to decrease. In view of an

increasing population, and improvements in regional medical differences, it is desirable to train, increase, and reinforce medical workers, while re-training those presently engaged in treatment to raise the technical level.

Table 2-12 Number of Medical Workers (1980, 1982, 1984)

	1980	1982	1984
Doctor	7,259	7,378	8,132
Nurse	9,605	9,644	10,306
Midwife	9,329	9,470	9,574
Dentist	1,029	1,090	1,123
Pharmacist	518	539	588
Sanitary inspector	1,565	1,928	1,880
Medical engineer	355	1,739	740
Nutrition technician	618	599	619
Medical trainer	90	78	127
Regional health worker	190,675	214,696	333,596

(Source: Ministry of Health)

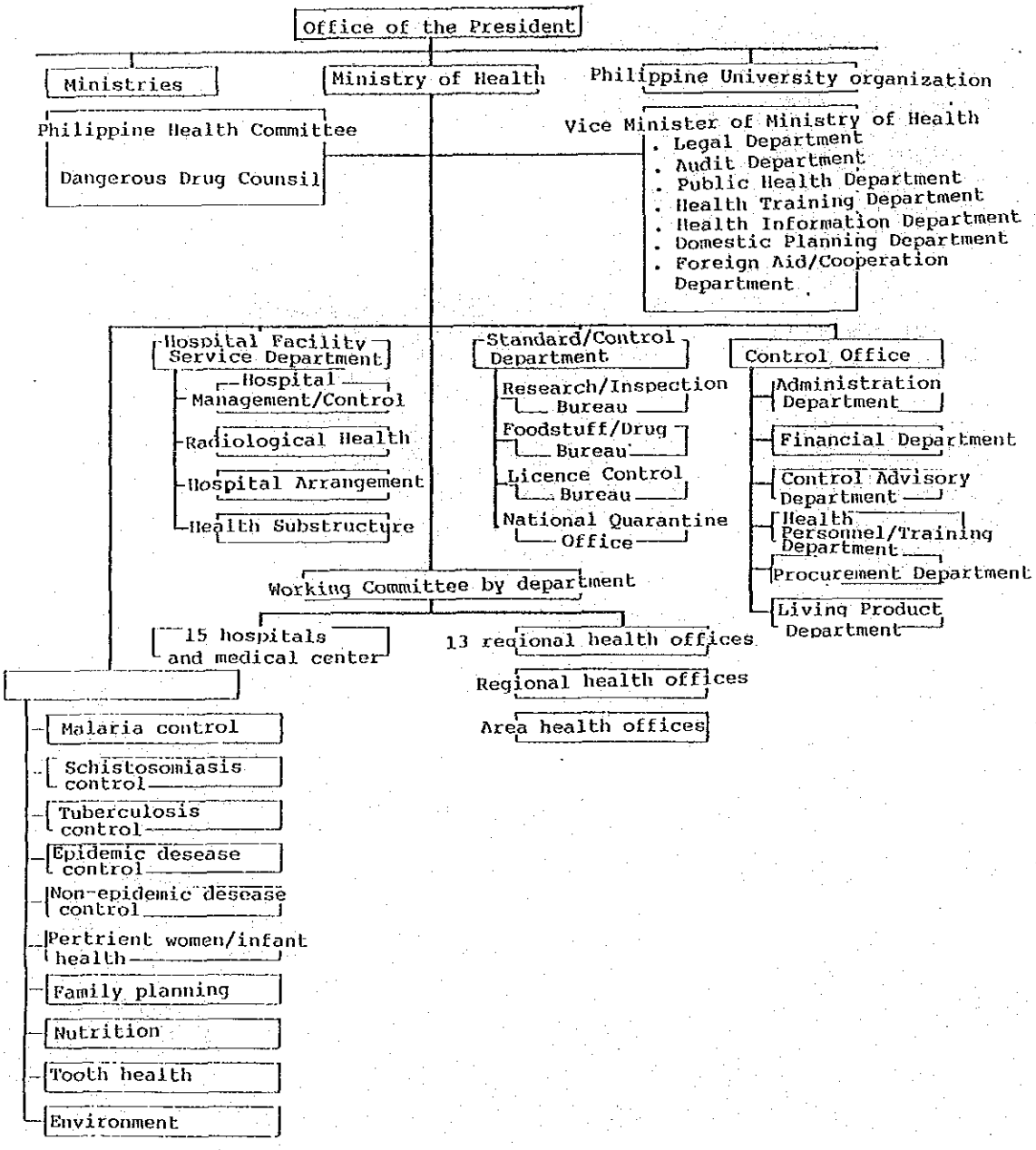
At present, there are 27 medical schools in the Philippines which are the organizations for educationg these health and medical workers, each medical school having an affiliated hospital. This engages in clinic, research and educational activities.

In Metro Manila, there are 5 medical schools including PGH. The other four schools, such as St. Thomas University, are private. These private schools are affiliated with excellent hospitals for education. On the other hand, although PGH is a hospital affiliated with a national university, due to its insufficient facilities, many differences in research and education with other private universities are produced. The PGH accepts the students of 8 colleges which belong to UP Manila and medical training facilities. The number of training medical students and trainees in 1985 was a total of

2,118.

2-3-6 Administrative Organization System for Health and Medical Care

Administrative organization system for health and medical care in the Philippines is organized as follows with the Ministry of Health, as the center: The UPS consists of 4 organizations such as UP Manila, and among these systems, the PGH belongs to UP Manila. In this way, the PGH does not fall within the regional medical system controlled under the Ministry of Health. However, it plays a leading part in the Philippines as a medical facility.



CHAPTER 3

PRESENT STATE OF THE PHILIPPINE GENERAL HOSPITAL

CHAPTER 3 PRESENT STATE OF THE OUTPATIENT DEPARTMENT IN THE PHILIPPINE GENERAL HOSPITAL

Summary

PGH, with a 75 year tradition and history, has greatly contributed to the medical care of the Philippines by engaging in the medical education as a hospital affilated with UP and by providing medical care as a charity hospital mainly for the low income group.

At present, PGH consists of 4 departments; the ward department, Out-patient Department, emergency department and cancer institute. These departments keep in close contact with one another and yet maintain their independent functions and mechanisms.

Independent from the national and public hospitals under the control of the Ministry of Health, PGH is under the control of the UP Manila. Therefore, it contains all; primary, secondary and tertiary care functions. The clinic consists of 4 sections; internal medicine, surgery, orthopedics and pediatrics. Out-reached health care services are also performed.

The medical care region of PGH includes not only Metro Manila but the whole nation. Although it is expected to have an important position and role, PGH's clinical functions have been reduced due to obsolescence. Due to insufficient and obsolete medical facilities and equipemnt, and an yearly increasing number of patients, it can no longer fully perform its functions. More than a thousand patients per day visit the perpetually crowded OPD.

The operational budget of the PGH is composed of the governmental subsidy given from the UP Manila and payment from patients. The income amounted to 106 million pesos (approx. 784 million yen) in 1985.

PGH has a site of 11 ha, in which there are hospital facilities, a nurse school, nurse house, faculty of pediatrics and part of the university facilities. At the center of the site, there is a New Central Block now under construction, which is aimed to be completed by August, 1987. The Out-Patient Building is situated on the left side of the Administration

Building on the center. It has 3 stories, and the total floor area is 5,200 m^2.

On the first floor, there are the orthopedics, ophtalmology, otorynolaryngology, dentistry, family medicine, general internal medicine, gynecology and pharmaceutical departments. On the 2nd floor, there are the general surgery department, special surgery department, minor operation room, pediatrics department and clinical laboratory department. On the 3rd floor, there are the medical record control room, disputed medical record control room, dermatology department and meeting room.

The expansion plan of PGH and the facility improvement plan were made up in 1981. Upon implementation of these plans, the construction work for the New Central Block, including central clinic department and ward department was commenced. However, the work was suspended in 1986 due to the political change and the serious situation of the economy. In June 1987, construction was commenced for the emergency clinic department, and the New Central Block re-started its work. The budget for the purchase of the medical equipment is not secured.

The Philippines requested for OPD as follows:

(1) to construct the OPD building with 3 stories, of which the total floor area will be approx. 10,000 m^2.
(2) to fulfill the clinical sections.
(3) to install the medical equipment necessary for OPD.
(4) to provide an ambulance for the out-reached health care services.

3-1 Function and Clinical Services

The Philippine General Hospital (PGH) was established in 1911 to serve all of the Philippine people of all ages for the purposes of medical and surgical consultation. Since its beginning, PGH has been a hospital for the lower income group. It has developed its functions of medical education and research as the hospital affiliated with the faculty of medicine of the University of Philippines which is the only national university in the Philippines.

History of PGH

(a) PGH was established in 1908 as a hospital for the health and medical care, to perform basically simple medical care and surgery. It also assumed the role of a medical education facility.
PGH was designed to have 1,500 beds at an early stage of planning. However, due to the influence of World War II, only 850 beds were provided. The number of beds has remained the same, although today the population is 10 times that of the prewar days.

(b) As the governmental budget was not obtained until 1961, the improvement plan for the physical therapy facilities was carried out by the assistance from the Rockfeller Foundation.

(c) In 1974, another expansion plan was planned in which the Philippine Medical Center was to merge with the College of Medicine in Pedro Gil, and move to the Diliman area. However, it was not realized due to financial reasons.

(d) In 1981, the expansion plan and facility improvement plan were made.

(e) Based upon the above plans, the construction work of the New Central Block, including the central clinic department and ward department with 507 beds, was commenced in February 1985. the concrete structure was almost constructed. However, the work was suspended for a year due to the political change which occurred in February 1986 and to the serious situation of the economy. In January 1987, work for the emergency department was commenced and in March 1987, the work for the New Central Block was recommmenced.
Now it is under construction and is expected to be completed by August 1987.
However, the budget for the purchase of the medical equipement has not been secured.

The historical contribution of PGH is extremely high, and it is the nucleus of improvement of medical care for the whole nation of the Philippines, and thus should lead the Philippine medical care in the future.

At present, PGH consists of 4 departments; the ward departmemt, OPD, emergency department and cancer institute. These departments keep in close contact with one another and yet maitain function independently.

With the whole nation as a catchment area, the PGH plays a significant role in 1) medical care in Manila City and its periphery to the residencies, especially to those underpriviledged, and 2) medical education as it is the only national university hospital in the Republic of the Philippines.

However, although the PGH is the largest scale general hospital in the Republic of the Philippines, its charity clinic is in great need of renewal. It's medical equipment and materials have become obsolete, and the building environment is quite poor. In contrast, the confidence and dependency of the Philippine people on this hospital are extremely high. One thousand or more patients visit the hospital daily, and, in particular, the out-patient department is always crowded. Many patients cannot be treated in the present hospital due to its lack of facilities. The hospital now manages to overcome this problem by limiting the clinic time, number of admission, and transferring some unattended patients to other hospitals.

Also in the Philippines, as other medical universities have almost no special clinical training affiliated with a hospital, each school now depends on the PGH for assistance.

The PGH is a hospital which performs all medical functions: it can therefore give ambulatory care which is not typical of a general hospital, medical clinic education and regional medical care.

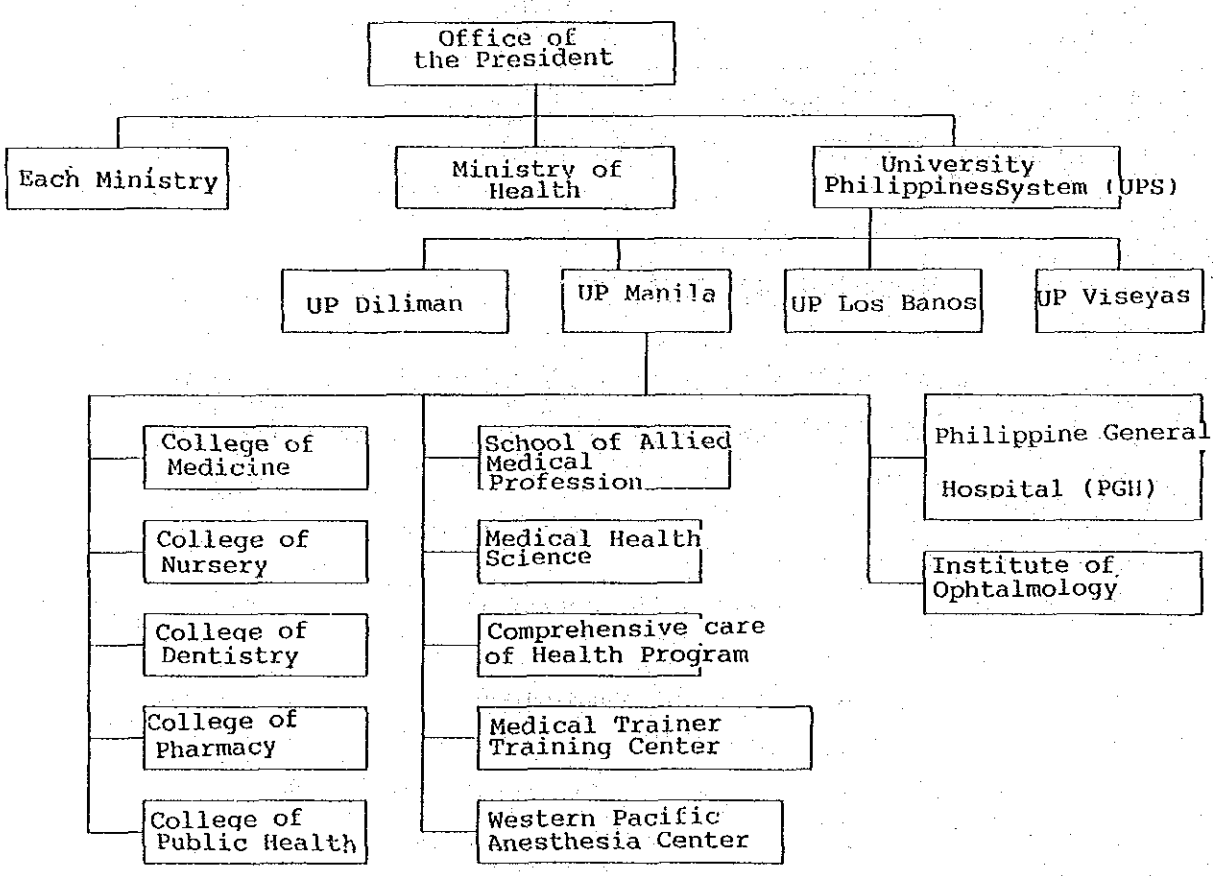
The out-patient clinic department of this hospital is a part of PGH, and at the same time, historically has performed independently; performing its function as a clinic facility containing all ambulatory care except in-patient medical care.

3-1-1 Function

The national and public hospitals under the control of the Ministry of Health is organized under the medical care system and include primary, secondary and tertiary care system, and each department is responsible for health care services to residents through ambulatory care. On the other

hand, the PGH is not included in such a system, Yet it is one of the most essential facilities and has a function of educational training for medical workers and a research function in close contact with the university (UP Manila).

Fig. 3-1 Philippine University System



(1) Medical care function

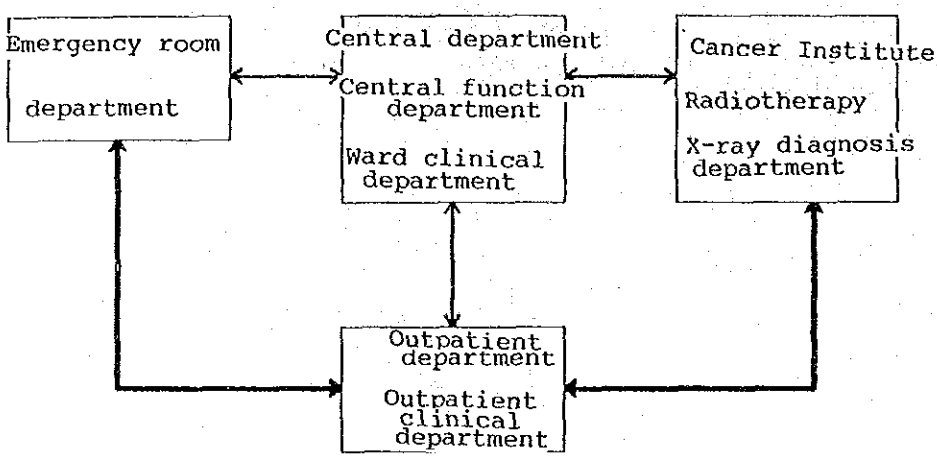
The clinical contents (Table 3-1) treated by PGH which is now handoling are divided roughly into 4 parts which perform the respective functions.

Table 3-1 PGH Clinic Contents

Clinic Department	Controlled Field	Clinic Department	Controlled Field
Medicine	General medicine	Obstetrics and	
	endoscope	gynecology	
	ECG	Otorhinolaryngology	Minor operation
	Dermatology		room
	Infectious deseases	Opthalmology	
Surgery	General surgery	Dentistry	
	Operation	Rehabilitation	EMG
	Endoscope		
		Psychiatry	
Orthopedics		Note)	
		Family medicine	
Pediatrics	Respiratory		
	Digestive tract	Anesthesia	Pain clinic
	Adolescent		
	Cardiovascular	Radiology	Radiotherapy
	Nervi crabuakes		
	Oncology	Clinicopathology (LAB)	
	Infant	Social medical services	

Note: The family medicine section was made to arrange the out-patient clinic.

Fig. 3-2 PGH Medical Treatment Function Drawing



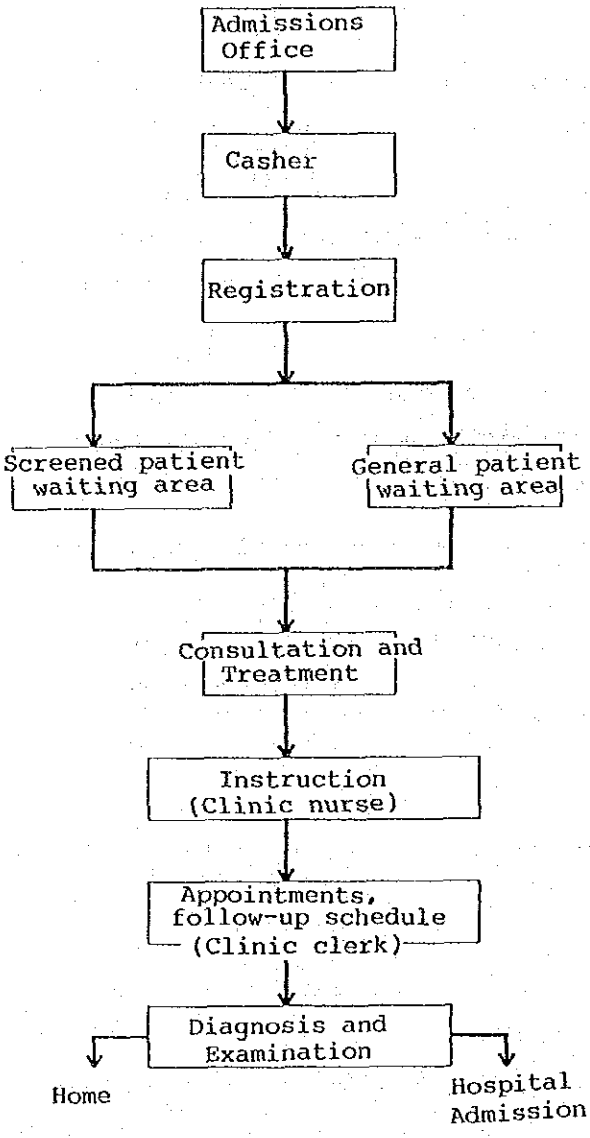
In addition to the aforementioned consultation and treatment functions, the PGH also has an ambulatory care function outside the hospital. The PGH is responsible for emergency medical activities, and medical teams are despatched upon request of the Government. This is called the "Volunteer Out-reach Program."

Table 3-2 Origin of Emergency and OPD Patients Surveyed in 1985

Patient Residence	No. of OPD Patients	Total
Manila	43,025	
Passey City	15,385	
Quezon City	5,908	
Caloocan City	3,820	
Las Pinas	3,287	
Makati	7,986	
Malabon	1,439	
Mandeluyoung	3,607	
Marikina	1,158	
Muntinlupa	3,800	
Navotas	1,299	
Paranaque	4,123	
Pasig	1,128	
Pateros	1,168	
San Juan	2,723	
Taguig	3,529	
Valenzuela	381	
		103,766 (89.13%)
Luzon	12,380	
Visayas	223	
Mindanao	55	
		12,658 (10.87%)
Total Patients Surveyed		116,424 (100.00%)

The current flow of patients in OPD is as shown in Fig. 3-3-a below.

Fig. 3-3-a Flow Chart for New Patients



(A) New patient:

1) The patient is interviewed and screened at the admission office. (Designation of the department)

2) The patient pays the registration fee (5 peso) at the cashier.

3) The patient is registered at the record clerk and receives the case number.

4) If the department is not designated during screening, then the patient undergoes an examination for the triage clinic at the family medicine.

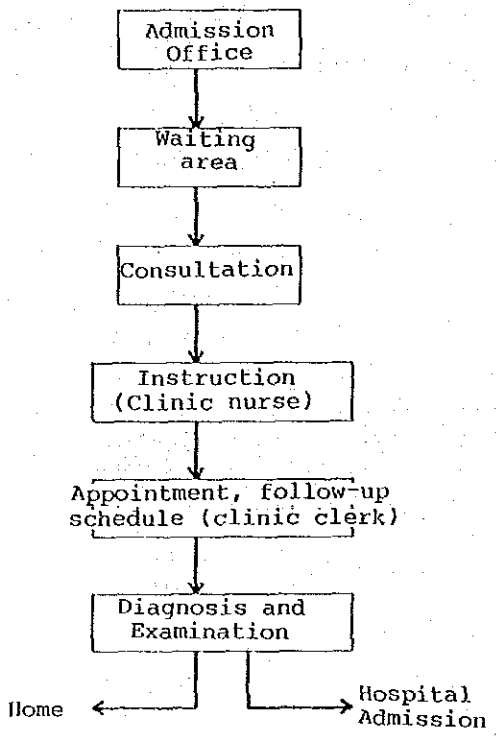
5) The patient who is subjected to doctor consultation or treatment is given his need or medical care instructions.(such as treatment by a nurse).

6) The patient is given instructions concerning further medical cares such as reservation of a return visit, hospitalizing procedures, or examination by a clinic clerk.

7) The patient pays the relevant expenses to the cashier and undergoes diagnosis and examinations.

   * The patient who requires an injection purchases it at the drug room, then returns to the consultation room for treatment.

Fig. 3-3-b Flow Chart for Old Patients



(B) Return Visit

1) The patient submits his ID card to the admission office, and proceeds to the designated consultation room.

2) The subsequent procedure is the same as for the new patient.

The problem here resides in card management which impedes the alleviation of the crowded outpatient department and reduced consultation time.

At present, it takes a medical record as long as 0.5 to 2 hours to reach the consultation room after a patient is called at the admission office. The medical record is sometimes not returned to the medical record management room. In addition, the medical record must be legally retained for 10 years; thus many hours are used to search for medical records as there is no sufficient space to store the card in the hospital.

The actual conditions of manpower supporting the PGH function unlike other general hospitals. The resident doctors (Class I, II, III) are responsible for clinical treatment under the instructions of consultant doctors. Thus, the hospital has the features of an educational training agency. In this system, intern doctors also take part in clinics for training as an assistant. The nurse department has the same configuration. The Table 3-3 shows the number of medical workers to OPD's direct medical care.

Table 3-3 Number of OPD Doctors

	Consultant Doctor	Resident Doctor	Intern Doctor
Medicine	6	56	27
Ophthalmology	11	31	5
Othorhinolaryngology	8	8	4
Family medicine	4	4	2
Obstetrics and gynecology	2	13	12
Pediatrics	10	4	6
Surgery	11	7	10
Sub total	52	123	66

Grand total 241

Table 3-4 Number of OPD Nurses

	Chief Nurse	Authorized Nurse	Practical Nurse
Otorhinolaryngology	1	1	1
Ophthalmology	1	2	1
Medicine	1	2	3
Obstetrics and gynecology	1	1	2
Treatment	1	3	0
Family medicine	1	0	0
Surgery	1	5	1
Pediatrics	1	2	2
Sub total	8	16	10

Supervisor: 1 person

Foreman: 1 person

Total medical care workers: 38

Grand total of medical clerks (Clinical department): 91

(2) Educational function

The faculty of medicine of the Philippine University is affiliated with the PGH. Therefore, students from other medical schools attend the PGH for clinical education. Since the current OPD already exceeds its capacity, this usage is unavoidably restricted. These statistics are as follows:

Table 3-5 Medical and Allied Medical Students and Trainees Undergoing Training in the PGH

Type of Student/Trainees	1981	1982	1983	1984	1985
A. Medical	567	1,075	1,158	1,240	1,314
Undergraduate	-	561	560	600	679
Interns	140	120	157	165	167
Residents	349	310	342	361	362
Others	78	84	99	114	106
B. Allied Medical Nursing	560	296	308	335	804
Nursing Students	200	-	-	39	459
Dietetic Residents	13	11	9	18	-
Nutrition Residents	170	81	60	48	88
Pharmacy Interns	51	62	94	52	62
Dental Externs	58	54	69	71	63
Postgraduate Medical (Technology Externs)	22	20	26	55	65
Social Work Students	3	22	1	3	3
Occupational Therapy Interns	17	5	19	10	6
Total	1,127	1,371	1,466	1,575	2,118

Table 3-6 Number of PGH specialized doctors in 1985

Specialized doctor	1984	1985
Medicine	31	28
Obstetrics and gynecology	16	4
Surgery	4	8
Pediatrics	16	15
Anesthesia	10	8
Orthopedics	6	6
Physiatrics	2	5
Otorhinolaryn	5	5
Family Medicine	10	10
Clinicopathlogy	4	2
Rehabilitation Medicine	1	5
Total	114	105

(3) Research function

Together with educational activities, the PGH also conducts research activities. The recent results of the research subjects of the entire PGH is shown in Table 3-7:

Table 3-7 Number of studys of each field in PGH

Department	1984 completed	1984 going on	1985 completed	1985 going on
Medicine	46	96	78	119
Ophthalmology	31	54	36	40
Pediatrics	17	18	9	12
Family Medicine	19	15	19	8
Obsterics and gynecology	12	21	4	18
Surgery	15	16	22	10
Orthopedics	14	12	17	19
ENT	10	9	7	5
Anethesia	2	6	4	4
Physical Therapy	-	4	-	4
Radiology/Cancer Inspection	-	2	2	2
Dentistry	1	1	-	-
Examination room	1	1	-	-
Psychiatrics	-	-	-	-
Total	168	255	198	285

3-1-2 Clinical Services

In view of the high evaluation of this hospital in the Philippine and the long history of the hospital as a charity facility, this hospital (PGH) has been viewed as the most reliable hospital for low-income earners. Eighty five percent of the patients attend the hospital from the metropolitan Manila area, and 15% attend the hospital from other various parts of the Philippines.

The number of patients attending increases year by year, with a mean of 1,238 per day in 1975. In order to examine these patients, many clinical

departments have been compelled to extend their clinic hours. In 1976, the Sanitary Committee planned to establish a medical network for the elevation of medical service at health center and public hospitals. This was intended to reduce the burden on the PGH by giving the patients with less severe symptoms the chance to attend regional health centers. However this plan was not effective, and patients continued to attend PGH.

Accordingly, it become necessary to limit PGH's number of outpatients due to the shortage of space and medical equipment; thus the number of patients was limited to 855 cases per day. Yet there was such strong request to attend PGH that night consultation was made possible 1982.

After 1985, some facilities were destroyed for the construction of the central block, and medical and consulting environments have become more aggravated. Although this is a transient problem, clinic hours have been reduced to 10:00 am to 12:00 am and 2:00 pm to 4:00 pm. Thus, the number of patients attending has been reduced.

However, potential demands are increasing, based upon the following reasons:

(a) The population in Metro Manila was 4.95 million in 1975 and it increased to 7.1 million in 1986. In other words, the increase was over 2 million people in 10 years with the bulk of the people being younger and low-income people.

(b) Medical facilities have not increased to match the population increase. Although during this period of time, 5 hospitals have been newly established, the only general hospital is Las Pinias Regional Hospital having 25 beds. All others are specialty-hospitals: namely, the Heart Center, Lung Center, Renal Center, and Pediatric Center.

(c) People who were previously treated in private hospitals have been attending the public hospitals as low-income patients in the charity-institute due to the revisions of the system.

In the case of a standard family with 2 children, those who earn less than 1800 peso/month are regarded as low-income earners or charity-

patients. Of the patients of OPD, 99.5% are charity-patients (1986).

The rates of treated patients at the OPD in the following clinical departments are shown in the following list: (Actual results in 1985)

Table 3-8 Number of Patients for Each Clinical Department of OPD (1985)

Clinical department	Number of patients	%
Otorhinolaryngology department	21,454	10.3
Ophthalmology department	23,306	11.2
Internal medicine department	33,452	16.0
Pediatrics department	12,064	6.0
Adult patients department	656	0.3
Newborns department	4,562	2.2
Surgery department	33,471	16.2
Orthopedics department	250	0.1
Dentistry department	10,660	5.2
Gynecology department	30,912	15.0
Family medicnine department	23,119	11.2
Dermatology department	8,991	4.3
Charged patient department	4,634	2.0
Total	207,501	100 %

Note: This data does not include the numbers of the psychiatry department, rehabilitation department, radiology department, and cancer institute, because they are independent facilities.

The following list shows the number of hospitalized/discharged patients:

Table 3-9 Number of Hospitalized/discharged patients in PGH(1985)

	Nominal No.of beds	Hospital-ized No.of patients	Discharged No.of patients	No.of deaths	Total hospital-ized days	Occupa-tion rate	In-hos-pital days
Charged ward	69	1,995	1,952	42	16,879	67 %	9
Charity ward	763	24,937	23,722	946	240,259	80 %	10
Total	832	26,932	25,674	988	257,138	85 %	10

As shown in the above list, bed-occupation rate is 85%. As a rule, a hospital is considered full with 75%-occupied rate. Thus the hospital is overloaded.

The mean stay in a hospital is 10 days which compares to 30 days in Japan and 1 week in the U.S.

The following list shows the major diseases treated for in-patients of the PGH:

1) Pediatrics department

Almost all diseases are caused by infections. In addition are congenital heart disease, lukemia and nutritional disturbances.

1. Bronchopneumonia
2. Septicemia
3. Diarrhea disease
4. Congenital heart disease
5. Tuberculous various diseases
6. Leukemia diseases
7. Kidney disease syndrome
8. Rheumatic heart disease
9. Acute nephritis
10. Nutritional disturbance
11. Rheumatic fever
12. Purulent meningitis

2) Internal medicine department

Hyperthyroidism is the Philippine's highest ranking endemic disease; diseases of the elderly rank lower. Similar to the pediatric department, most diseases are caused by infection-diseases.

1. Thyroidism and syndrome
2. True diabetes
3. Hypertensive disease
4. Tuberculous pulmonary disease
5. Upper trachial infection
6. Ischemic heart disease
7. Urinary tract infection
8. Osteoarthritis
9. Digestion functional disease

3) Gynecology department

Main patients suffer from aberrations caused by delivery or abnormal growths caused by various disorders such as poor nutrition, etc.

1. Corpus uteri aberration
2. Partes cervicalkanal aberration
3. Ovary disease
4. Uterine tube disturbance disease
5. Partes vagina disease
6. Partes genitales externae disease

4) Obstetrics department

1. Spontaneous abortion
2. Induced abortion
3. Early abnormal labor
4. Ectopic pregnancy
5. Eclampsia
6. Dead fetus

5) Orthopedic surgery department

1. Traumatic injury excision and cleaning technique
2. Open fracture diorthosis
3. Solerecto-operation

6) Opthalmology

1. Cataract
2. Glaucoma
3. Eye-muscle surgery
4. Sclerecto-iridectomy
5. Hyaloidectomy
6. Tear-sac operation
7. Ophthalmoplasty
8. Ophthalmectomia
9. Evisceration of the eye
10. Orbitotomy

7) Radiotherapy department

This department uses an old-fashioned cobalt cure unit for the treatment of over 100 persons per day for the following diseases:

1. Carcinoma of cervix
2. Mastocarsinoma
3. Nasopharyngeal carcinoma
4. Malignant neoplasm
5. Bronchogenic carcinoma
6. Carcinoma of prostate
7. Lung cancer
8. Malignant lymph gland

The above-mentioned is the medical names of the main clinical departments, which indicates that patients rely on the medical level of the PGH. The patients may consider the PGH as a spiritual anchor.

The following are the results of other care:

Table 3-10 Results of Radiotherapy (1985)

Therapy	Result (number)
Cesium radiation	17,632
Cobalt radiation	31,176
Radium insertion	347
TOTAL	49,115

Table 3-11 Clinical Examination Result (1985)

Examination item	Number of examinations
Bacterial examination room	124,882
Biochemical examination room	248,551
Blood control room	94,668
Microscopic room	41,842
Blood test room	260,197
Surgical pathology test room	9,454
TOTAL	779,594

Table 3-12 Operation Result (1985)

Operation example	Number of operations
General operation	
Major operation	3,354
Minor operation	919
TOTAL	4,273
Emergency operation	
Major operation	2,301
Minor operation	528
TOTAL	2,829
GRAND TOTAL	7,102

Table 3-13 No. of CT Scan Patient Commissioned by PGH to Other Hospitals

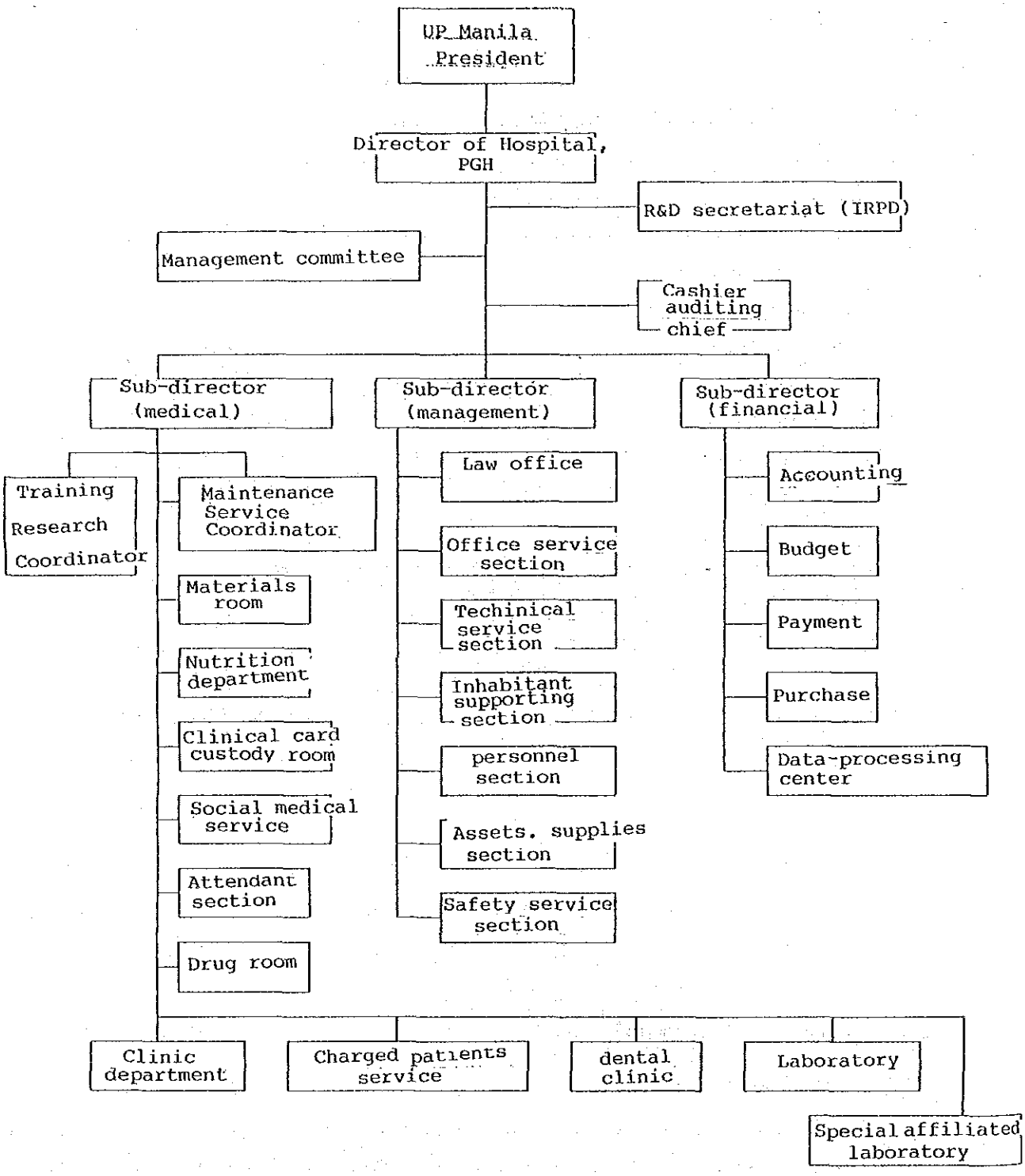
March 1987	26
April 1987	34
May 1987	46
Hospitals Commissioned:	Makati Medical Center
	China General hospital

3-2 Management System and Budget

3-2-1 Organization of PGH

PGH is positioned as part of U.P. of Manila in the Philippine University Organization (UPA), and its flow chart is shown in Fig. 3-14:

Fig. 3-4 Organization of UP Manila

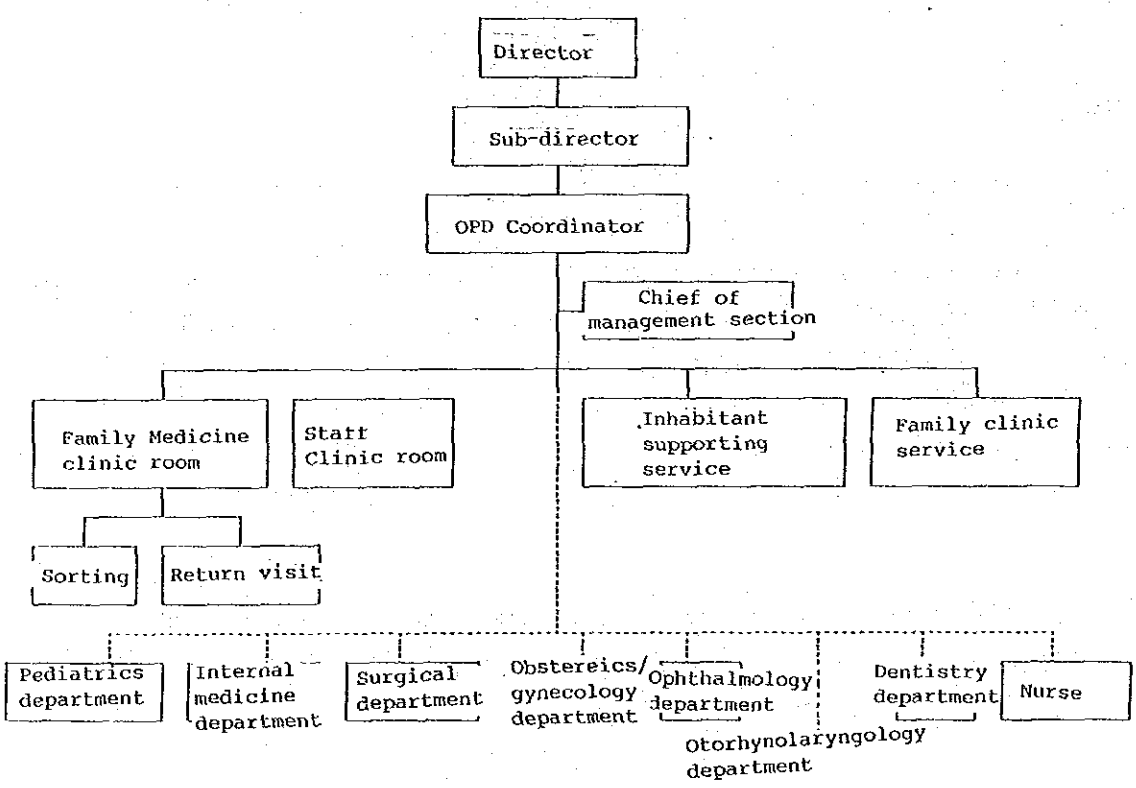


3-2-2 Organization of the OPD

The OPD is one of the departments of the PGH, and doctors rotate in from other departments.

OPD cannot have a full personnel system, so for its coordination an OPD-coordinator is provided. Family Medicine is a department born by the need of coordination of the outpatient clinic, and it has so far been playing the role for adjusting the outpatient department.

Fig. 3-5 OPD organization diagram at present



3-2-3 Financial state of PGH

1) Operation budget

PGH's budget is managed by and provided by the UP Manila. The PGH's amount is the majority of the University's budget.

Table 3-14 UP Manila/PGH Government Budget

	UP Manila (peso)	PGH	Occupation rate(%)
1986	183,202,121	120,713,181	65.9
	(1,352,031,650)	(890,863,280)	
1987	181,889,000	125,643,000	69.1
	(1,342,340,820)	(927,245.340)	

The operation budget for PGH is based on the governmental subsidy as given by UP Manila. It is also supplied by payment of patients' treatment costs, and examination costs.

Table 3-15 PGH Revenue

Unit: Peso (Yen)

Revenue source	Execution (peso) 1984	1985	Budget (peso) 1986	1987
Government budget	68,810,718	98,110,380	114,465,571	119,895,000
	(507.823,100)	(724,054,600)	(844,755,914)	(884,825,100)
Hospital revenue	10,849,423	7,333,095		5,748,000
	(80,068,740)	(54,118,240)	(46,107,360)	(42,420,240)
Others	96,934	751,041		
	(715,370)	(5,542,680)		
Total	79,757,075	106,194,516	120,713,181	125,643,000
	(588,607,210)	(783,715,520)	(890,863,270)	(927,245,340)

The amount of 85 - 90% of revenue was received from the government subsidy, and the remaining is based on donations received by the PGH. Revenue received from patients is low (6.3% of total revenue in 1984).

In view of the last 4 years (1984 - 1987), the government subsidy has been gradually increasing.

2) Operation expenses

Personnel cost, and maintenance and operation costs are illustrated in the following table. Maintenance and operation costs are increasing. The mean increase is an average of about 17% over 3 years.

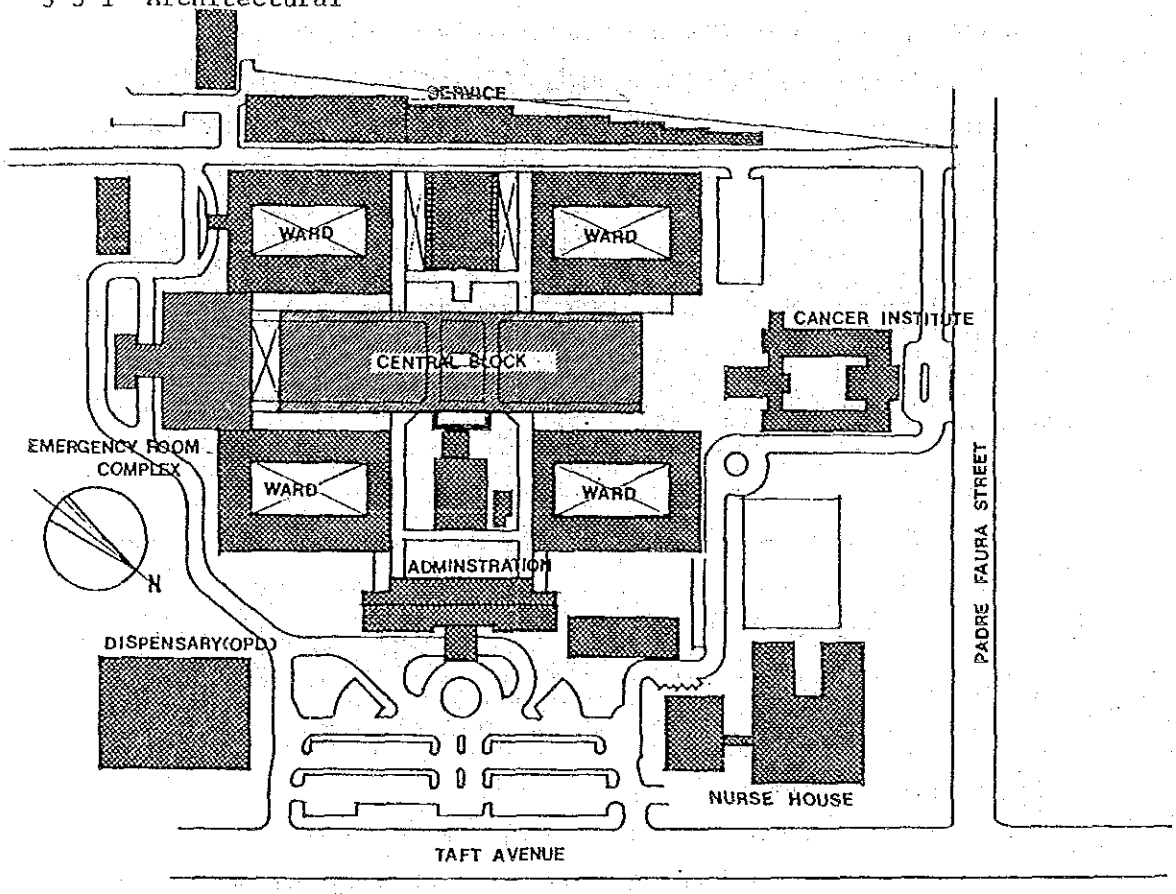
Table 3-16 PGH expenses

Unit: Peso (Yen)

	1984	1985	1986	1987 (Estimate)
Personnel cost	51,791,251	60,695,339	72,745,298	69,889,000
	(382,219,430)	(447,931,600)	(536,860,300)	(515,780,820)
Maintenance oontrol cost	27,299,621	43,897,095	47,967,883	55,754,000
	(201,471,200)	(323,960,560)	(354,002,900)	(411,464,520)
Material-purchasing cost	155,691	100,000		
	(1,149,000)	(738,000)		
Others, repairing cost	500,000	751,041		
	(3,690,000)	(5,542,680)		
Total	79,746,563	105,443,475	120,713,181	125,643,000
	(588,529,630)	(778,172,840)	(890,863,280)	(927,245,340)

3-3 Present State of the Facility

3-3-1 Architectural



PHILIPPINE GENERAL HOSPITAL FACILITY LAY OUT

Summary

The previous drawing shows the present state of the architectural phase. The front road, Taft Avenue, is one of the major roads. It runs across the island from the north to the south along Manila Bay. The light rail transit also runs along this road. PGH facilities are arranged along Taft avenue, thus the facilities, including the New Central Block which is now under construction, extend north and south. There is only one entrance to the complex from the main road, which is located near OPD. On the west side of the facility

(upper part of the drawing), entry can be made from the service road. Presently, the construction vehicles of the New Central Block enter the complex from Padre Faura Street and pass through the construction site scheduled for this project and make access to the material depot which is located between the central block and the cancer institute. The vehicles also enter the compound from the service road. The response provided by the Philipines has stated that the restriction of the vehicular route for the construction of the New Central Block can be made once this project is implemented. The width of Padre Faura Street exceeds 10m, and on both its sides are buildings of the University of the Philippines (UP) and the buildings of the former Foreign Affairs. The atmosphere is somewhat like a college town. The street carries heavy traffic with many jeepneys, etc. About 800m to the west, this street reaches Manila Bay. The main sewer system is buried under this street and the main drain pipes of PGH are connected to this main sewer. As the main drain pipe from the existing PGH facilities is laid under a portion of the construction site of this project, it is necessary to move the drain pipe before the commencement of work.

Overall layout of the facility

The entire site of the PGH is approximately 11ha. On this site are the facilities for the hospital, the nursing school, the lodging house for the nursing school, the dentistry department, and a part of the university facilities.

Facilities for the hospital are built collectively in the entire site. In the center of the site. There is the huge New Central Block of 140m long x 40m wide x 40m high. In the south, next to this building, is the site of the future emergency room complex (2-storied); the 2nd floor slab being placed during March, 1976. The construction of an auditorium which is planned to be built in the north, next to the New Central Block has not yet been started.

To the New Central Block, the existing 4 wards (each 2-storied building) are attached. The administration building is built in

front of the gate and the service building is built in the rear of the central block.

In addition to the above block of buildings, there are the cancer institute in the north, the dentistry department in the northwest, the plant building in the west, present dispensary (OPD) in the southwest corner and the nursing school and the lodging house for this school in the northwest corner of the site.

Present state of the New Central Block

As to the construction of the New Central Block, the demolition of the existing building was carried out in February, 1985. The excavation of the site was made in May, 1985. Structural work of the 7-storied building was completed in November. The work has progressed remarkably quickly. However the work was suspended during the revolution which occurred in February, 1986, and was not resumed during that year. In January, 1987, the work was resumed under the present government's administration, and presently the structural work of the emergency room complex and the interior masonry work are under way. The order has been placed for the finish work, which is scheduled to be carried out in March, 1987; and the proceeding two works are scheduled to be completed in August, 1987.

Consultation section scheduled to be built in the New Central Block

(Consultation function)

The Central building is scheduled to be used as follows: central consultation section on the 1st to 3rd floors; wards on the 4th to 7th floors; The following illustrates the functions of the central block by floor.

	7 Ward	Ward (61 Beds)		
	6 Ward	Ward (138 Beds)	507	
	5 Ward	Ward (138 Beds)	Beds	Beds
	4 Ward	Ward (170 Beds)		
	3 Operation Theater			
Blood Bank, etc.	2 Laboratory	CCU & IGU		
Emergency Rm.	1 Radiology	(Diagnosts & Treatment) Special Diagnostic Nuclear Medicine Pharmacy		Auditrium

Work progress of the New Central Block

The work of the New Central Block up to the 3rd floor was scheduled to be completed in August, 1986. Presently the interior finish has almost been completed. However, as most of the interior is heavily damaged due to the penetration of rain water, the ceiling and other boards have been swollen and have come off in many places. Also in some places, concrete forms, etc. have been left behind without having been removed from the building. Although the floor of the

operation room is tile-finished, the material used is porous and is apt to collect dust. The floor is not level and uneven. Other problems have been observed; inclination of the floor is reversed to the drain hole, some of the floor hinges have been incorrectly unfastened so that water does not run well.

Under these circumstances, although the facility itself may be completed in August, 1987, it may take more time to start the actual operations, especially when the procurement of the medical equipment, training of the staff, etc. are taken into account.

Physiological examination department

The physiological examination department is arranged near the operation department. A part of the existing building was modified and was assigned to this department; but the ceiling is low and the space is not large enough.

Operation department

There are more than ten operation departments. Although they are outdated, the usage rate is high. The recovery room has about 20 beds.

Minor operation department

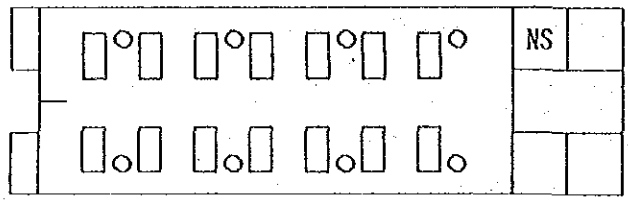
Similar to the operation departments, a lot of operations are carried out in the minor operation department, including opthalmology and otorhinolaryngology, etc.

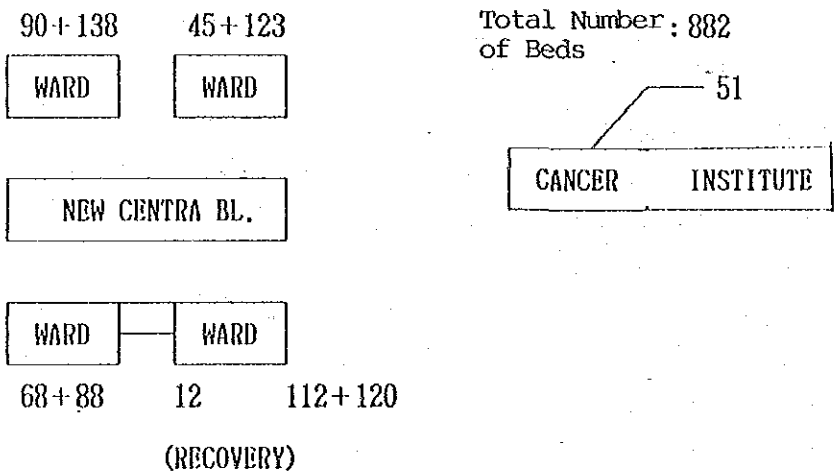
Generally, although the operation department and the minor operation department are frequently used, the facilities themselves are old-fashioned, the supply room for sterilized materials is poorly equipped and the sanitary control is incomplete. Even if most of these facilities are moved to the central block, it may be difficult to improve the quality of the facilities as the design concept of the central block is based on the existing facilities. The biggest disadvantage of the operation department in the new central block is that the central equipment room is located in the rear wing on the 2nd floor. The distance to the operation room on the 3rd floor is

too far. Additionally sterilized materials are carried through areas where sanitary control is not undertaken.

Ward

The existing wards are, in principle, Nightingale wards; beds are lined vertically to the window as shown in the drawing below.





The Existing Ward and the Number of Beds

Ward, Wing	Floor	Department	Bed Number
Right Front Wing	1st	Medicine	112
	2nd	Surgery	120
Right Rear Wing	1st	Newrology/Rehalo	45
	2nd	Surgery/Ortho	123
Left Front Wing	1st	F. Med Pedia	68
	2ns	E. Ent	88
Left Rear Wing	1st	Ped. OBG Bura	90
	2nd	OB, Gyne	138
Medicare			35
Cancer Institute			51
Recovery Room		Surgery	12

Cancer Institute

This is an independent building, having its entrance on Padre Faura Street. X-ray equipment and materials, ultrasonic diagnostic unit, Cobalt-60 (2,500 Cu), cesium, etc. are equipped in this building.

Nurses' home (Nursing school, lodging house for female doctors, nurse house)

The nurses' home, built adjacent to the project site is a three-storied building. The 1st floor is used for classrooms and

the 2nd and 3rd floors are used for lodging. Though old, this building has an extremely sophisticated design. PGH chose to preserve the building.

OPD dispensary

In the dispensary, as shown in the following plan, this building is 3-stories, and it's building area is approximately 2,300m^2 with total floor area of 5,200m^2.

On the 1st floor, there are the Ophthalmology, Otorhinolaryngology, Dentistry, Family Medicine, General Internal Medicine, Gynecology, Pharmaceutical Departments, etc. On the 2nd floor, there are the General Surgery Department, Special Surgery Department, Minor Operation Department, Pediatrics Department, and Clinical Laboratory Department. On the 3rd floor, there are the Medical Record Control Room, Disputed Medical Record Control Room, Dermatology Department, meeting rooms, etc.

The building is old but the structure itself is firm. However, it seems that the building has been left unmaintained; the paint on the elevators and the ceiling has worn off; the floor is dirty; walls are out of repair, etc.

The small void in the center (3m x 20m) seems to have been built for ventilation, but as direct sunlight comes in from the canopy, the inside is heated on the contrary to the initial purpose. Every possible effort has been made to ventilate the inside; such as axial fans being equiped in the corridor, etc.

Manual carrying lifts are used to transfer the medical records. These are planned at both sides of the void. Due to the unstable power supply the Philippines, this is a wise way to send the medical records. During the rainy season, this facility is almost always inundated with 20-30 cm of water above the floor level. There are various reasons for the flooding; the ground level is low, about only 2m above sea level, etc.

However the main reason for inundation is that the capacity of the

rain water drainage pipe is not enough to cope with the volume of rain water to be discharged. In order to protect the index cards for the patients and the related documents, they are kept on high places, and the shelves have especially long legs. The hydraulic elevator in the facility no longer works as the machine room is in the basement and was flooded and damaged.

3-3-2 Mechanical

a) Water supply

Water is supplied from the Manila Water Supply and Sewage System (MWSS). Water is drawn in at two places through incoming 150 mm dia. pipes. 150mm dia. One of the two water supply systems utilizes the method of gravity. Water is stored in the water reservoir, then pumped it up into the elevated water tank. The other system is connected directly to the pump. It pressurizes water and is linked to the loop distribution line (150mm dia.) inside the compound. Water is then supplied to each water supply. Possibly because a lot of buildings are under construction in the premise of PGH, presently there are water failures in the existing OPD. This may result from the complicated distribution pipe line on the site.

A water supply facility (a water reservoir and a pressure pump station) which covers the entire PGH is planned to be built in the cental block. However since the dates of the completion of the work and the installation of the emergency power plant cannot be foreseen, it may not be possible to utilize them as the water supply facility for the new OPD.

Moreover, as to the water supply capacity of MWSS, the water supply pressure is decreased for a certain period during the dry season to save water. Except during this period, the water supply is abundant. As to the quality, there is no problem in its use as potable water according to the test data.

b) Drainage

Waste water and rain water are drained to the sewage pipe of MWSS and the storm drainage pipe of Manila city, respectively. According to the drawing of the existing facilities, sewage is mainly drained to the main sewer on Padre Faura Street and a part of the sewage from the existing OPD and others is drained to the main sewer on Taft Avenue. All the rain water is drained to the rain water drain on Padre Faura Street.

The main drainage ditch runs between the nurse home and the tennis court, and runs across the projected site, so it may be necessary to divert the route of the ditch. Also, due to the insufficient drainage capacity, the premises of the PGH may be flooded during the rainy season.

There is no waste water treatment facility in PGH. All the waste water is drained directly to MWSS. MWSS has completed a treatment facility to cope with the city waste water and the waste water is pressurized by pumps and drained off the coast of Manila Bay without being treated.

c) Town gas

Gas is supplied from Manila Gas Co. Low pressure gas is lead in through a incoming pipe of 100mm dia. from Taft Avenue. Gas is mainly used for the laboratory tests and as the heat source for the kitchen.

Since there is no existing gas piping around the site for the new OPD, it is necessary to lead in the low pressure gas from Taft Avenue for the OPD's exclusive use. The town gas is produced based on naphtha and the calorific value is 5,340 kcal/Nm^3; the specific gravity, 0.72; the low pressure gas supply pressure, 250 to 300mmH_2O; and the production capacity/day, 35,000Nm^3.

d) Fire fighting system

The fire fighting systems are different depending on the builings of

the PGH. Generally, indoor fire hydrants (with a hose of 1 1/2") and fire extinguishers are equipped.

In the central block, sprinklers are equipped inside the entire building.

According to the Fire Code of the Philippines, the following facilities must be equipped when constructing a hospital.

1) Automatic sprinkler system
2) Indoor fire hydrant (with a hose of 1 1/2")
3) Fire extinguisher
4) Dry standpipe (2 1/2" valve)

As for the installation criteria, NFPA and FOC are accepted. In general, NFPA is applied.

e) Refuse disposal

There is no incineration treatment facility inside PGH. Refuse is collected by the Environmental Sanitation Commission of Manila city every day. PGH pays only for the fuel of the disposal trucks.

f) Medical gas

There is a centralized medical gas facility intended to serve the New Central Block and other main facilities of PGH. This facility supplies nitrous oxide gas and oxygen in the form of liquid oxygen gas (there are oxygen bombs for emergency use). The compressed air and vacuum system have not been installed yet, although the space for their installation is secured.

The supply from this facility to the new OPD is not planned, therefore it is necessary to build a new facility which exclusively serves the new OPD.

The outlets used are made in U.S.A. and Australia, and are of different type, the screw type and one-touch type: thus there may be a problem in the interchangeability.

g) Air conditioning and ventilating system

In general, the air conditioning system consists of window-type

packaged air conditioner. They are installed in the chief room, laboratory, X-ray room, special dispensary room, operation room, etc. The central air conditioning system utilizing chilled water is planned for the new central dispensary department in the central block. Four units of water-cooled turbo refrigerating machines of 300^{RT} are to be installed, and the chilled water is to be supplied to the air conditioners and the fan coil units. Taking into account the maintenance of the existing building and also the limited budget, it is quite doubtful that this kind of central air conditioning system will function sufficiently.

The refrigerating machine is intended only for the New Central Block.

Most of the rooms including the dispensary room and waiting room are ventilated with ceiling fans. This type of ventilation seems to be effective taking into account the shape of the building, positions of the openings, height of the ceiling, etc.

h) Steam supply system

Currently, steam is not being supplied to the existing facilities. A steam boiler plant is planned for the central sterilizing room in the central block. Two units of fire tube type boilers, 300 boiler HP, will be installed.

3-3-3 Electrical

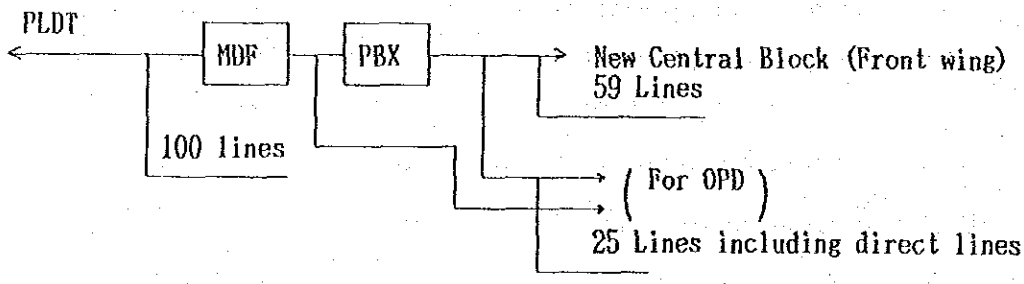
a) Power conditions (power distribution to OPD and new central block)

Since OPD is receiving power in low voltage (1ϕ 220V) from Meralco, reliability of the power supply is very poor and power failures frequently occur. The cause for power failures is not in the power distribution system. The main cause is the overloading of the circuit and also short circuits due to the deterioration of the insulation of the cord in conjunction with the deterioration of the building. As the facility is receiving power in low voltage day and night, the voltage fluctuation is very large; fluctuation is more than ±15% to the rated voltage. Therefore, some fluorescent light fixtures do not

light up, and the control board sometimes shuts down the operations of motors and fans due to the decline of the voltage in the magnetic switch. In order to improve the facility, consideration must be given to install a new power distribution line from the plant building in the central block. An emergency generator system is not installed to OPD. The central block is now under construction and the finish work is scheduled to be carried out in June, 1987. According to the plan, distribution systems of high tension (34.5kV) having a capacity of 4,000kVA (1,000kVA x 4 units) and 2 units of emergency generators are to be introduced. Nevertheless, a generator is not included in the work ordered; only the space for its installation is secured inside the plant building. Purchase plan for the generators has not yet been fixed.

b) Intercommunication situation

There are 100 telephone lines from PLDT for the existing facilities. Lines currently used are shown as follows:



16 lines are reserved as spares and are available for this project. The present conditions of the existing PBX equipment are as follows:

Conditions of PBX room are:

o MDF: Wall type and no lid of the cabinet; exposed to dust.

o Battery: Cells are exposed and placed in MDF and switchboard room. No ventilating system for the generated gas.

o Contact point type crossbar switch:
Not accommodated in the cabinet; exposed to dust.

o ATT (switchboard):
A cord type switchboard is operated by two persons; very old-fashioned.

Generally the PBX room has to be air-conditioned. In this facility, the operator room and machine room are in the same room and are air-conditioned with a window cooler.

As mentioned above, since the PBX equipment itself is superceded, and the existing switch equipment has to be used for the intercommunications between the existing buildings, noises and cross talks may be mixed in the communication network, causing some interferences.

c) Public address system

Although a central amp unit was installed in the switchboard room, it is out of order. Therefore, paging calls for the doctors cannot be made through the speakers. An intercommunication system is utilized to cope with the situation.

3-4 Present State of Medical Equipment

3-4-1 Out-patient Department

The present state of the existing medical equipment in the out-patient department is as follows:

a) Most of the equipment in consultation rooms, such as sphygmomanometer, X-ray film viewer, small articles for consultation, etc. are in very short supply, and the old-fashioned equipment has reached the end of its usefulness.

b) In the case of equipment in the laboratory department for specimen tests, only the blood chemical analyzer is new. The other main equipment is both, of the old type and beyond repair. In addition, due to a lack of demineralizers, only a restricted number of specimen tests can be executed.

c) The X-ray unit, a main component for patient examination, uses a unit with TV for fluoroscopy, a photographing unit, and an X-ray unit for group examination (mirror camera), all of which are of old and maintenance is expensive. Moreover the developing accuracy of films photographed is often poor.

d) For the other patient inspection unit, electrocardiograms, endoscopes, ultrasonic cardiography diagnostic unit, etc. are utilized. Among them the ultrasonic cardiography diagnostic unit, which has been donated, is new .

Except for the abovementioned equipment there is very little required equipment. This always puts diagnosis in a difficult position. In addition, electroencephalograph, electromyograph, etc., which should be available, have not been provided.

e) The equipment for the sterilization department, for the pharmacy and for patient transport or article conveyance which are auxiliary departments, can no longer be used. For this reason the equipment is in very short supply.

f) The equipment for the ophthalmology and otolaryngology departments, is small in number and very old.

g) For the equipment in the out-patient operation department, the operation equipment and consumables are indeed in short supply, and due to insufficient or lacking sterilizing equipment, infectious diseases after operation are expected to occur.

h) Concerning the equipment in the dentistry department, almost all of the 12 therapy chairs have some failures. The payment of material for dental treatment must be provided by the patients. Due to high costs,

it is not often used.

The existing main medical equipment of the OPD is as follows:

Instruments for out-patient diagnoses

- Various Sphygmomanometer
- Auxiliary stand light
- Euipment table
- Stethoscope
- Weighing machine
- Film Illuminator

Euipment for special clinical department

(Ophthalmology)

- Visual function examination unit
- Visual field meter
- Campimeter
- Test chart

(Obstetrics and gynecology)

- Ripiodol instillator set
- Fetal stethoscope
- Various colposcopes
- Weighing machine for infant

(Otorhynolaryngology)

- Treatment unit
- Suction apparatus

(Dentistry)

- Dental unit
- Treatment instruments

Auxiliary consultation section

(Chemical examination department)

- Automatic chemical analyzer
- Centrifuge
- Incuvator
- Autoclave
- Microscope
- Balance for analysis
- Spectrophotometer
- Flame photometer

Physiological function examination section

(X-ray department)

- Diagnostic X-ray unit
- X-ray-unit for group examination
- Scotography unit
- Ultrasonic diagnostic appratus
- Electrocardiograph
- Endscope

Electrical colorimeter

3-4-2 Central Block

a) The materials for the central operation room are no longer useful. Some of the most conspicuous are: the anesthesia apparatus and electrosurgical units which have been much damaged. Due to the lacked operation consumables, most disposable sterile products have been reused; the washing and sterilization of insufficient equipment may cause infectious diseases to be transferred. In addition, the electrosurgical units are damaged and some patients may get electrically burned.

b) The feeding units used for sterilizing water used for an operator's hand washing are imperfect. The piping route from the unit to the faucet is so long that it may easily be polluted. As a sterilization test has not been executed, a rapid improvement should be made.

c) The equipment for the intensive care unit (ICU), most of which is life saving equipment, have been prepared. However, the ventilators, patients monitors, micro drip units, etc. are in short supply. In addition, equipment for emergency clinical tests have not yet been supplied.

d) The central operation department, ICU department, and central material sterilization department have already reached their limit. Although the medical manpower is lined up, the facilities need to be rebuilt. Namely, even if only newly required equipment is prepared, the measures may still be regarded as insufficient.

e) Although the skin burn therapy department has been established, it has no special equipment. Some striker rotary beds exist, but there is neither a chemical tank nor a clean air-conditioning unit. The only measure taken is that the department is isolated from the general wards.

f) The premature baby and neonatal department (N. ICU) is kept clean.

Although there are some couveuses, there are very few life saving units, such as micro drip units, artificial respiration units, etc. Clinical emergency test tools (such as percutaneous PO^2 measuring instruments) are not equipped.

g) The artificial dialysis department has two units in operation. However the dialysis circuit, which is normally use once and then thrown away in Japan, is generally reused three times.

h) Although the central ward, being under construction, was to be completed up to the third floor by the end of August, 1987, any plan of medical equipment and materials to be provided has not yet been determined. However, concerning the radiotherapy department (X-ray units, X-ray TVs, X-ray CT units, etc.), clinic pathology department (such as LAB checkup equipment), operation department (shadowless lamp, medical gas piping unit, etc.), and ICU-CCU department (patient monitoring unit, life saving unit, etc.), the basic works allowing the required equipment to be installed have been completed or are under construction.

As mentioned above, the present situation of the medical equipment for the whole PGH and its OPD is in poor condition. To execute effective care, even if medical cares have been well utilized by the medical staff, the clinic facilities must be rapidly improved through the introduction of new medical equipment.

The existing main medical equipment of the Central Block is as follows:

Central operation department
- Operation table
- Shadowless lamp
- Electric knife
- Anethesia appratus
- Suction appratus
- Vehicle for patient transportation
- Sterlized water supply unit

ICU department
- Artificial respirator
- ICU bed
- Patient center
- Defibrillator
- Automatic infusion unit

Scald treatmeent department
Striker rolling bed

C.S.S.D department
Autoclave
Working table

Ward department
Bed for patients
Nursing supplies

Low birth weight infant and newborn department
Couveus
CPAP unit

Patient ECG monitor
Artificial respirator

Artificial dialysis department
Artificial dialyser

Radiology department
Cobalt 60 treatment unit

3-5 Similar Medical Facilities in Manila

When the trends of patients treated in the OPD of PGH were compared with the actual results of the two public hospitals (Manila City Hospital and Quirino Memorial Central Hospital) the results were shown as follows. According to these results, PGH treats primary to tertiary medical care and assumes the function as a special hospital. Hereby, it is clear that PGH has been forced to perform some activities out of its scale.

Manila City Hospital

No. of beds : 200 beds
Outpatients : (Approx.) average 400 persons per day
Emergency patients: (Approx.) average 180 persons per day

Main items		Percent	(% treated by PGH)
Ophthalmology	(Approx.) 20-30 persons per day	7.5%	11.2%
Dental	(Approx.) 20 persons (2 units per day)	5%	5%
Otorhinolaryngology	(Approx.) 30 persons per day	7.5%	10.3%
Minor operatoins	Executed only two times a week		
X-ray photos	50 pieces per day		

Quirino Memorial Hospital (Quezon City, Hospital under Health Ministry)

No. of beds : 200 beds
Outpatients : (Approx.) 500 persons (including emergency patients) per day

Main items		Percent	(% treated by PGH)
Ophthalmology, Otorhinolaryngology	(Approx.) 20-40 persons per day	6%	21.5%
Dental	(Approx.) 18 persons (2 units per day	3.6%	5%
X-ray photos	50 pieces per day		
Numbers of operations:	(Approx.) 5 cases		

3-6 PGH Expansion and Facility Improvement Plan (Made in 1981)

1) Project purpose

a. Expand and upgrade the physical therapy

b. Prepare the medical equipment and renovate the management facilities.

c. Make personnel placement plan and institutionalize the administration and management plan.

d. Introduce the auditing system, with improved administration and management as its premise.

2) Fund plan

In 1982 the expansion and improvement plan at the PGH was approved. In the same year, it was determined that the project cost should be paid by the Social Security System (S.S.S.) loan. Any loan lacking was to be supported, if possible, through MPWH by the governmental aid. Therefore, the budget has come to be paid by both S.S.S. loan and the Government aid fund. The items are as follows:

Matters paid by SSS	Matters paid by Government aid
1. Expand from 850 beds to 1,000 beds and make the patient management perfect.	a) Construct the 7-storied central block. Secure 300 toll beds.
2. Construct a new energy power plant.	b) Construct the emergency department twice as large as the existing.
3. Expand and repair the ADM department.	c) Meeting room, auditorium
4. Centralized facilities concerning feeding, drainage and electric equipment.	d) Expand and improve the OPD.
5. Improve the site ground.	e) Expand the service department.
	f) Repair the Cancer Institute.
	g) Medical equipment & ADM department.

6. Supplement and repair the medical equipment or materials.

The item d) to be implemented by the governmental aid fund, including the medical equipment, was requested of JICA by Philippine Government in 1987. That is the Out-patient Department construction plan which is discussed here.

3) Present state of the project (as of March, 1986)

1. The project by SSS fund is 95% complete.
2. The project by the Government aid fund is 50% complete.
3. The contents of the incompleted works are given in the following figure:

Contents of works	Fund source	Completed rate in %	Details
1. Wards concerned	SSS	35%	Electricity, PABX, power receiving & transformation pump and others
2. Repair and expand the ADM	SSS	75%	
3. Excluding the structures up to 3 stories of central block, equipment, furnishings 4-layer finish of high rise block	Government Government	80% 0	
4. Emergency outpatient department and meeting room concerned	Government	0	
5. Cancer Institute	Government	0	
6. Service department	Government	0	
7. OPD department	Government	0	Requested to Japanese Gov.
8. Auditorium housing 600 persons	Government	0	
9. Preparation within the site	Government	50%	
10. As to the preparation of the medical equipment and the ADM department-related equipment, only the repair and partial purchase (P200M) have been done.	Government		Partial purchase of equipment paid by the SSS loan.

3-7 Outline of the Request and the Preliminary Study

3-7-1 Outline of the Request

The request given during this study is to construct a building facility that can treat 2,000 persons as compared to the existing 1,000. The area of the building is three stories of 10,000 m^2.

The main items to be requested from the Philippine Government are as follows:

1) Construction of new OPD building

Construct a three-storied building with the total floor space of approx. 10,000 m^2 within a site of approx. 5,000 m^2.

2) Clinic department

The clinic departments are now divided into the internal department, surgery department, pediatrics department, orthopedics department, obstetrics and gynecology department, dental department, otorhinolaryngology department, ophthalmology department, domestic medicine department, dermatology department, urology department and physiotherapy department. When the new OPD is completed, by adding some departments which have been compelled to be dispersed or temporarily incorporated in another department, generally coordinated clinic departments should be completed.

Further, anesthesia and pain clinic sections were newly added.

3) Installation of medical equipment

The medical equipment required is to be installed.

However the request list includes the repairs of medical equipment which is presently in operation. Of the above various clinic departments, various fields are required to perform operations, treatment inspection, etc. in the same area without separation. Therefore, operation rooms and inspection rooms should, to some extent, be organized in a linear way.

4) Recruit for ambulances and vehicles