

- 3: The planning and supervision of all district health activities including family health services and immunisation.
- 4: Disease control, including tuberculosis, leprosy and outbreaks of communicable diseases.
- 5: Health education and environmental improvement.
- 6: Supervision of health-subcentres and aid posts.
- 7: Communication and coordination between the districts and governmental or non-governmental organisations in primary health services.
- 8: The administration of the health centre, including preparation of reports.

(e) Role of District Health Nursing Officer in Health Centre

- 1: Curative services.
- 2: Immunisations.
- 3: Nutrition surveillance.
- 4: Midwifery services.
- 5: Family planning.
- 6: School health care services.
- 7: Health education.

2) Present Situation of Secondary Health Services

In PNG secondary health services are defined as those services provided in hospital. The hospitals are classified into groups according to their workload, the size of the referral populations they serve and the complexity of the services they offer.

(a) Provincial Hospital

A provincial hospital is a hospital having the following functions:

- provides comprehensive medical, diagnostic and nursing services;
- trains health workers; and
- supervises clinical standards of health services throughout the province.

Provincial hospitals are classified as Level One or Level Two, according to their size and workload.

1: Level One Hospitals:

Level One provincial hospitals are large enough to support some specialist medical officers and a number of general medical officers. Level One principal hospitals are located at Arawa, Kundiwa, Madang, Mendi and Wewak.

2: Level Two Hospitals:

Level Two provincial hospitals do not generate sufficient work to justify employing specialist medical officers, and are staffed by a generally trained senior medical officer and one or more junior doctors. Level Two provincial hospitals are located at Alotau, Daru, Kavieng, Kerema, Kimbe, Lorengau, Popondetta, Sopas and Vanimo.

With the exception of Sopas Hospital (church hospital), all provincial hospitals are run by provincial health authorities. Specialist medical staff salaries are paid by the Department of Health.

3: Base Hospitals (or Regional Hospitals):

These hospitals have the following functions in addition to the above functions:

- provide advisory services and clinical supervision for all aspects of medical care within the region;
- provide specialist care (ideally this should include a general surgeon, a physician, an obstetrician, a paediatrician and an anaesthetist);
- teach resident medical officers, medical registrars and nurses, and provide in-service training; and
- support research into problems relevant to the people served.

Base hospitals are located at Goroka, Lae, Mt. Hagen and Rabaul. All are run by provincial health authorities as a delegated function except Lae.

(b) Port Moresby General Hospital (PMGH)

PMGH is the national teaching hospital for undergraduate and postgraduate doctors and acts as the National Referral Hospital.

(c) Present Situation of Various Hospitals

1: Buildings: Most hospitals were built between 1955 and 1965. On the whole, they are well designed and more than comparable with similar institutions in other developing countries. However, maintenance is a continuing problem and some buildings have been neglected. The Health Department's allocation for construction investments and maintenance expenditures has been below the average allocation for Government departments. Consequently many sizable construction works are now needed to renovate or replace existing facilities and equipment.

2: Staff Accommodation: The lack or shortage of staff accommodations has been a major constraint to the efficient running of all hospitals. Emergency staff

must be available for on-call duty; suitable housing should therefore be provided for them within the hospital grounds, or at least close by.

3: Equipment: Hospital equipment needs to be regularly maintained and replaced. Maintenance of medical equipment has posed a serious problem for many years. The Department of Works, whose responsibility it is, is in the process of reorganising the system of maintenance to rectify the situation. The contracting of the maintenance work to a private company has not well functioned. Obsolescence of equipment as well as irreparable breakdowns require that items of equipment are regularly replaced.

4: Use of Hospitals: All hospitals operate a public outpatients department which provides primary medical care for patients who come out of choice to the hospital rather than visit an urban clinic. The presence in hospitals of large numbers of the slightly unwell general public diverts resources away from the care of inpatients and referred patients.

5: Hospital Administration: All hospitals suffer from a shortage of efficient and experienced management. Most medical superintendents have had no training or experience in management or administration prior to their appointment. Hospital secretaries and middle level management similarly have rarely received any training in management of their department. As a consequence hospitals sometimes do not make the best use of the limited funds available to them as is demonstrated by the wide disparities in the cost of treating individual cases in different institutions.

6: Staff Establishment: Hospitals are necessarily labour intensive; the quality of care provided and its effectiveness are, therefore, dependent to a very large extent on the dedication and skill of the employees. Yet very little attention has been paid to their terms and conditions of service. Staff establishments for most hospitals were drawn up in the 1950's and 1960's and now are starting to be revised. Diagnostic and treatment regimes have become more complex and sophisticated, demanding more and better educated staff.

- In most hospitals, a considerable proportion of nursing functions are still being performed by poorly skilled hospital orderlies.
- There are usually fewer nursing aides than trained nurses resulting in inefficiencies. Nurse establishments need revision to bring them more in line with workload.
- Generally, insufficient consideration has been given to the staff in paramedical services. Technical staff have little opportunity to undertake further training to up-date and develop their skills.
- With the exception of post graduate training for doctors and nurses, in-service training and continuing education for staff is limited. Technical staff sometimes have difficulty in keeping abreast of new developments in their special field.
- Under current procedures and regulations it is difficult for senior supervisors to discipline or dismiss recalcitrant employees.

7: Paramedical Services

- Insufficient attention has been given to the development of the paramedical services.
- Pathology services in particular have been neglected; there is no comprehensive development plan; they are short of staff and modern diagnostic equipment; and, with the exception of biochemistry, no performance standards have been set.
- The most important and common diseases are caused by infectious agents, and laboratory services are very deficient and require much improvement.
- Rehabilitation services are rudimentary or non-existent in many hospitals, and the number of long term institutional patients who currently occupy beds at substantial cost cannot be reduced.

8: Hospital Records and Statistics: Hospitals lack the capacity to collect and compile accurate and reliable clinical and utilisation statistics. Patients sometimes bypass admission clerks, and outpatient attendances and hospital admissions are therefore under-recorded.

- Systems for the daily reconciliation of admissions, discharges and occupancy at both ward and hospital level are lacking, as a result of which statistics on occupancy of the hospital are usually underestimated.
- The hospital's number of beds is often meaningless, because patients are admitted to hospitals according to clinical need rather than to the availability of beds.
- Discharge diagnosis data recorded by junior clerks. The accuracy of the diagnosis is doubtful unless it

is recorded correctly by doctors.

- Community support for the hospital is often poor, and communities tend to regard it as the Government's hospital rather than their own hospital.

9: Hospital Fees: National Minister of Health is empowered to declare which is a public hospital, which sections are to be public and which intermediate, and to determine the fees to be paid for treatment in such hospitals. Provincial governments have no power to vary fees. All money collected from hospital fees must be paid into the National Consolidated Revenue fund, and not into either provincial revenue or used by the hospital. The present schedule of fees was last revised in 1978.

- For the public section of the hospital, an outpatient consultation fee and a flat-rate admission charge are established.
- For the intermediate section, a higher consultation fee and a daily inpatient fee depending on type of treatments are established.

(d) Objectives of Secondary Health Services

Development of secondary health services is described in the Second National Health Plan 1986/90, and the major objectives are as stated below:

1: To provide a comprehensive general hospitals with essential nursing, diagnostic and specialist services as planned in 1974.

2: The challenge for 1986-1990 is to improve the quality

of those services in order to support the primary health services.

(e) Secondary Health Service Facilities

Table 2-2 shows a list of secondary health service facilities in the country. Functions of each level are as described in paragraph entitled "Present Situation of Secondary Health Services."

TABLE 2-2 DEFINITIONS AND FUNCTIONS OF PNG HOSPITALS

Classification	Hospitals	No. of Beds 1985	Proper Authorities
National Referral Hospital	PMGH	798	Department of Health
Base Hospitals	Angau	500	Department of Health
	Goroka	300	Provincial Health Authorities
	Mt. Hagen	212	
	Rabaul	480	
Provincial Hospitals Level 1 (200-300 beds) Level 2 (less than 200 beds)	Mendi	217	Provincial Health Authorities (except Sopas, under control of Seventh Day Adventist Church)
	Arawa	250	
	Madang	400	
	Wewak	312	
	Kundiawa	200	
	Daru	110	
	Kerema	83	
	Alotau	100	
	Popondetta	150	
	Sopas	85	
	Vanimu	200	
	Kinbe	140	
	Lorengau	100	
	Kavieng	122	

(Source: National Health Plan 1986/90)

3) Present Situation of Tertiary Health Services

Tertiary health services are defined in PNG as those highly specialised clinical services which can only be supplied either at a very limited number of places in the country or for which patients are referred overseas. They include otorhinolaryngology (ENT), cardiothoracic surgery, neurosurgery, orthopaedic surgery, and dermatology. In line with the Government's commitment to give priority to the provision of high quality primary health services to the entire population, and due to the financial constraints facing the country, there will be no expansion in tertiary services during the plan period. Expenditure on referrals overseas will also be maintained at the current level.

(a) Services within PNG

The following services are provided only when a part-time doctor and nurses are available for each type of services described:

1: Radiotherapy/Oncology

At present malignancies are relatively uncommon causes of morbidity and mortality, with the exception of oral cancer and cancer of the cervix. However, infectious diseases are brought under control, and lifestyles and habits become more westernised, cancer will become a more significant proportion of workload. Also, some cancer patient goes untreated, or is referred to the medical services too late for treatment. When detected, most cancer is treated surgically or by chemotherapy, or by radiotherapy. A radiotherapy treatment was inaugurated at Angau Memorial Hospital, Lae in 1971. In 1985 it is run by a contract senior specialist. A specialist is invited from Australia, and training of radiographic technicians started in

1982.

2: Ophthalmology

Eye diseases are common in the country. Most blindness results from senile cataracts, which could easily be cured by surgery. The Health Department has positions for four regional ophthalmologists, one each at Port Moresby, Goroka, Madang, and Rabaul. However, only two of these positions were filled in 1985. Two national doctors are currently undertaking postgraduate training in ophthalmology. In general, the hospital eye clinics are well equipped. Provided that suitable staff can be regularly recruited, the existing ophthalmology services are adequate and no further expansion is required for the next five years.

3: Orthopaedic Surgery

Trauma to necessitate orthopaedic surgery is a major cause of admission to the surgical wards, and is expected to increase with the increased use of motor vehicles. All orthopaedic surgery is currently performed by general surgeons, since specialist orthopaedic surgeons are not available in the country. The Department will not create positions for specialist, but will progressively improve the skills of general surgeons by continuing to send national doctors to Australia for postgraduate training in orthopaedics. The Department is arranging with an Australian orthopaedic surgery specialist to tour major hospitals at regular intervals to train staff in-service.

4: Otorhinolaryngology (ENT)

Acute and chronic otitis media in children is very

common, and there is a high prevalence of hearing impairment. Cancer of the mouth and larynx is uncommon. A single post of ENT surgeons is assigned only to PMGH. The ENT surgeons of PMGH have been able to do only a limited amount of travel to provincial hospitals, and all patients requiring ENT specialist treatment have had to travel to Port Moresby.

To provide a basic national ENT service ideally requires an ENT surgeon in each region. However, for the foreseeable future the only ENT surgeon will visit the base hospitals at least once a year or other provincial hospitals only once in a two years to see and treat referred patients.

5: Cardiothoracic Surgery

For several years a senior cardiologist from the Department of Cardiology, Royal Prince Alfred Hospital, Australia, has toured the base hospitals annually to identify suitable candidates for cardiac surgery. Patients, who have received free medical services from the Government of PNG and are still requiring open heart surgery, are sent to the major Sydney hospitals. In order to ensure the continuation of the scheme, the Department will investigate the feasibility of continuing the programme as a small "tied aid" project.

6: Neurosurgery/Neurology

Although there is no neurosurgical specialist or neurological unit, the present senior specialist surgeon at Goroka Base Hospital has experience in neurosurgery. In addition, a national surgeon has received training overseas in paediatric neurosurgery. PMGH has referred several patients each year to Australia for the more complicated neurological

investigations and surgery or treatment, but the results have been very disappointing. Better utilisation of in-country specialists is considered preferable. There are no plans to establish specialist neurosurgical or neurological units during the period of this plan.

7: Dermatology

Skin diseases are common. While they are rarely fatal, they often cause serious disfigurement and discomfort. The major role of the specialist dermatologist, who is based at PMGH, is to train other health staff in the diagnosis and treatment of common dermatological problems; to conduct consultation clinics at PMGH; and to carry out surveys and research into the incidence and treatment of skin disease.

8: Overseas Treatment

At present, the Department of Health transfers patients to Australia for specialist medical treatment not available in PNG. All patients must be reviewed independently by two Government medical officers, one of whom must be a specialist, and both must recommend the transfer. Overseas transfers are extremely expensive and they benefit only a very small number of patients. They divert scarce resources from developing the health services within PNG. The majority of referrals have been generated from PMGH.

The Government intends to continue to provide an overseas referral service for Papua New Guinean citizens for life threatening conditions where treatment is not available within the country, and cure or long term benefit is probable.

However, the Department will restrict overseas referrals to those cases in which long term benefit can be reasonably predicted.

2-2-2 Disease Patterns and Types of Medical Treatment

(1) Disease Patterns

In accordance with the disease statistics (1985) based on the data collected from all health service facilities under control of the Department of Health, indicators of pneumonia, malaria and epidemic diarrhea account for 34.5% of all diseases including delivery-related diseases. These indicators account for 43.2% (Table 2-3) of all diseases if delivery-related diseases are not counted. This disease pattern is substantially unchanged when compared to the data of 1971.

On the other hand, indicators of basic health statistics including average life expectancy, and infant and child mortality (see Table 4 in Appendix V) show considerable improvement for the decade between 1971 and 1980. This shows that the government policy of strengthening primary health services was successfully administered for the period. However, significant changes in disease patterns are not noticed, and the incidence of pneumonia, malaria, and epidemic diarrhea has risen steeply, and maternal mortality has not been decreased, in spite of much improvement of average mortality. In view of the aforementioned facts, the the priority between primary and secondary health services is now being restudied.

According to the indicators shown on Table 2-3, major causes of death in 1985 were, in order: pneumonia, malaria, diarrhea, and tuberculosis. Also, infectious diseases including pneumonia, epidemic diarrhea, malaria, and tuberculosis account for almost half of the causes of death. Treatment methods for these diseases are already known, and they can be cured easily. Sources of infection can also easily be eliminated by improvement of a

TABLE 2-3 PATTERN OF DISEASES, 1971 - 1985

	1971			1985			Ratio 1971/85
Population	2,490,000			3,343,000			1.34
Total Number of Diseases	170,865 — (A)			206,622 — (A)			1.21
Number of Obstetric Cases	16,940 — (B)			41,926 — (B)			2.47
(A) - (B)	153,925 100%			164,696 100%			1.07
Pneumonia	1st	20,521	13.3%	1st	31,820	19.3%	1.55
Malaria	3rd	10,297	6.7%	2nd	22,804	13.8%	2.21
Diarrhea Diseases	2nd	15,905	10.3%	3rd	16,570	10.1%	1.04
Skin Diseases and Subcutaneous Tissue	5th	5,919	3.3%	4th	9,861	6.0%	1.67
Diseases of Musculoskeletal System and Connective Tissue	7th	3,198	2.1%	5th	5,293	3.2%	1.66
Anaemias	8th	2,854	1.9%	6th	4,892	3.0%	1.71
Bronchitis, Chronic and Unspecified Emphysema and Asthma	4th	9,874	6.4%	7th	4,791	3.9%	0.49

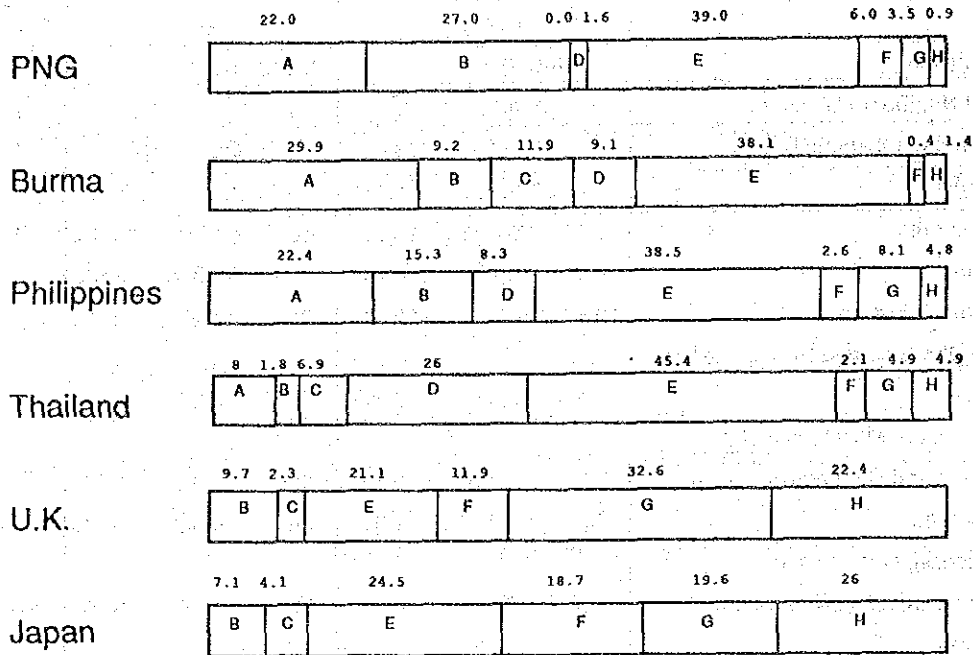
(Source: Handbook on Health Statistics, National Health Plan, 1986/90)

sanitary environment.

The number of deaths due to malnutrition, anemia, and production-related accounts for 12.5% of all deaths, but these causes can be minimised substantially if current standards of basic health services and national life are improved.

Fig. 2-1 shows an international comparison of relationship between the major disease patterns and causes of death.

FIG. 2-1 INTERNATIONAL COMPARISON OF CAUSES OF MORTALITY



LEGEND

- | | |
|---|-------------------------------------|
| A Infectious diseases | E Others |
| B Pneumonia & respiratory diseases | F Cerebral vascular diseases |
| C Accidental injuries | G Heart diseases |
| D Unknown | H Neoplasms |

(Sources: Discharge Statistics, Department of Health, 1983-85 World Health Statistics Annual, 1983-85)

(2) Types of Medical Treatment

1) Facilities and Activities:

As stated in the preceding paragraphs, types of medical treatment are given much weight in the primary health services. These are the results of the First National Health Plan which expanded the services by increasing the number of health centres, health-subcentres, and aid posts. Of these facilities, the health centres and subcentres are equipped with inpatient beds. In 1985 there were 459 health centres and subcentres in total throughout the country with total number of

8,782 beds versus the 4,778 beds of all hospitals. Records of 1985 indicate that the total number of inpatients in all centres and health-subcentres is over 1.6 times to that in all hospitals, and the total number of surgical operations and deliveries handled is almost equal to that of all hospitals. However, the total number of doctors, laboratory technicians and pharmacists available in all hospitals is much greater than those available to the primary health service facilities.

The health centres and subcentres have advantage over the hospitals in number of beds. However, they are managed and administered mainly by health extension officers, nursing officers and nurse aides, and the quality of medical treatment is poorer when compared to that of hospitals.

TABLE 2-4 NO. OF BEDS BY PROVINCE AND MEDICAL FACILITIES, 1985

	Population of Citizens	Hospital		Health Centre		Health Subcentre		Population per Bed	
		Number of Hospitals	Number of Beds	Number of Centres	Number of Beds	Number of Centres	Number of Beds	No. of Hospital Beds	Total Beds
Western	89,400	1	110	11	276	19	84	813	190
Gulf	70,300	1	83	9	380	8	56	847	135
Central	12,900	0	0	8	335	23	138		275
NCD	136,800	1	798	0	0	0	0	167	167
Milne Bay	146,500	1	100	8	199	26	145	1465	330
Oro	88,000	1	150	5	120	11	55	587	271
S. Highlands	255,300	1	217	13	573	24	258	1176	244
Enga	176,300	1	85	10	571	9	133	2074	223
W. Highlands	294,200	1	212	11	278	8	36	1388	559
Simbu	185,200	1	200	7	289	12	95	926	317
E. Highlands	300,800	1	300	7	130	22	321	1003	401
Morobe	348,200	1	500	17	589	7	42	696	308
Madang	239,400	1	400	19	724	8	60	599	202
East Sepik	249,000	1	312	12	357	20	114	798	318
West Sepik	125,800	1	200	10	446	18	100	629	169
Munas	29,100	1	100	7	108	0	0	291	140
New Ireland	75,100	1	122	8	389	15	36	616	137
East New Britain	150,000	1	480	11	344	11	72	313	167
West New Britain	104,300	1	140	9	339	11	66	745	191
N. Solomons	149,400	1	250	8	428	18	96	598	193
PNG	3,343,000	19	4,778	190	6,875	270	1,907	700	247

(Source: National Health Plan 1986/90)

2) Period of Admission

Average period of admission by number of days in PNG is shorter when compared to that of Japan as shown on Table 2-5.

Due to lack of beds, special tuberculosis and leprosy hospitals, where admission tends to be prolonged, are being converted to health centres or health-subcentres. Patients requiring for long-term admission are being sent back to home treatment, or being referred to health centres or health-subcentres, for effective use of the limited number of beds. For instance, tuberculosis patients who normally need treatment for an average of 18 months are hospitalised only for two months maximum, and then receive treatment as an outpatient receiving prescription medicine twice a week thereafter. Operation of the leprosy hospital at Togoba has also been discontinued, and all patients referred to various hospitals or sent home to be treated as outpatients. For these reasons the number of outpatients is rapidly increasing.

TABLE 2-5 AVERAGE NUMBER OF DAYS IN HOSPITAL BY LEADING CAUSE

		(Unit: days)			
		1984		1985	
		NCD	All Provinces	NCD	All Provinces
Medicine	Pneumonia	7.0	8.3	6.3	7.9
	Gastro-Enteritis	5.2	6.5	5.5	6.8
	Malaria	4.8	6.8	5.8	6.4
	Bronchitis	4.9	8.8	7.2	9.2
	Skin Infection	5.6	9.4	5.7	8.9
	Other Skin Diseases & Subcut.	12.6	11.6	13.0	13.5
	Acute Respiratory Infection	6.5	8.0	4.3	7.5
	Anaemias	7.7	10.2	8.6	9.6
	Measles	5.2	8.1	5.4	6.4
	Whooping Cough	8.4	10.3	6.0	9.2
	Malnutrition	15.0	19.8	14.7	20.9
	Accidental Poisoning	2.9	2.7	2.6	2.6
	Tuberculosis	31.7	32.7	29.5	31.7
	Leprosy	4.0	35.9	15.5	37.2
	S.T.D.	9.5	10.9	8.8	13.8
Obstetric	Normal Deliveries	3.1	6.5	2.7	6.5
	Child Birth Complication	6.2	9.1	5.2	8.8
Surgery	Car Accident	11.8	7.7	12.8	7.4
	Accidental Fall	4.9	8.6	1.0	6.5
	Fire Accident	4.2	15.1	14.1	16.0
	Industrial Type Accident	4.0	5.7	3.5	4.9
	Other Accidents	0.0	0.0	0.0	0.0
	Others	8.0	9.6	7.2	9.5

(Source: Handbook on Health Statistics)

3) International Comparison of Health Care Services

Table 2-6 shows international comparison of population factors between PNG and neighbouring countries.

TABLE 2-6 INTERNATIONAL COMPARISON OF POPULATION COMPOSITION OF PAPUA NEW GUINEA AND FOREIGN COUNTRIES

Country	Total Population (Million)	Rate of Birth (Thousand)	Mortality (Thousand)	Average Growth Rate (%)	Average Life Expectancy	GNP/head (US\$)
PNG	3.4	33.3	14	2.6	52	760
Japan	121.5	13	5	0.7	77	10,100
Australia	58.8	15	7	0.8	74	11,460
New Zealand	3.3	16	8	0.8	74	-
Fiji	0.7	30	5	2.5	62	1,780
Solomon Islands	0.3	37	10	3.7	57	-
Burma	37.7	33	14	2.0	58	180
Philippines	58.1	33	8	2.5	62	750
India	785.0	35	13	2.3	53	260
Sri Lanka	16.6	26	6	2.0	68	330
Thailand	52.8	28	8	2.0	63	820

(Source: Second National Health Plan)

Table 2-7 shows international levels of health care services comparing number of beds, doctors, pharmacists, and nurses currently available in PNG with those of foreign countries.

The table also shows indicators per population of 10,000.

Based on the indicators from Table 2-7, PNG is classified with the group of developing countries. Number of beds is at a satisfactory level, but number of doctors and pharmacists is ranked at a very low level among the developing countries.

TABLE 2-7 INTERNATIONAL COMPARISON OF MEDICAL SERVICE LEVELS

	Population (thousand)	Bed	Doctor	Pharmacist	Nurse	Year
PNG	3,343	4,778 (14)	184 (0.55)	26 (0.078)	1,118 (3.35)	1985
Burma	36,392	26,019 (7.2)	10,031 (2.76)	69 (0.018)	5,560 (1.53)	1985
Phillipines	50,740	93,474 (18.4)	7378G (1.45)	995G (0.19)	9,664 (1.9)	1981
India	676,220	540,768 (8.0)	268,712R (3.97)	115,621R (2.30)	150,339R (2.22)	1981
Sri Lanka	15,910	44,029 (3.0)	1,964G (1.29)	449G (0.30)	7,040G (4.63)	1981
Thailand	48,490	71,718 (14.8)	6,867 (1.42)	2,650 (0.55)	28,339 (5.84)	1980
West Germany	61,638	707,710 (115)	134,431 (22.6)	44,744 (7.26)	334,282 (54.24)	1980
Sweden	8,330	123,074 (148)	18,300 (22.0)	7,460 (8.96)	76,330 (91.63)	1980
U.S.A	231,534	1,134,360 (58)	414,916 (17.9)	144,260 (6.23)	1,514,000 (65.39)	1980
Japan	118,008	1,757,309 (149)	179,358 (15.20)	108,806 (9.22)	590,177 (50.01)	1984

G: Public Officials R: Registered (Source: World Health Statistics Annual 1983)

Values in parenthesis shows ratio per 10,000 of population

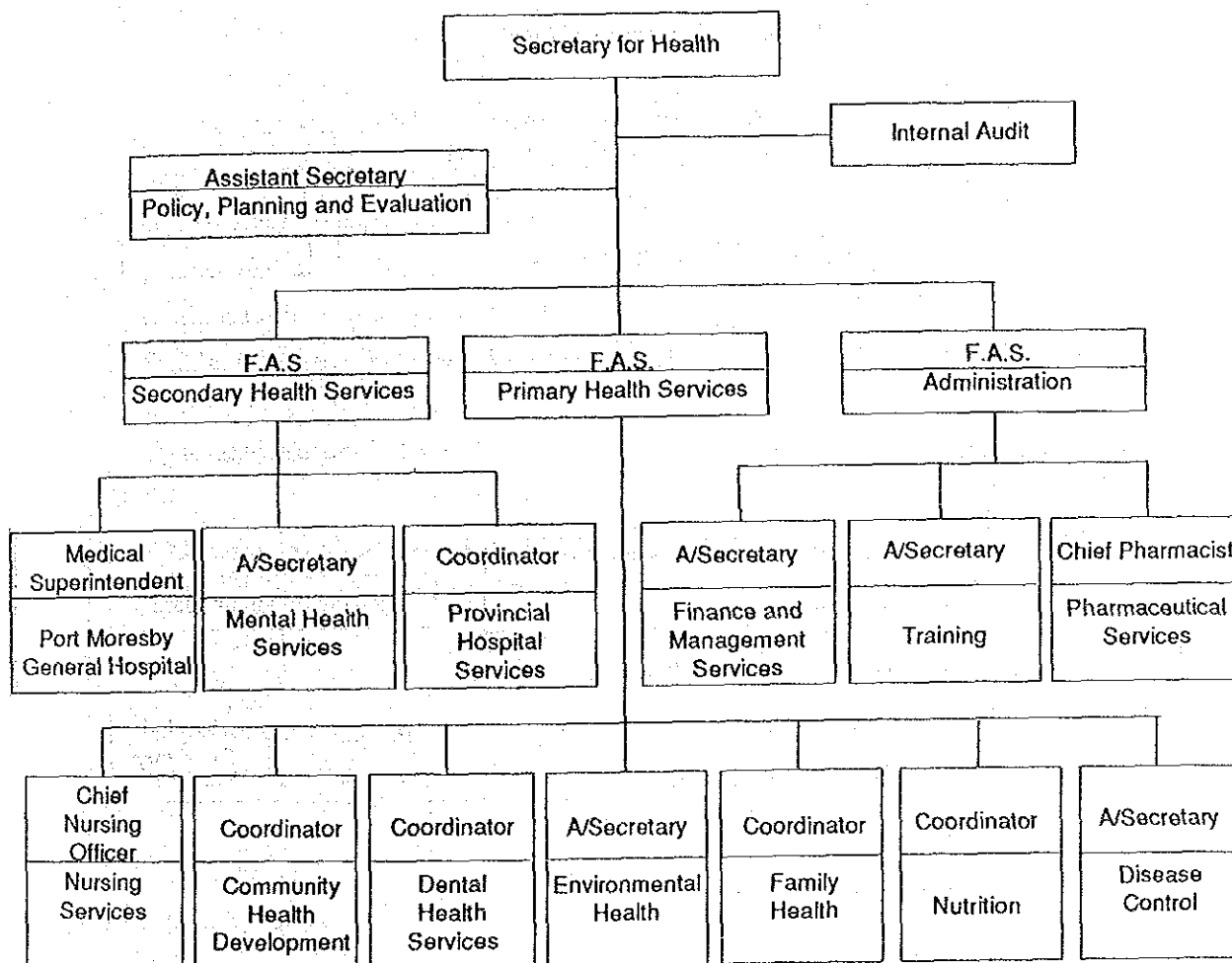
2-2-3 Present Situations of Health Services Administration

The health services in PNG are administered by the Department of Health at the central government level, and by the Division of Health at provincial government level. Pharmaceuticals, medical equipment and supplies are procured by the Pharmaceuticals Services Section of the Department of Health and provided to each health service facility.

1) Organisation of the Department of Health

The Second National Health Plan 1986/90 describes the organisation of Department as follows:

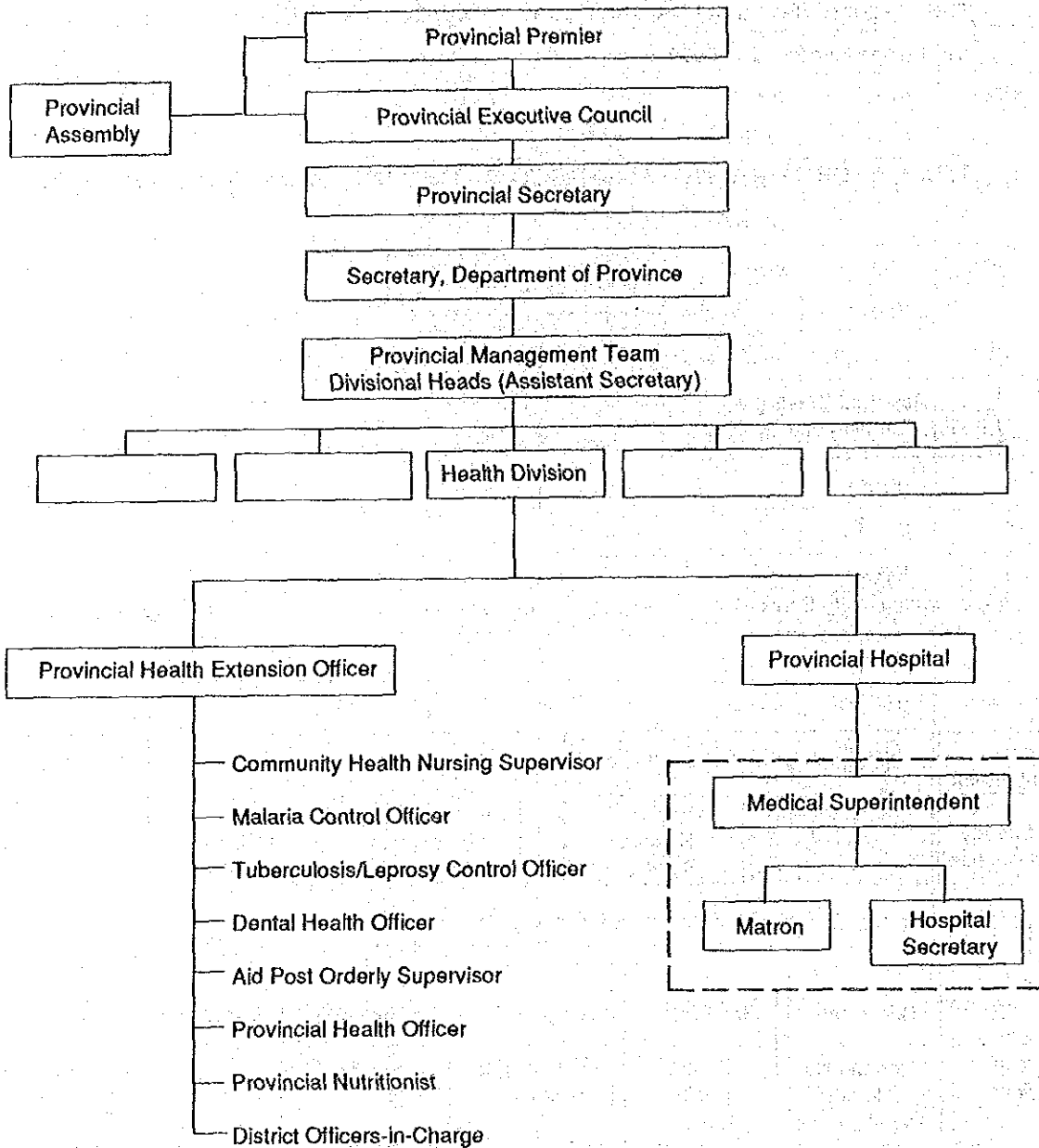
FIG. 2-2 ORGANISATIONAL STRUCTURE OF THE DEPARTMENT OF HEALTH



(2) Organisation of Health Service Administration at Provincial Government Level

Each provincial government at 19 provinces is authorised to have its own administrative organisation. The following is a typical health administrative organisation described in the Second National Health Plan:

FIG. 2-3 ORGANISATIONAL STRUCTURE OF PROVINCIAL GOVERNMENT, SHOWING DIVISION OF HEALTH STRUCTURE



(3) Pharmaceuticals and Medical Equipment Supply System

The Pharmaceuticals Service Section within the Department is authorised to procure, independently of other procurement agencies, all pharmaceutical and medical equipment from foreign and domestic markets and provide them, as required, to all health service facilities run by the Government and by churches. The

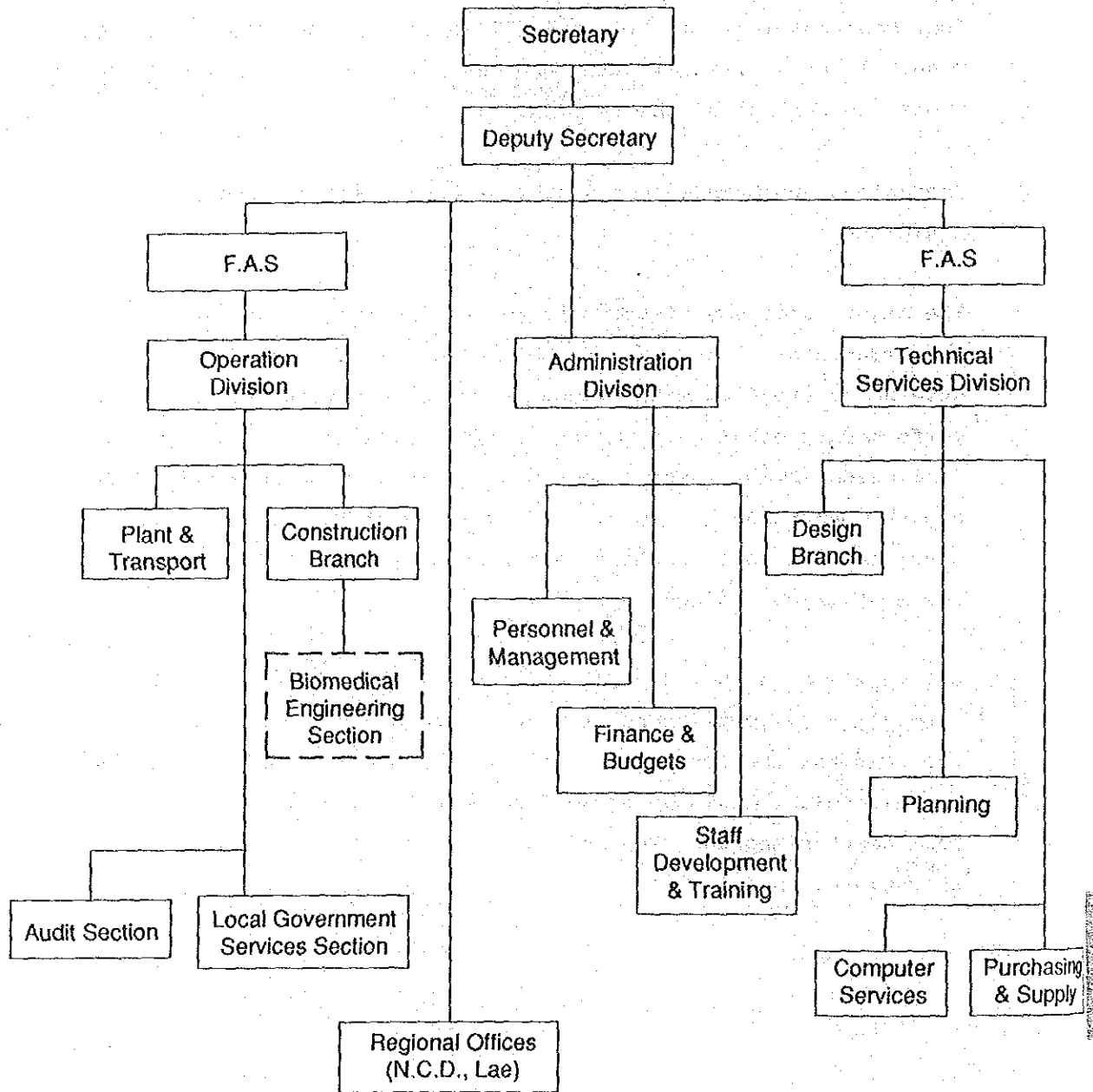
Pharmaceuticals Services Section is also responsible for operation of dispensaries, toxic control, preparation of treatment standards, and for planning dispensary operations at PMGH, and the four base hospitals at Lae, Rabaul, Goroka, and Mt. Hagen. At Lae Hospital, an artificial limbs fabrication factory is operated under the control of the section.

(4) Operations and Maintenance System of Facilities and Medical Equipment

The major functions of the Department of Works include actual performance of planning, construction and maintenance of the government projects with exceptions of direct works to be performed by other government agencies, such as Electricity Commission (ELCOM), Post and Telecommunication Corporation (PTC), and the Water Board. Generally the scope of work done by other government agencies is limited to connection of utilities outside the hospital buildings.

All work within the hospital buildings is performed under the control of the Department of Works. Operation and maintenance of the hospital facilities and medical equipment is administered by the Biomedical Engineering Section, Construction Branch, Department of Works. The Department of Works is organised as illustrated in Fig. 2-4.

FIG. 2-4 DOW HEADQUARTERS ORGANISATION



2-2-4 Medical Education and Training

(1) Medical Education

Medical education in PNG was commenced in 1971 at the University of Papua New Guinea (UPNG), through its Faculty of Medicine, by training doctors and dentists. In addition, the training of paramedics, such as medical technicians, laboratory technicians, pharmacists, health extension officers, and senior medical administrators, is being conducted at the Papuan Medical College in Port Moresby or at the College of Allied Health Sciences (CAHS) in Madang.

Training for paramedics is given to the graduates of a 12-year minimum basic education programme (six years at primary school, plus four years at high school, plus two years at national high school) at CAHS for the period from one to three years.

Applicants for medical officers are trained at UPNG for five years, the first year for basic medicine and the remaining four years for specialist education. Graduates are given clinical education for two years with pay.

1) Training of Medical Officers

Table 2-8 below shows number of medical graduates from three different programmes, 1951 through 1983.

TABLE 2-8 NUMBER OF MEDICAL GRADUATES, 1951-1983

Medical School	PNG	Other Pacific Islands	Others	Total
Fiji School of Medicine	15	1	-	16
Papuan Medical College	35	8	1	44
Faculty of Medicine, UPNG	138	25	17	180
TOTAL	188	34	18	240

(Source: Department of Health)

UPNG continues to experience difficulty in attracting sufficient numbers of suitable national applicants to the medical course. In November 1985, only seven PNG applicants were accepted. Proportion of national graduates against total graduates dropped to 50% in 1985 from 96% in 1978. This is far short of 40 graduates necessary for execution of the First National Health Plan.

2) Current Availability of Medical Officers

The growth in medical manpower has just kept pace with population growth. The 1974 ratio of doctors to population was 1:11,400, whereas in 1984 it was 1:11,700. In 1984, 73% of national graduates were employed in the public sector; 13.1% were in private practice; 7% were employed by the Defence Force; and 6%, though employed, were on study leave. National doctors have increased steeply from 28.5% to 51.2%. Total number of doctors is only 93 at present, but will need to increase to 180 in the year of 2000.

3) Specialist Medical Officers

Total number of special medical officers in 1986 is as listed in Table 2-9.

TABLE 2-9 SPECIALIST MEDICAL OFFICERS, 1986

	Expatriate	PNG	Vacant	In Training
Pathology	3	-	2	2
Anaesthetics	4	1	3	2
General Surgery	7	5	-	14
Ophthalmology	2	-	2	2
ENT	-	-	1	-
General Medicine	4	4	3	7
Obstetric	5	-	3	12
Dermatology	1	-	-	-
Paediatric	8	1	2	8
Radiotherapy	1	-	-	1
Radiology	-	-	1	-

(Source: Department of Health)

4) Dental Staff

There are three levels of trained dental staff, dental officers, dental therapists, and dental technicians, employed in health services in PNG. Between 1970 and 1972 13 persons graduated from a diploma level course, run by the Department of Health at the Port Moresby Dental College. The Cabinet made a policy decision to transfer the dental course from the Department of Health to the University of Papua New Guinea. As it took too long to execute this decision, dental training was discontinued until the first degree-level students graduated from the University in 1981. The quota of eight students per year has not been achieved.

5) Pathology Staff

Three levels of pathology staff are employed in the PNG health system - medical laboratory assistants, medical laboratory technicians, and medical technologists. All are trained at the College of Allied Health Sciences of WHO Training Centre in Port Moresby. A large number of other staff (aid post orderlies and nurse aides in rural health centres and subcentres) carry out simple laboratory procedures as part of their work. A small number of in-service training courses for such workers have been undertaken.

6) Pharmacy Staff

There is no national pharmacist in PNG at present. In 1984, there were 32 pharmacists in PNG, with 21 of them working for private pharmacies. Only two of the eleven Government pharmacists worked in hospitals. The rest were employed at regional medical stores or in the Department of Health. Two suitable students will be selected and given appropriate preparation for overseas training by 1990.

7) Radiographers

The radiographer in PNG is trained to work independently of a radiologist, taking X-rays in ways that neither damage his nor his patients' health. Training of radiographers is performed at the College of Allied Health Sciences in Port Moresby for three consecutive years.

8) Nursing Officers

In 1973, the Government and churches employed 1,554 nursing officers, of whom 741 were foreigners. By January 1985, they employed 2,054 nursing officers, of whom very few were foreigners. 42.2% of the nurses worked in hospitals, and 55.8% in health centres, health-subcentres or provincial health offices. The Government intends to increase the total number of nurses to 3,000 by the year of 2000.

9) Health Extension Officers

Health extension officers are responsible for the comprehensive health services, as key personnel in the primary health system, and coordinate and direct the work of health staff. The Government plans to increase the number of those currently available from 337 in 1985 to 500 by the year of 2000.

10) Health Inspectors

The health inspector is a specialist who improves environmental health conditions in the community by advising, supervising and planning the environmental health measures required for healthy living, and by motivating society, through health education, to accept responsibility for a healthy and clean environment. He also advises employers and employees on health hazards in the workplace and monitors industrial pollution and nuisance. The training of health inspectors began at Madan College College of

Allied Health Sciences in 1967. By 1984, 234 students had graduated.

In 1985, there were 182 health inspectors employed in the country. Of these, 88% were employed by provincial health departments or local authorities. The remainder were mainly in training or administrative posts in the Department of Health. By 2000 it is anticipated that the need for health inspectors to serve on-site services will have risen by 40%.

11) Base Level Health Workers

Three types of base level workers, nurse aides, aid post orderlies, and hospital orderlies, currently exist in the PNG health care system. The category is a very heterogeneous mixture of workers, ranging from those recently qualified to others who received only in-service training. There is considerable overlap between the various cadres, and, in practice, are now used interchangeably in many provinces. The training of nurse aides and aid post orderlies is very similar, and their training will be amalgamated during the period of this health plan. The separate categories of base level workers would merge into a single category, called "health orderlies."

Role, training system, and current availability of base health workers are summarised on Table 2-10.

TABLE 2-10 ROLES, TRAINING AND MANPOWER OF HEALTH WORKERS

	Nurse Aides	Aid Post Orderlies	Hospital Orderlies
Roles	Work with nursing staff in all levels of health services from health centres or health sub-centres to national or provincial hospitals.	Provide a simple but comprehensive level of health care. Also provide health promotion and disease prevention as well as the curative services.	Received no formal training or instruction. Most of hospital orderlies are being transferred from health care duties to those of labourers.
Training	Trained at nursing schools annexed to health centres or provincial hospitals. Training period was lengthened to two years in 1982.	A school named "Mt. Ambra Training School" was opened by DOH in Western Highlands Province with an intake of 44 trainees in 1972. There are seven training schools now throughout the country.	There are no specific institutions for training. Orderlies normally receive in-service training.
Availability	There are 1,978 nurse aides employed between 1984 and 1985. 60% of nurse aids employed by health services in rural areas, and 40% by hospitals.	There were 2,150 aid post orderlies employed in 1985.	Although accurate statistical data are not available, there were 741 orderlies were employed in hospitals, and 541 orderlies in health centres or aid posts in 1985.

(Source: Second National Health Plan, 1986/90)

2-3 SYNOPSIS OF RELATED PROGRAMMES

2-3-1 National Development Plan

(1) Eight-Point Goals, 1973

PNG formulated "Eight-Point Goals," as a basic philosophy towards development of national economy and society in 1973, two years prior to the Independence. The eight-point goals emphasised promotion of equalisation, decentralisation and self-reliance as stated below:

- 1: Equal distribution of economic gains to all nationals of PNG.
- 2: Equal division of economic gains among all nationals.
- 3: Decentralisation of economic activities and the government outgoings.
- 4: Promotion of small business.
- 5: Economic independence.
- 6: Financial independence.
- 7: Equal opportunity for women to participate in economic and social activities.
- 8: Strengthening of the government leadership in various sectors of economy.

(2) National Goals and Guidelines, 1974

In the succeeding year to the establishment of the eight-point goals, the national goals and guidelines were announced to the public. The major points are as stated below:

- 1: To liberate from domination and suppression, and to develop neo-humanism.
- 2: To promote participations in development and to equalise economic gains.
- 3: To complete country's independence politically and economically and to establish a self-reliant economic sector.
- 4: To maintain national resources and environment in good order.

5: To establish social, political and economical systems in the way of PNG.

(3) National Development Strategy

In 1976, the Government of PNG issued a synopsis of the national development strategy to achieve the eight-point goals announced at Independence, and stressed the necessity of establishing concrete and detailed plans of the public outgoings. The Government insisted on the priority for development in the rural areas while large projects for resource development and improvement and modernisation of industries was also acknowledged to be important.

(4) National Public Expenditure Plan, 1978

This plan was made up with the aim of allocating public expenditures equally along the lines of national development strategy. The plan was set up as a four-year rolling plan. The current plan is effective through 1992 starting 1988. Actual expenditures in the previous year are carefully checked for updating the current plan, and the four-year expenditure plan is revised for the following years.

(5) National Plan and Budgetary Strategy, 1988/92

The details of the National Plan and Budgeting Strategy 1988/92 were released by the Government of PNG immediately before the joint conference of donor countries held in Tokyo in October 1988. This plan is identical to the current national public expenditure plan as described in the preceding paragraph. The following four items were stressed in the strategy:

- 1: Growth of economic power
- 2: Creation of employment opportunities in regions
- 3: Establishment of self-reliant finance
- 4: Correction of economic and social inequalities

2-3-2 National Health Plan

(1) The First National Health Plan, 1974/78

The Government of PNG established the First National Health Plan, 1974/78, based on the eight-point goals announced in 1973. The big changes occurred immediately after the Independence to decentralise responsibility for management of the health services. The role of the Department of Health has changed accordingly. The Department of Health is responsible for the establishment of national policy and standards, and provision of technical assistance to the provinces. Some of the functions of the Department were transferred to provinces.

During the period of the First National Health Plan, the first priority was placed on the development of primary health services. As a result, life expectancy rose and both rates of the neonatal mortality and infant mortality reduced. In 1985 it has become possible for 96% of the nation's population to have access to health care facilities of any type within two hours.

(2) The Second National Health Plan, 1986/90

The Second National Health Plan was prepared upon carefully study of the results of the First National Health Plan. The primary goals of the Second Plan are as follows:

1: Participating: health services are best received when people and communities are involved in decision-making about their own health.

2: Equitable: appropriate care should be available to all as close to their home as possible.

3: Appropriate: standards should reflect the level of community and national development.

- 4: Collaborating: health services must work with other government departments and the community to achieve improvements in health.
- 5: Efficient: maximum benefit should be achieved from expenditure of scarce resources.

(3) Planning and Expenditure Strategy, 1988/92

The following health service activities will be emphasised during the period of the Second Plan and expenditure strategy, 1988/92:

- 1: Improving the quality and efficiency of existing primary health services by increasing emphasis on self-reliance and community participation in health activities.
- 2: Providing more effective health education and information to assist all members of the community to prevent illness and to lead healthier lifestyles.
- 3: Upgrading secondary health services to support primary health services.
- 4: Establishing national family planning.

(4) Related Survey Plans

In 1986, the Department of Health with support from the Government of Australia, conducted a physical survey of provincial hospitals in PNG and prepared the report of "Hospital Planning Study." This provided a preliminary master plan for improving the health services provided by provincial hospitals. In 1987 the Department prepared "Master Plan for Hospital Services Project" to follow up on the preliminary master plan. This was supported by the Asian Development Bank, and finalised the Master Plan on provincial hospitals which required emergency upgrading of facilities.

2-3-3 International Cooperation in Sector of Medical Health Services

The following table shows various international cooperation projects implemented recently for PNG in the sector of medical health services.

TABLE 2-11 INTERNATIONAL COOPERATION OF MEDICAL HEALTH SERVICES

Donor Country or Agent	Project	Period
Australia	Medical Specialist Technical Cooperation Hospital Planning Study	1985 - 1988 1985
Canada	Disabled Child Rehabilitation Programme	1985 - 1986
Japan	Medical Equipment Supply Project Redevelopment of PMGH	1987 1988 - 1990
WHO	Malaria Control Programme Medical Care System Development Medical Education Strengthen Programme	1977 - 1985 1974 - 1989 1982 - 1989
UNICEF	Rural Health Service Study	1983 - 1987
ADB	Rural Health Improvement Programme Hospital Services Project	1982 - 1988 1987

(Source: Department of Health)

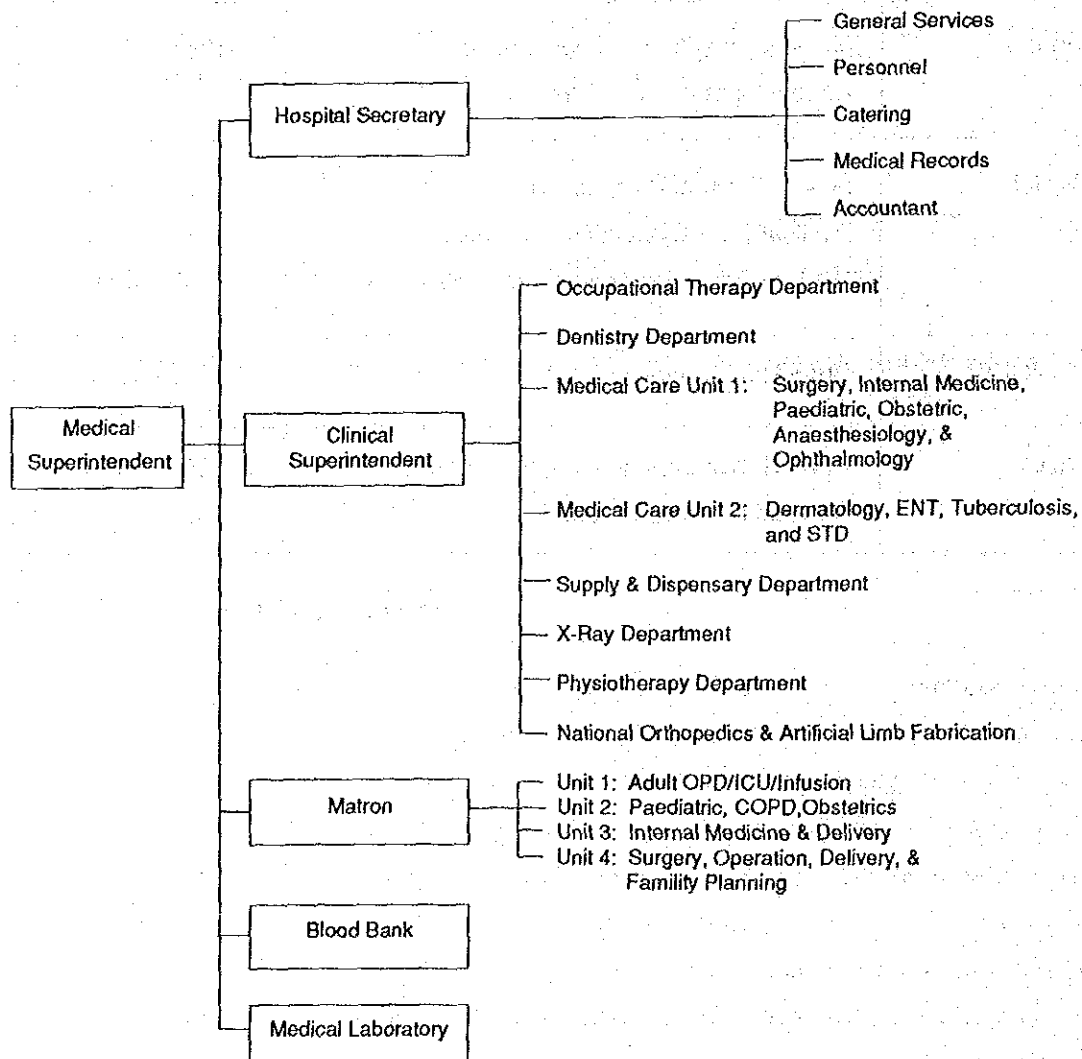
2-4 EXISTING CONDITIONS OF PROJECT HOSPITALS

2-4-1 Administration and Services

(1) Lae (Angau Memorial) Hospital

1) Organisation: The project hospital is a base hospital under the direct control of the Department of Secondary Health Services, Department of Health. At the time of survey conducted in September 1989, the hospital was organised as shown on Fig. 2-5.

FIG. 2-5 ORGANISATION CHART



(Source: Lae (Angau Memorial) Hospital)

2) Services: The following health services are provided at Lae Hospital.

1: Medical Treatment

- Dentistry
- Surgery
- Internal medicine
- Paediatric
- Obstetric and gynaecology
- Anaesthesiology
- Ophthalmology
- Dermatology
- ENT
- Leprosy and tuberculosis
- Sexually transmitted diseases
- Radiotherapy (oncology)
- Orthopedics

2: Occupational therapy

3: X-ray examination

4: Pharmacy

5: Pathology

6: Physiotherapy

7: In-patients wards

8: Blood bank

9: Artificial limbs factory

10: Family planning

11: Nursing school

12: Emergency

13: Operating theatre

3) Service Population, Hospital Staff, Patients, and Availability of Beds

1: Service Population (assumed)

1987	1988	1989	1990
366,400	375,800	385,000	394,000 (rate of rise: 2.6%)

2: Current Availability of Beds: 526 beds (1988)

3: Users of Health Services:

TABLE 2-12 USERS OF HEALTH SERVICES AT LAE HOSPITAL

	1984	1985	1986	1987	1988
Outpatients	195,678	170,618	198,810	190,891	192,778
Specialist Treatment	17,531	16,925	15,948	15,413	14,238
Pathology	52,058	59,084	53,615	58,035	51,398
Pharmacy	-	-	100,550	127,550	146,540
Inpatients X-ray Examination	25,402	25,402	28,110	28,704	31,043
Surgical Operation	3,795	3,536	3,812	3,684	3,436
Obstetric	3,892	2,999	3,978	3,755	3,020
Delivery	2,152	209	2,091	591	1,081
Special Care Nursery	1,320	1,392	1,428	1,440	1,500
Paediatric	2,152	2,093	2,844	1,961	3,307
Internal Medicine	1,263	1,281	1,040	884	1,178
ICU	105	68	86	74	87
Cancer Consultation	139	164	179	225	259
Intermediate Wards	449	461	481	568	583

(Source: Lae Hospital)

4: Hospital Staff (1988)

Medical Officers: 25
Dental Officer: 1
Paramedical Staff: 21
Nursing Staff: 289
Administration: 194

4) Operational Budget

The following table shows actual expenditures for the years between 1986 through 1988:

TABLE 2-13 OPERATIONAL BUDGET

(Unit: Thousand Kina)

Items	1986	1987	1988
Salary and Other Employee Payments	1,237	1,876	1,960
Travel and Subsistence	11	16	15
Utilities	352	435	468
Materials and Supply	355	351	457
Plant and Transport Hire	40	52	57
Special Services (Transport of Patients)	144	110	170
Assets	87	3	12
Others	6	7	5
Miscellaneous Labour Costs	426	434	459
TOTALS	2,658	3,284	3,563

(approximately ¥165/Kina, 1989)

(Source: Lae Hospital)

5) Characteristic Features of Present Status

The project hospital is a general provincial hospital, built immediately after World War II in Lae, the second great city located at the northern shore of the main island of PNG.

1: Unchangeable Demand: The growth of service population, especially the growth of patients, showed no significant fluctuations for the last several years.

2: Shortage of Spaces and Aged Functions: The floor areas, number of medical officers and availability of beds at the project hospital are more than double those of Mt. Hagen where a similar number of patients are treated, and it is

not necessarily follow that the hospital lack of the spaces. However, the whole hospital, except for the pediatric outpatient ward built in 1988, is aged and some departments (Outpatients, Central Supply, Dispensary, Obstetric, and Operating Theatres) are suffering from restricted space and confused passages.

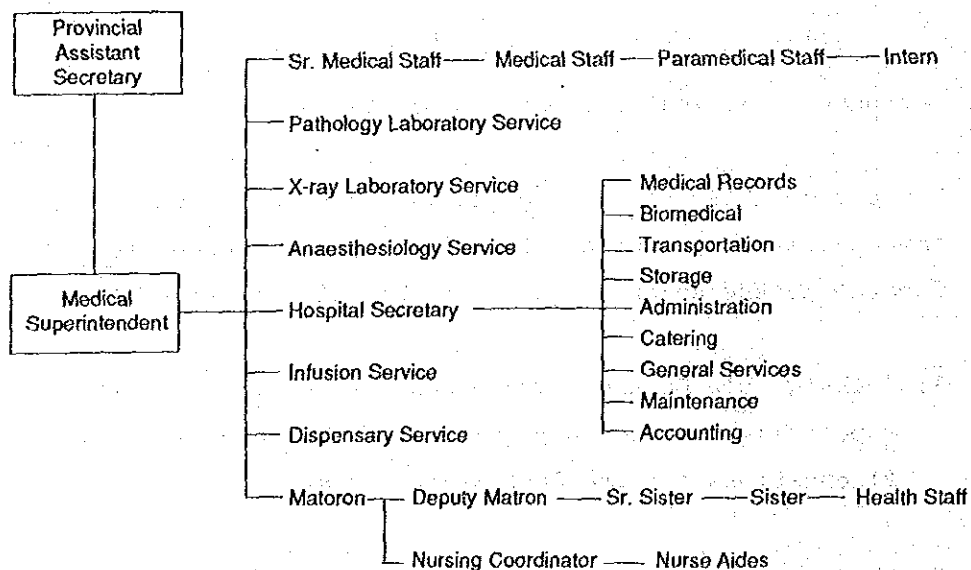
3: Slow Growth of Operational Expenditures: As stated in the subparagraph 1 above, the actual operational expenditures showed very slow growth for the last three years.

(2) Mt. Hagen Hospital

1) Organisation

The project hospital is a base hospital located in Western Highlands Province. At the time of the survey in September 1989 the hospital was organised as shown on Fig. 2-6 below:

FIG. 2-6 ORGANISATION CHART



(Source: Mt. Hagen Hospital)

2) Services: The following health services are provided at Mt. Hagen Hospital.

1: Medical Treatment

- Surgery
- Internal medicine
- Paediatric
- Obstetric and gynaecology
- Ophthalmology
- Leprosy and tuberculosis
- Sexually transmitted diseases
- Psychiatric
- Dentistry
- Anaesthesiology

2: Pathology

3: X-ray examination

4: Pharmacy

5: Blood bank

6: Family planning guidance

7: In-patients wards

8: Emergency

9: Operating theatre

3) Service Population, Hospital Staff, Outpatients, and Availability of Beds

1: Service Population: 306,500 (Western Highlands, 1987)

2: Current Availability of Beds: 263 beds

3: Users of Health Services: See Table 2-14.

TABLE 2-14 USERS OF HEALTH SERVICES AT MT. HAGEN HOSPITAL

	1986	1987	1988
Adult Outpatients	92,390	90,700	86,849
Child Outpatients	89,029	101,557	104,748
Specialist Treatment	-	5,338	6,508
X-ray Examination	5,535	4,730	6,436
Internal Medicine	1,935	-	2,277
Obstetric and Delivery	2,031	2,282	2,210
Special Care Nursery	160	205	260
Gynaecology	1,203	1,425	1,380
Paediatric	3,104	3,204	4,518
Surgical Treatment (adult)	-	2,987	3,597
Surgical Treatment (children)	-	527	687
Surgical Operation	649	738	849
Minor Surgical Operation	2,557	2,368	2,669
Typhoid	486	890	1,121
Blood Bank	2,367	2,117	2,169
Pathology	18,736	16,006	14,981
Pharmacy	-	155,563	162,512
Admission	11,970	13,034	15,350

(Source: Mt. Hagen Hospital)

4: Hospital Staff (1988)

Medical Officers: 14
 Paramedical Staff: 8
 Nursing Staff: 338
 Administrative staff: 69

4) Operational Budget

Table 2-15 shows actual and assumed expenditures for the years between 1987 through 1989.

TABLE 2-15 OPERATIONAL BUDGET

(Unit: 1,000 Kina)

Items	1987	1988	1989 (assumed)
Salary and Other Employee Payments	623	956	1,106
Travel and Subsistence	6	6	10
Utilities	98	128	100
Materials and Supply	123	147	150
Plant and Transport Hire	16	30	32
Special Services (Transport of Patients)	8	8	8
Assets	-	-	48
Others	9	3	0.3
Miscellaneous Labour Costs	167	-	274
TOTALS	1,050	1,278	1,728

(@ approximately ¥165/Kina, 1989)

(Source: Mt. Hagen Hospital)

5) Characteristic Features of Present Status

The project hospital is located at the capital city of Mt. Hagen. Province of Western Highlands, in the highland areas of rapid growth of population, of the main island of PNG.

1: Shortage of Spaces: The project hospital is a base hospital and is similar to Lae Hospital in its functions. Number of outpatients is also similar to that of Lae Hospital, but size of floor areas, availability of beds and medical officers is only half that of the Lae Hospital. The hospital is suffering from shortage of beds in the paediatric and obstetric wards, restricted spaces of the pathology laboratory and X-ray room in the Outpatient Department, potential infection due to mixture of infected patients with other patients, and confusion due to non-separated main and service access ways.

2: High Growth Rate of Users: While the growth rate of outpatients shows no marked fluctuations at Lae Hospital,

the users, including children, surgical outpatients, and admissions to the hospital are steadily increasing at a high rate and has resulted in an overcrowded situation.

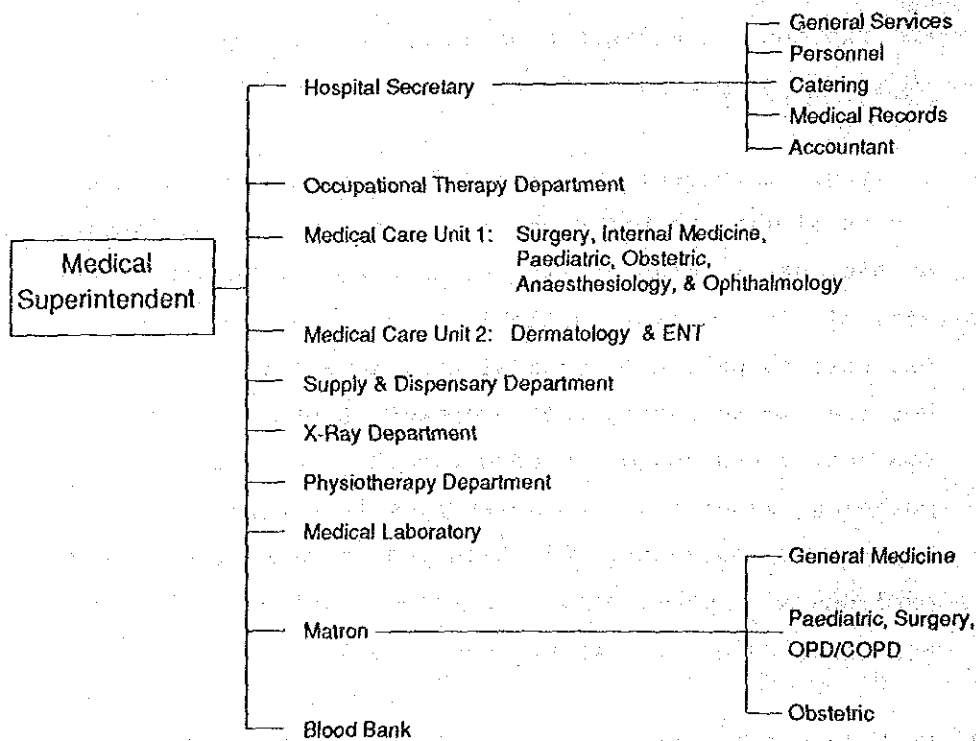
3: High Growth of Operational Expenditures: Reflecting the situation stated above, the actual operational expenditures showed the highest growth rate among the three project hospitals.

(3) Wewak Hospital

1) Organisation

The project hospital is a level one hospital under the control of East Sepik Province Government. At the time the survey was conducted in September 1989, the hospital was organised as shown on Fig. 2-7.

FIG. 2-7 ORGANISATION CHART



(Source: Wewak Hospital)

2) Services: The following health services are provided at Wewak Hospital.

1: Medical Treatment

- Surgery
- Internal medicine
- Paediatric
- Obstetric and gynaecology
- Anaesthesiology
- Ophthalmology
- Dermatology
- ENT
- Psychitric

2: Pathology

3: X-ray examination

4: Pharmacy

5: Physical therapy

6: Blood bank

7: Occupational therapy

3) Service Population, Hospital Staff, Outpatients, and Availability of Beds

1: Service Population: 383,200 (East Sepik and West Sepik, 1988)

2: Current Availability of Beds: 358 beds

3: Users of Health Services:

TABLE 2-16 USERS OF HEALTH SERVICES AT LAE HOSPITAL

	1983	1984	1985	1986	1987	1988
Adult Outpatients	63,896	71,901	74,572	69,810	76,791	84,470
Special Care Nursery	208	433	313	325	320	271
Deliveries	-	-	1,208	1,328	1,458	1,601
Operation	-	-	4,320	4,600	5,127	6,112
Pharmacy	-	-	-	14,312	15,010	15,186

(Source: Wewak Hospital)

4: Hospital Staff (1988)

Medical Officers:	6
Paramedical Staff:	3
Nursing Staff:	139
Administrative staff:	11

4) Operational Budget

The following table shows actual and assumed expenditures for the years between 1987 through 1989:

TABLE 2-17 OPERATIONAL BUDGET

(Unit: 1,000 Kina)

Items	1988	1989
Salary and Other Employee Payments	1,132	979
Travel and Subsistence	6	16
Utilities	221	321
Materials and Supply	90	170
Plant and Transport Hire	17	37
Special Services (Transport of Patients)	40	90
Assets	-	14
Others	9	10
TOTAL	1,515	1,872

(@ approximately ¥165/Kina, 1989)

(Source: Wewak Hospital)

5) Characteristic Features of Present Status

The project hospital is located at the capital city of Province of East Sepik, in the western area of the northern shore of the main island of PNG. The hospital has been partially extended, but the original layout and sizes of the most buildings remain unchanged since its construction in 1962. The hospital, therefore, is not able to meet the increased demand for health services, and is suffering from shortage of spaces as a whole.

The spaces of outpatient department, dispensary and operating theatre annex are extremely restricted. The hospital is also short of special care nursery rooms, and the interiors of the psychiatric and physiotherapy wards are succeedingly deteriorated.

- 1: Rise of Demand: Although clear statistical data are not available, numbers of outpatients (adult), deliveries and surgical operations all rose by annual rate of approximately 10% after 1985.
- 2: Deteriorated Functions: Minor repairs or alterations have been provided in line with the primary policy. Existing facilities are built on a site facing the shoreline, and the buildings and equipment are badly deteriorated because of the salty environment.
- 3: Slow Growth of Operational Expenditures: The record of operational expenditures shows relatively slow growth rate for the years of 1988 and 1989.

2-4-2 Existing Conditions of Medical Facilities and Equipment

(1) Existing Conditions of Facilities

1) Lae (Angau Memorial) Hospital

The most buildings of Lae Hospital were built between 1957 and 1962. The existing buildings are all single storied, and all the buildings are connected with covered corridors crosswise. The buildings are scattered in an area measuring 150 metres from south to north, and 250 metres from east to west. The administration of this hospital was transferred to national control in August 1986. This hospital is characterised as unique because it has a cancer centre and an artificial limbs factory. The Cancer Centre was established in 1978. In 1988, a caesium storage facility was added as support, and the centre

was considered fully equipped to function as a cancer centre. In addition, the pediatric outpatient department was added under Government funding in 1988. The buildings for this hospital are all built on elevated floors 60 to 90 centimetres above ground level to withstand the high tides which occur several times a year.

The following table shows sizing of existing buildings:

LIST OF EXISTING BUILDINGS

Department	Floor Area (m ²)
Outpatient	1,956
Dispensary	151
Examination	368
Operating	655
Patient Wards	5,838
Other Facilities	907
Administration	759
Services	2,006
TOTAL	12,640

Outpatient Department (1,954 m²) Figures in parentheses indicate existing floor areas.

Room	Floor Area (m ²)	Total Floor Area (m ²)
General Outpatients		
Waiting Hall	67	251
Sub-Waiting Hall	50	
Examination Room	21	
Consultation Room	27	
Treatment Room	40	
Injection Room	24	
Medication Room	22	
Specialist Clinic		
ENT	27	84
Surgical Treatment	19	
STD Treatment	38	
Emergency		
Emergency Treatment Room	20	144
Waiting Hall	19	
Minor Operating Theatre	27	
Ambulance Garage	55	
Driver's Room	23	
Others		
Corridor	139	159
Toilet	20	
TOTAL		638

Other Outpatients

Dental Outpatients	127
Obstetric	291
Paediatric	900

Dispensary Department (151 m²)

Room	Floor Area (m ²)	Total Floor Area (m ²)
Dispensary	57	151
Bulk Store	45	
Office	15	
Waiting Hall	10	
Others (Corridor)	24	

Examination Department (368 m²)

(X-ray Examination)

X-ray Room	76	160
Film Store	17	
Dark Room	13	
Office	16	
Others	38	

(Pathology Examination)

Laboratory	71	157
Malaria Laboratory	15	
Washing Room	5	
Staff Room	11	
Office	6	
Store	7	
Others	42	

(Blood Bank)

Bleeding Room	30	51
Store	5	
Office	16	

Operating Theatre (655 m²)

Room	Floor Area (m ²)	Total Floor Area (m ²)	
Operating Theatre			
Operating Theatre (3 rooms)	113		
Preparation Room	10		
Dirty Utility	29		
Anaesthesia Room	26		
Recovery Room	23		
Doctor's Room	12		
Staff Change Room	25		
Oxygen Room	17		
Staff Room	16		
Washing Room	9		
Equipment Store	34		
Glove Room	9		
Office	9		
Others	210		542
Central Supply			
Sterilising Room	52	113	
Steam Generation Room	30		
Store Room	14		
Others	17		

Patient Wards (5,838 m²)

Wards		
Patient Wards (including obstetric wards)	4,404 (897)	
Others		1,434
Corridors	933	
Toilets	501	

Other Medical Facilities (907 m²)

Radiotherapy	301	907
Physiotherapy	187	
Limbs Factory	419	

Administration Department (759 m²)

Room	Floor Area (m ²)	Total Floor Area (m ²)
Medical Superintendent	14	759
Staff for Medical Superintendent	15	
Hospital Secretary	15	
Staff for Hospital Secretary	12	
Doctor's Room	80	
Administration Office	17	
Finance Office	26	
Accountant Office	19	
General Office	39	
Medical Record Room	54	
Conference Room	67	
Library	30	
Stationary Room	30	
Staff Room	22	
Toilet	24	
Corridors	295	

Services Department (2,006 m²)

Kitchen and Mess Hall	279	2,006
Laundry Room	318	
Mechanical Room	400	
Work Shop	607	
Store	402	

(2) Mt. Hagen Hospital

The project hospital was built in 1956 as a health centre. In 1965 the centre was remodelled to the present hospital. The following modifications were provided thereafter:

- 1966 Intermediate wards added.
- 1976 Paediatric and obstetric wards partially modified.
- 1977 General outpatient department added.
- 1978 Dental clinic ward added.
- 1986 Operating theatre modified.

The following table shows size of existing buildings:

LIST OF EXISTING BUILDINGS

Department	Floor Area (m ²)
Outpatient	1,047
Dispensary	82
Examination	226
Operating Theatre	505
Patient Wards	1,692
Other Facilities	118
Administration	455
Services	594
TOTAL	4,719

Outpatient Department (1,047 m²) Figure in parentheses indicates existing floor area.

Room	Floor Area (m ²)	Total Floor Area(m ²)
Specialist Clinic	36	1,047
Others	1,011	

Dispensary Department (82 m²)

Dispensary	33	82
Bulk Store	42	
Waiting Hall	7	

Examination Department (226 m²)

(X-Ray Examination)

X-ray Room	51	121
Records Room	18	
Dark Room	9	
Office	9	
Toilet	4	
Waiting and Corridor	30	

(Pathology Examination)

Room	Floor Area (m ²)	Total Floor Area (m ²)
Examination Room	63	81
Washing Room	9	
Office	9	

(Blood Bank)

Blood Bank	24	24
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Operating Theatre (505 m²)

Operating Theatre	505	505
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Patient Wards (1,692 m²)

Psychiatric wards etc.	(38 beds) 574	1,692
Obstetric Wards	(32 beds) 351	
Paediatric Wards	(78 beds) 318	
Others	(110 beds) 449	

Other Medical Facilities (118 m²)

Malaria Examination	76	118
Mortuary	42	

Administration Department (455 m²)

Administration Office	455
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Services Department (594 m²)

Mess Hall	164	594
Kitchen	209	
Laundry	88	
Mechanical Room	133	

(3) Wewak Hospital

The project hospital is the best maintained among the three project hospitals, and requires no large scale modifications or alterations. The project site is situated on the peninsula facing the ocean at three sides. The buildings are mainly constructed of wood, built on an elevated floor 60 to 90 centimetres above ground level so as to withstand high tides and the salty environment. The following table shows size of existing buildings:

LIST OF EXISTING BUILDINGS

Department	Floor Area (m ²)
Outpatient	268
Dispensary	78
Examination	299
Operating Theatre	314
Patient Wards	2,827
Other Facilities	449
Administration	263
Services	769
TOTAL	5,267

Outpatient Department (268 m²) Figures in parentheses indicate existing floor area.

Room	Floor Area (m ²)	Total Floor Area(m ²)
Waiting Hall	26	268
Sub-waiting	7	
Consultation Room	6	
Treatment Room	27	
Plaster Room	4	
Injection Room	8	
Casualty Waiting Room	18	
Casualty Treatment Room	14	
Casualty Sub-waiting	4	
Others	154	

Dispensary Department (78 m²)

Room	Floor Area (m ²)	Total Floor Area (m ²)
Dispensary	33	78
Others	48	

Examination Department (299 m²)

Examination Room	33	299
Microbe Examination	14	
Others	252	

Operating Department (314 m²)

Nurses Room	4	314
Recovery Room	9	
Store	11	
Others	290	

Patient Wards (2,827m²)

Psychitric Ward	130	2,827
Physiotherapy Ward	130	
Special Care Nursery	37	
Preparation Room	13	
Spare Room	13	
Others	2,504	

Other Medical Facilities (449 m²)

Mortuary	49	449
Medical Supply Store	400	

Administration Department (263 m²)

Administration Office	263
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Services Department (769 m²)

Kitchen	187	769
Laundry Room	330	
Mechanical Room	252	

(2) Structural Type of Existing Facilities

Most of the existing buildings for the three project hospitals are constructed of wood. The details of the structure is characterised by framed wall structure with wooden bearing walls laid on both span and ridge directions supporting a wood truss roof over the walls. However, the relatively new paediatric ward, built in 1988 at Lae, has major components such as foundations, columns and beams constructed of reinforced concrete. The walls, including partitions, are constructed of reinforced concrete blocks, and the roof trusses are wood.

(3) Utilities for Existing Facilities

1) Lae Hospital

Water is supplied through underground pipes of 100 mm in diameter. No specific problems are noticeable in water pressure and flow rate. Hot water is supplied by two 5-ton steam boilers, installed in 1989, to kitchen, laundry, and steam steriliser. Hot water is also supplied by a solar heater to some wards. Sewer lines from the hospital are connected to the city sewerage system through two lines. As a part of the existing drainage pipelines runs through the construction site of the central building, it is necessary to remove and reroute the line to interfere the construction. Since the existing city storm water drainage system is not fully capable (piping size is only 150 mm in diameter) to drain all the surface water at time of heavy rainfall, a part of the facilities are sometimes flooded. Sprinkler and fire alarm systems have been provided for fire protection, but the surfaces of most sprinkler heads are rusted and appeared unserviceable. Medical gases (oxygen and nitrous oxide) are supplied through separate manifolds installed at the operating theatre and paediatric ward to an appropriate point. An air conditioning system is provided for the operating theatre and ICU with air handling and ducting systems, and for the

administration department with an air-cooled window package. Electric power is supplied from a transformer station (300 kVA) located near the kitchen to each ward through the distribution panelboard and underground cables (except for the overhead wiring to the paediatric ward). The present loading on the distribution panel exceeds the permissible capacity. Lighting fixtures in typical rooms are exposed type fluorescent lights. There is an emergency generator unit (air-cooled generator of 318 kVA) to automatically switch over in case of power failure.

2) Mt. Hagen Hospital

Water is supplied directly from the city water system. Both water pressure and flow rate are adequate for daily use. Hot water is supplied from the solar heaters mounted individually for the operating theatre, X-ray examination, and laundry. Medical and general sewer lines are connected to the sewerage system, and the surface water is connected to the city storm water drainage system. Steam is supplied to the steam steriliser from an electrical boiler specially mounted for the purpose. Medical gases (oxygen and nitrous oxide) are supplied to an appropriate point through the manifold installed at the operating theatre. The operating theatre is air conditioned through a duct system connected to an air handling package. The obstetric ward is heated with an electric heater. Electric power is supplied to each ward from the transformer station (200 kVA) installed in the electrical equipment room through the distribution panelboard. However, the power to the operating theatre and surgical ward is supplied via the psychiatric ward and intermediate ward which are to be demolished and removed, it is necessary to remove and reroute the existing cables to avoid interference with construction. Lighting system in the typical rooms consists of exposed type fluorescent fixtures, and in the operating theatre ceiling mounted covered fluorescent fixtures are used. An air-cooled diesel engine generating unit is provided to automatically switch over in case of power failure.

3) Wewak Hospital

Water is supplied from the city water system. However, the rainwater is still being used. Hot water is provided by a heat exchanger supplied with steam in the kitchen. Steam is supplied from two 5-ton steam boilers only to the kitchen and steam steriliser. Sewer lines are connected directly into to the complete sewerage system. The operating theatre and examination room are air-conditioned through a duct system connected to an air-cooled air conditioning package. The administration department is cooled through air-cooled window package. Electrical system is almost over loaded. The existing electrical poles must be removed and relocated to extend the operating theatre.

(4) Existing Conditions of Medical Equipment

New medical equipment was furnished under 1987 grant aid from Japan mainly to equip the operating theatre. The equipment is effectively being used in a way to fit local conditions. Also, the quality and high reliability of the Japanese products were well appreciated when compared to the conventional equipment made by other countries.

At the present time, the Department of Works (DOW) imports Japanese products, such as spare parts, via Australia. There are some problems in prices and delivery time with this procedure. It was reported that the routing could be changed to obtain materials via Malaysia in the future. Pharmaceuticals and medical supplies are now furnished from the Department of Health (DOH) to each hospital, and maintenance of the equipment is administered by the responsibility of DOW. There exist some problems in the current systems when compared to the systems in Japan. However, the operations and maintenance are satisfactorily administered, and pharmaceuticals and medical supplies are also satisfactorily furnished as required.

It was noticed during our survey that the present status of health services and facilities at Mt. Hagen was worse than that of two other project hospitals at Wewak and Lae. The major medical X-ray units at all three hospitals were made in Japan (1975 models), but these units have reached the retirement age. One at Wewak was extremely deteriorated, and there is no replacement.

1) Lae (Angau Memorial) Hospital

The equipment furnished from Japan in 1987 is actively used at the operating theatre, laboratories, ICU room, and various wards (and beds). It was noted that the equipment is short or deteriorated at other departments. It was also noticed that the emergency treatment, outpatient clinics, and specialist outpatient clinics were not adequately equipped.

There is a medical equipment technical shop responsible for maintenance of all medical equipment in the area within northern shores of the main island of PNG. Spare parts are supplied on request from DOW. Japanese made spare parts are imported via Australia on lead time of two or three months. Although some complaints are filed sometimes, the shop is being operated satisfactorily as a whole.

2) Mt. Hagen Hospital

Medical equipment is short at the most of departments. However, the wards, operating theatres, and laboratories are equipped with the minimum necessary equipment which was furnished under grant aid from Japan in 1987. It was hard to find some equipment in all other departments such as the general outpatients, obstetric, neonates, etc.

Maintenance of the equipment is controlled by the medical equipment technical shop for all the areas of highlands. Pharmaceuticals and medical equipment are supplied through the medical depot in Mt. Hagen City.

3) Wewak Hospital

The equipment is short and deteriorated. The equipment furnished from Japan in 1987 is actively used at the operating theatre, laboratories, and various wards (and beds). X-ray units are extremely deteriorated, and shortage is at issue for the emergency treatment and physiotherapy. Maintenance services are being smoothly provided.

The following table shows the major equipment currently possessed by three project hospitals:

LIST OF EXISTING MEDICAL EQUIPMENT

1) Lae Hospital

Circle O indicates products made in Japan, 1987

Anesthesia unit (major)	3	Operating Theatre	
- ditto - (minor)	1	- ditto -	
Respirator	1	- ditto -	
Dentistry unit	1	Dentistry	○
Ultrasonic scanner	1	Outpatients	○
- ditto -	1	Delivery Ward	○
Electro-surgery unit	3	Operating Theatre	
Defibrillator/cardiac monitor	1	- ditto -	
- ditto -	1	- ditto -	○
- ditto -	1	ICU	
Electrocardiograph	1	Operating Theatre	○
- ditto -	1	Emergency	○
- ditto -	1	ICU	○
- ditto -	1	Ward	○
Electronic stimulator	1	Physiotherapy	
Ultrasound therapy unit	1	- ditto -	
- ditto -	1	- ditto -	○
Infusion pump	2	Ward	○
- ditto -	4	Ward	
Infant monitor	3	Neonate ward	

Defibrillator	1	Operating Theatre	○
- ditto -	1	Not installed yet	○
Ultrasonic cleaning bath	1	Examination Laboratory	○
Blood cell counter (CBC)	1	- ditto -	
Spectrophotometer	2	- ditto -	
Flame photometer	1	- ditto -	
Electronic balance	2	- ditto -	
- ditto -	6	- ditto -	○
Ph meter	1	- ditto -	
Calorimetre	2	- ditto -	
Incubator	1	- ditto -	○
- ditto -	1	Not installed yet	○
Microscope	6	Examination Laboratory	○
Centrifuge	1	- ditto -	
Operating table	2	Operating Theatre	○
Portable operating light	2	- ditto -	○
- ditto -	1	Ward	○
Autoclave	2	Central Supply	
- ditto -	1	Operating Theatre	
- ditto -	1	Examination Laboratory	
- ditto -	2	Operating Theatre	○
X-ray unit	2	X-ray Room	(aged)
Portable X-ray unit	1	- ditto -	(aged)
- ditto -	2	- ditto -	
- ditto -	2	- ditto -	○

(2) Mt. Hagen Hospital Circle ○ indicates products made in Japan, 1987

Anesthetic unit (major)	1	Operating Theatre	
- ditto - (major)	1	- ditto -	(aged)
- ditto - (minor)	2	- ditto -	
- ditto - (minor)	1	- ditto -	(aged)
Respirator	1	- ditto -	
Dentistry unit	1	Dentistry	○
Ultrasound therapy unit	1	Obstetric	○
- ditto -	1	Operating Theatre	○
Electro-surgery unit	2	- ditto -	
Defibrillator/cardiac monitor	1	- ditto -	○
Shaukasten Unit	1	- ditto -	
- ditto -	1	- ditto -	○
Electrocardiograph	4	ICU and Wards	○
Ultrasonic cleaning bath	1	Not installed yet	○
Spectrophotometer	1	Examination Laboratory	
Flame photometer	1	Not installed yet	
Electronic balance	3	- ditto -	○
Incubator	1	Not installed yet	○
Centrifuge	2	Examination Laboratory	
Operating table	2	Operating Theatre	○
Portable operating light	1	- ditto -	○
- ditto -	1	Neonate Ward	○
Autoclave	2	Central Supply	
- ditto -	1	Dentistry	○
- ditto -	1	Operating Theatre	○
- ditto -	1	Examination Laboratory	○
X-ray unit	1	X-ray Room	(aged)
Portable X-ray unit	1	- ditto -	(aged)
- ditto -	1	- ditto -	○
- ditto -	1	- ditto -	○

(3) Wewak Hospital Circle ○ Indicates products made in Japan, 1987

Anesthetic unit	1	Operating Theatre	
Portable anesthetic unit	2	- ditto -	
Respirator	1	- ditto -	
Ultrasonic scanner	1	Unit missing	○
Electro-surgery unit	2	Operating Theatre	
Defibrillator/cardiac monitor	1	ICU	○
- ditto -	1	ICU	
- ditto -	1	Operating Theatre	
Electrocardiograph	3	Ward and ICU	○
ECG monitor	1	Operating Theatre	○
Ultrasonic cleaning bath	1	Not installed yet	○
Electronic balance	2	Examination Laboratory	○
Incubator	1	- ditto -	○
Microscope	2	Not installed yet	○
Operating table	2	Operating Theatre	○
Portable operating light	2	- ditto -	○
Autoclave	2	Central Supply	
- ditto -	1	Examination Laboratory	○
- ditto -	1	- ditto -	○
X-ray Unit	1	X-ray Room	(aged)
Portable X-ray unit	2	- ditto -	(aged) ○
- ditto -	1	Operating Theatre	○

2-5 CONTENTS AND CIRCUMSTANCES OF REQUESTS

2-5-1 Background of Requests for Project

The Government of Papua New Guinea executed plans to expand and strengthen national health services during the period of the First National Health Plan, 1974/78, and achieved the purposes of raising average life expectancy of the population, and reducing the rates of both neonate mortality and infant mortality. However, the disease patterns were not improved during the period of the Plan. Therefore, the Second National Health Plan, 1986/90 has been set up to aim strengthening secondary health services supporting primary health services. In Papua New Guinea the secondary health services are provided in responsibility of Port Moresby General Hospital and 18 hospitals at various levels in local areas. These hospitals have a shortage of space because of an increase in inpatients and outpatients. Meanwhile, most of these hospitals were built in 1950's and 1960's, and have reached the age of retirement.

The Department of Health conducted a field survey of the condition of provincial hospitals in 1986, with close cooperation of specialists from the Government of Australia, to strengthen secondary health services as a major goal of the Second National Health Plan, and prepared the report of "Hospital Planning Survey" to provide necessary information for master plans of strengthening health services at hospitals in local areas. Succeeding to the report, in 1987, the Department prepared the report of "Hospital Services Project" in collaboration of the Asian Development Bank, and prepared a master plan to redevelop provincial hospitals needing emergency repairs, modifications or alterations.

In response to the requests from the Government of Papua New Guinea based on the aforementioned survey reports, various medical equipment and supplies were provided in an aid grant from Japan in 1987 to improve the quality of health services throughout the country. At present, the redevelopment project of Port Moresby General Hospital, 1988/89 is under way as a link of the medical aid grant projects. The

Government of Papua New Guinea selected nine provincial hospitals which needed emergency repairs, modifications or alterations, based on the foregoing site survey reports, and gave the top priority to the three provincial hospitals at Lae, Mt. Hagen and Wewak, and requested the Government of Japan for an aid grant for these three hospitals.

2-5-2 Content of Requests for Project

The content of the requests by the Government of Papua New Guinea for the aid grant, based on the discussions with the site survey team, included the following major items:

(1) Lae Hospital

1) Facilities for Redevelopment

- 1: New Central Building including units of outpatients, pathologic examination, dispensary, and operation.
- 2: On-call staff room
- 3: Connecting passage between two units to combine obstetric/delivery ward and the existing operating theatre

- 2) Medical Equipment and Supplies: Will be furnished within the scope of work of the project.

(2) Mt. Hagen Hospital

1) Facilities for Redevelopment

- 1: Wards: To include paediatric, obstetric (delivery room), special care nursery, ICU, X-ray examination (to be constructed at the site after the existing psychiatric ward and intermediate ward have been demolished).

- 2: Outpatients Unit: New outpatient department will be

constructed at new location, south of the existing outpatients unit, to combine two units of the outpatients and pathologic examination.

3: On-Call Staff Room

2) Medical Equipment: Will be furnished within the scope of work of the project.

(3) Wewak Hospital

1) Facilities for Redevelopment: Operating theatre, special care nursery ward, adult outpatients unit, dispensary, pathologic examination unit, psychiatric ward, physiotherapy unit, and others.

2) Medical Equipment: Will be furnished within the scope of work of the project.

CHAPTER 3
CONTENTS OF THE PROJECT

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3-1 PURPOSES OF PROJECT

The major purposes of the project is to strengthen the present functions of three existing provincial hospitals at Lae, Mt. Hagen and Wewak with grant aid from the Government of Japan as a link of the Second National Health Plan, 1986/90, to extend and strengthen secondary health services.

(1) Lae (Angau Memorial) Hospital

All existing facilities with high-level functions such as outpatients, clinic, examination, operating theatre, and dispensary which are extremely aged and overcrowded, except the paediatric outpatient building constructed in 1988, are to be relocated to and improved in a new central building to be constructed in the open space at south side of the paediatric outpatient building. The project will require that all major functions of the hospital will be relocated without interrupting the operations, and that the present functions of the entire hospital will be upgraded and strengthened upon completion of the relocation plan. The Government of Papua New Guinea (PNG) intends to change services of the existing operating theatres to delivery room. The project will provide new corridor to connect the obstetric ward with the adjoining operating theatres.

(2) Mt. Hagen Hospital

Mt. Hagen Hospital is presently suffering from lack of available wards and from very overcrowded outpatient department. The project proposes to provide for a new maternity and children (MCH) building with improved medical treatment facilities and increased number of beds, constructed in a way to minimise demolition and removal of existing wards. Also, the existing units of examination, dispensary, and specialist clinics which are grossly

inadequate are to be relocated to a new outpatient building in the open space at south side of the existing outpatient building. The functions and efficiency of the whole outpatient department will be much upgraded. Demolition and removal will be limited to the minimum necessary, and the number of beds will be increased to a maximum. The whole outpatient department will be strengthened with a new small outpatient building.

(3) Wewak Hospital

Wewak Hospital is presently suffering from overcrowded and aged facilities making it difficult to respond to the increased demand for health care services. The project proposes to resolve problems arising from lowered efficiencies at various units of outpatients, dispensary, examination, operating theatre affiliate, special care nursery, psychiatric ward, and physiotherapy, with the minimum required expansion of building spaces (building additions) and modification of the interiors.

3-2 EXAMINATION OF CONTENTS OF REQUESTS

3-2-1 Examination of Scope of Project

Each hospital under the project is responsible principally for providing secondary health services which are almost the same at all three hospitals with minor exceptions. The functions to be borne by each hospital are as described below:

(1) Lae (Angau Memorial) Hospital

- 1) To serve as a base hospital in Morobe Province.
- 2) Equipped with a radiotherapy centre and an artificial limbs factory serving the entire country.
- 3) To provide primary health services at Lae and its adjacent areas.
- 4) To provide training and education for medical officers and other medical staff.

(2) Mt. Hagen Hospital

- 1) To serve as a base hospital in Western Highlands Province.
- 2) To provide primary health services at Mt. Hagen and its adjoining areas.
- 3) To provide training and education for medical related personnel.

(3) Wewak Hospital

- 1) To serve as a central hospital in Provinces of East Sepik and West Sepik.
- 2) To provide primary health services at Wewak and its adjoining

areas.

- 3) To provide training and education for medical related personnel.

The aforementioned three hospitals have been used since their construction in 1960's as described in Chapter 2. The facilities are old and deteriorated, and the operational function of each hospital has fallen due to repeated repairs or modifications of parts of buildings and inadequate passages. It is apparent that the hospitals are not able to fully respond to the increased demand for the health services because of lack of the available spaces. It is urgently necessary for each hospital to resolve the lack of space and to restore and improve health service functions.

In order to resolve the present and future problems, it is urgently required to repair or reconstruct old and deteriorated facilities; to modify and improve the obsolete and inefficient facilities; and to provide added spaces. After completion the reconstructed hospitals will be operated and administered in principle by the same medical staff of the present hospitals. If the functions and efficiency are improved as expected by redeveloping, then the new hospitals can be operated and administered without substantial changes in present management systems.

Construction sites, demolition and removal, operations and administration of the three hospitals during construction, interference to construction, and provision of infrastructure are described below by each hospital:

(1) Lae (Angau Memorial) Hospital

The construction site is located in the open space at the south side the paediatric outpatient building. There are no specific facilities to be demolished and removed except small dwelling houses. As there exist two separate access roads for the hospital and for use by the construction contractor, the construction may

be performed without any interruption to the operations of the hospital. Sufficient electrical power and water supply are available for the new buildings and construction work.

(2) Mt. Hagen Hospital

Two old wards exist at the proposed site of new MCH building. These existing wards will be demolished and removed at the responsibility of the counterpart. All inpatients in the existing wards will be transferred to nearby Togoba Hospital during the construction. As the construction site is facing the main public road, the operations of the hospital will not be interfered by the construction. The new outpatient building is to be constructed in the open space south of the existing outpatient department. The size of new building is small and the site is located at the end of the wide access road used by outpatients. Therefore, the construction will not interfere with the operations of the hospital, if construction equipment and materials are delivered and handled properly. Electrical power and water supply are available for the new buildings and construction work.

(3) Wewak Hospital

The redevelopment plan to apply to this hospital is small-scaled. The hospital authority has studied and selected a building to accommodate the existing facilities temporarily during the construction. The relocation is to be performed at the cost and responsibility of the counterpart. The time required for construction is estimated very short, and the construction will be performed in a manner to least inconvenience the hospital. Sufficient electrical power and water supply are available for new buildings and construction work.

3-2-2 Examination of Facilities and Equipment Requested

(1) Examination of Facilities

It was disclosed as a result of site investigation that each hospital under the project encounters individual inherent problems. In addition, the problems to be solved urgently were discussed and confirmed between the Government of PNG and the JICA Study Team. The details of facilities and equipment requested are examined in the following paragraphs.

1) Lae (Angau Memorial) Hospital

Outpatient Department

It is considered advisable to relocate the outpatient department into the New Central Building for the following reasons:

(General Outpatients)

- During our survey it was noticed that many of patients were waiting in the area most of the time. Dozens of the patients were waiting for a turn outside of the building, without sitting, because of the shortage of seating accommodations in the limited floor space.
- Since the Accountant Office (cashier for doctor's fee) is located at the corner of the waiting area, the passage of patients is always confused in the area.
- Screening of patients (patients are screened and given directions for adequate diagnosis and treatment) is performed by two or three nurses (senior nurses called "Sisters") using a small table, and is not being performed smoothly because of the patients crowded in the area.
- Passage for the screened patients (especially the passage leading to the specialist consultation rooms) and the passage leading to the Dispensary, X-ray Department, and Emergency Department are crossing each other. The passage

for the Emergency Department is trespassing the waiting area where patients are crowded, especially at the time of arrival of an emergency patient.

- The sub-waiting area for screened patients is short of necessary space, and all seats are fully occupied by patients. Additional patients and their attendants who are waiting lean against the walls for their turn.

(Specialist Outpatient Clinic)

- At present, five medical officers, including two surgeons, one physician, one eye specialist, and one ENT specialist, come to the hospital about three times a week to provide consultation services at the existing Surgical Department.

A future expansion plan to increase surgeons, and to establish six new specialist clinics to include internal medicine and tuberculosis/leprosy, has been submitted for approval. However, it should be considered to limit the number of new consultation clinics to five, same as existing, in a way to use the existing facility for treatment of tuberculosis/leprosy and by scheduling the use of new clinics with the additional surgeons.

- The scanning equipment at the corner of ENT Clinic is being used daily. Both the passages to the scanning equipment and to the ENT cross each other, and the area is crowded on days the clinic is open.

- The floor area available for the STD Clinic is approximately 38 m². Seven staff members are assigned to this clinic and the room is overflowing with outpatients, from 50 to 100 coming in daily. Also, the traffic flow of patients is complicated, as male and female patients are presently mixed in the clinic.

(Emergency Outpatients)

- The passage line of the existing Emergency Department crosses a corner of the outpatient waiting area and causes confusion in the area when emergency patients are taken in. The department is located at the worst place. The department is now properly functioning with affiliation of an extra room and minor operating theatre. It is, however, preferable to relocate the department into the New Central Building to resolve the problem of traffic flow and improve the functional layout of the operating theatre and surgical department.

Dispensary Department

It is considered desirable to relocate the dispensary into the New Central Building for the following reasons:

- The main passage between the Surgical Department and wards and the Outpatient Department is now being used as a waiting area for the dispensary. Passage lines are confused in the waiting area.
- The floor space of the existing dispensary is limited to only 60m² which includes a separate Pharmacist's Room of about 10m². This space accommodates a staff of eight people, with five more assigned to the supporting bulk store of approximately 45m² (capable of a 3 to 4-week storage). It is desired to make the bulk store large and to upgrade working efficiency.

Examination Department

It is considered desirable to relocate the Examination Laboratories into the New Central Building for the following reasons:

(X-ray Room)

- The corridor is being used as a waiting area. Pathology Laboratory is at the opposite side, across the corridor, where testing equipment is piled up because of the very limited space. Film shelves are also installed in the corridor as the X-ray film storeroom is too small. Because of this the existing corridor is always crowded with patients and equipment and is not suitable for use as a waiting area.
- The existing X-ray Testing Room is full of equipment, and there is a narrow passage of about 50 centimetres wide at the door, reducing efficiency. It is strongly recommended that this room be relocated into the New Central Building along with the relocation of the Outpatient and Operating Departments.

(Pathology Laboratory)

- The existing room is divided into sections of Biochemistry, Haematology, Bacteriology, and Serology with removable partitions. The restricted space is a common problem to all sections. Some equipment is installed in the corridor to save space, and is obstructing traffic. The floor area of each section is limited to about 13m², and working space is mostly occupied with various pieces of equipment forcing technicians (two technicians assigned to each section) to work in a very restricted space.

Operating Department

It is considered desirable to relocate the Operating Department into the New Central Building for the following reasons:

- The existing Operating Department comprises three operating theatres. The interiors of each theatre are kept clean.

The theatres function satisfactorily, but all three rooms are being fully used. Space is short for the staff (about 15 staff assigned) to take a rest. Some of the staff are forced to take a break in the equipment storeroom. The floor area of the existing department is approximately 500m² including the space for Central Supply.

Obstetric Department

- Since the existing obstetric ward is short of delivery beds, the Government of PNG plans to change the neighbouring operating theatres to delivery rooms after completion of the New Central Building. Meanwhile, a request was submitted to the authority for immediate use of the existing operating theatres as delivery rooms prior to alterations. It was, therefore, agreed to reuse the existing operating theatres as presently configured, but provided with a connecting passage between the obstetric ward and operating theatres. This will accelerate smooth health services in the obstetric ward.

On-Call Staff Room

- A special room is not available for this purpose. It is recommended that a new on-call staff room be provided so that staff can quickly respond to emergency activities.

Administrative Department

It is considered necessary that the remaining area of the existing Administrative Department, except the Accountant Office, Public Relations, and Medical Records, be relocated by the Government of PNG to the site where the existing Outpatient Department will be removed.

- A New Accountants Office should be laid out in the area next to the waiting areas to provide smooth services. The Public

Relations should also be laid out in the same area, because frequent contacts with outpatients are expected.

- Medical Records should be laid out at the location convenient for reception of the registered outpatients in the New Central Building.
- The existing General Office has a floor area of approximately 40m² with seven office staff assigned. Paperwork is piled up all over the office floor for shortage of filing cabinets, and the staff sit in the small area among the piles.
- Existing offices for use by the Medical Superintendent and the Hospital Secretary are located in the separate buildings. It is necessary to lay out these offices at reasonably convenient locations and that they be provided with adequate floor area.
- Confusion is mainly caused by shortage of floor spaces. It is, therefore, recommended that the remaining open spaces (the spaces may be altered structurally for reuse) after the existing Outpatient Department is relocated to the New Central Building.

2) Mt. Hagen Hospital

Outpatient Department

It is considered desirable to relocate the Specialist Outpatient Clinics into the New OPD Building for the following reasons:

(Specialist Outpatient Clinics)

- Specialist consultation services are now provided by two

surgeons and two physicians at the existing Outpatient Department. Increase of the medical staff is planned by recruitment of two surgeons and one physician in the future. Provision of four clinics including two additions has been requested. The traffic to the existing clinics at the corner of the Outpatient Department crosses with the passage line of general outpatients, and causes congestion within the department. This congestion will be unquestionably resolved if the clinics are relocated into the New OPD Building.

Dispensary Department

It is considered desirable to relocate the dispensary into the New OPD Building for the following reasons:

- The Dispensary is now located at the ground floor entrance of the Administrative Department. The existing bulk storage space is small, but the dispensary was not found inefficient as reported. However, the existing waiting area is restricted with the available space being only 3 m x 3.5 m. The waiting area is also used as the main entrance to the Administrative Building, causing heavy congestion in the area. It is therefore planned to relocate the Dispensary to the New OPD Building to eliminate heavy congestion within the existing Administrative Building. It was confirmed that the open floor space will be reused by the Medical Equipment Management Department.

Examination Department

It is considered desirable to relocate the facilities into the New MCH Building and New OPD Building for the following reasons:

(X-ray Room)

- The X-ray Room is now located at the Outpatient Department, and is equipped with one mobile and one fixed radiograph unit. The installation of additional radiographic equipment has been requested. If new equipment is installed in the limited space at the existing X-ray Room, the work would be interrupted. Since the additional equipment is expected for use in the obstetric treatment and in the operating theatre, the X-ray Room should be relocated to the New MCH Building.

(Pathology Laboratory)

- The existing laboratory has a floor area of approximately 70m². New grant aid medical equipment was found unpacked, because adequate space is not available for installation. A new laboratory of reasonable size should be provided in the New OPD Building.

Wards

It is considered desirable to relocate the obstetric and paediatric wards into the New MCH Building for the following reasons:

- Since the availability of beds is exceedingly short throughout the hospital, the two existing buildings having the least number of beds, the Intermediate Ward (presently being used as typhoid ward) and the Psychiatric Ward, should be demolished and removed to provide a site for construction of New MCH Building. It was confirmed that 38 patients in the wards may be moved to two wards temporarily built, located in Mt. Hagen Hospital.
- There are seven delivery beds in the existing delivery room. However, there are no facilities to handle abnormal deliveries, and the health services are sometimes

interrupted.

- There are seven cots in the existing Special Care Nursery Room. The request contains a plan to increase the cots to ten from seven. The Special Care Nursery Room should be relocated into the New MCH Building.

ICU Department

- There are three ICU beds in the existing Psychiatric Ward. These beds are not now being used because of lack of adequate instruments and manpower. A prospective ICU specialist is now being trained at Port Moresby General Hospital. The hospital has proposed to increase the health care system (manpower) to use five ICU beds at the peak, and has submitted an application to the central government for approval of the manpower expansion. New MCH Building will be laid out at a location next to the existing Operating Department so that all patients may use the ICU beds.

On-Call Staff Room

- A special room is not available for the purpose. It is recommended that a new on-call staff room be provided to allow quick response to emergency activities.

3) Wewak Hospital

Outpatient Department

It is considered desirable to alter and expand the Outpatient Department for the following reasons:

- Sub-Waiting Area accommodates only two patients. There is only one door from each room and doorways are congested with incoming and outgoing patients, since one way passage is not set up there. The areas around the doorways from the

treatment or consultation rooms are also congested with patients waiting for screening by two Sisters working at a small desk. It is necessary to designate doorways for either egress or ingress and provide a one-way traffic pattern.

- Dozens of patients are always standing in the waiting area.
- The passage line from the Emergency Department is too close to the outpatients waiting area and is complicated with the passage lines of patients from screening or the dispensary.

Dispensary Department

- Bulk storage is short and the medicine is stocked in the Dispensary. The present functions and efficiency would be upgraded if the bulk storage is extended.

Pathology Unit

- Only the Bacteriology laboratory will be provided with a separate room, and two other sections (haematology and biochemical) are accommodated in a single room. It may not be necessary to provide separate rooms to all sections, if each section is clearly divided to upgrade the working efficiency.

Operating Department

- The existing operating theatres are kept clean and were noted to fully function. Affiliated rooms (recovery and change rooms) are small. It was noticed that one end of a bed was jutting out of the recovery room.

Wards

(Special Care Nursery)

- An increase in the number of cots to 15 from 10 has been requested. The premature infants are admitted by the hospital regardless of their place of birth. However, a separate room with seven cots is requested to accommodate all infants delivered outside (some infants could be infected) separately from the infants delivered inside the hospital. Primary plan to extend the east side of the building has been cancelled in consideration of future plan (to extend the Central Supply), and one of the existing rooms (a reserved room) at the Intermediate Ward will be remodeled for the purpose.

(Psychiatric and Physiotherapy)

- Existing building has no ceiling and the inside is affected by high outside temperatures. Most windows are badly damaged. Special finish (iron-barred windows) on exterior walls has been requested.
- Provision of an independent office has been requested to accommodate the relocated refrigerator and kitchen sink from the playing room to prevent them from being damaged by disorderly patients.

(2) Considerations on Structure

1) Lae (Angau Memorial) Hospital

According to the soil investigation report furnished by the Government of PNG, the site had been bombed during World War II and later backfilled with soft soils. If some of the planned foundations hit the backfill, the ground must be reinforced

with adequate materials to a considerable depth. The locations of backfill were not plotted on the records of the soil investigation report. It may be necessary to verify these locations during excavation for foundations.

2) Mt. Hagen Hospital

The proposed site for the New OPD Building is gradually sloped down toward the south. It was noted from the previous records that the areas around the site had been filled with embankment approximately 2 meters high. If the planned foundations are to be constructed on the embankment, it may be necessary to place the bottom of the foundations firmly supported on the bearing layer to prevent the foundations from uneven settlement.

The proposed site for the New MCH Building is located on a slope two to three meters in difference of elevation when measured on centres of the site. Uneven settlement could occur in the area and cause structural concern. The method of constructing on embankment is not encouraged. The area with the sloped ground should be considered for use as a semi-basement for storage purposes.

3) Wewak Hospital

The redevelopment plan includes only alterations or extensions of the existing buildings of wooden construction. Structural considerations, therefore, will be made on the joints between new and old buildings. Existing buildings are constructed of wooden frame and wooden trussed roofs, supported on earthquake resisting walls laid out between spans and along ridge direction. The joints between the old and new buildings must be reinforced as follows:

- To reinforce existing walls with posts or additional walls
- To reinforce with additional beams or trusses where existing walls are removed

- To reuse the existing walls

The slope of new roofs will be more gradual than that of existing roofs to obtain necessary ceiling height.

(3) Considerations on Mechanical and Electrical Systems

1) Private Power Generation

Electrical systems play an important role in maintaining the medical functions which are greatly hampered in a case of outage due to conveniences of the supplier, natural calamity, or security reasons. Private power generation systems are indispensable for operation of the ICU, operating theatres, and other departments in the hospital. In PNG, hospitals are provided with power generating circuits equivalent to 80% of full demand load. The following departments or rooms will be provided with power generating circuits under this redevelopment plan:

ICU, operating theatres, special care nursery rooms, delivery rooms, examination laboratory, and building machine room

2) Telephone System

Telephone system is fully operated at all hospitals. It is recommended that the existing system be extended to the new construction since a new telephone system may not be compatible to the existing system.

3) Airconditioning Systems

Lae Hospital: Airconditioning systems will be provided for Administrative, Operating, Consultation, and Examination Departments. The system for the Administrative and Consultation Departments will be fan coil units, and for Examination and Operating Departments by a packaged

airconditioning system with ducts, in consideration of duration of usage and maintenance cost.

Mt. Hagen: The ambient temperature lowers to 10° Celsius at night. A heating system is required. The heating system will be provided mainly for inpatient wards. Existing heating system is electrically operated, but many of the heaters (decentralised system) are inoperable due to lack of maintenance. New system will be centralised so that the system can be controlled at one designated point. Fan convectors and a hot water boiler will be provided.

4) Medical Gas Supply System

The medical gas supply system will be centralised at larger hospitals in consideration of maintenance and ease of handling.

(4) Considerations on Medical Equipment

Medical equipment will be provided, except removable and reusable equipment, and will be supplied based on the data collected during the basic design survey. Medical equipment supply schedule will be planned to supply basic equipment which can be maintained, including necessary spare parts and consumables, in a manner to ensure proper harmony with the existing equipment.

3-3 OUTLINE OF PROJECTS

3-3-1 Executing Organisations and Project Plans

(1) Lae (Angau Memorial) Hospital

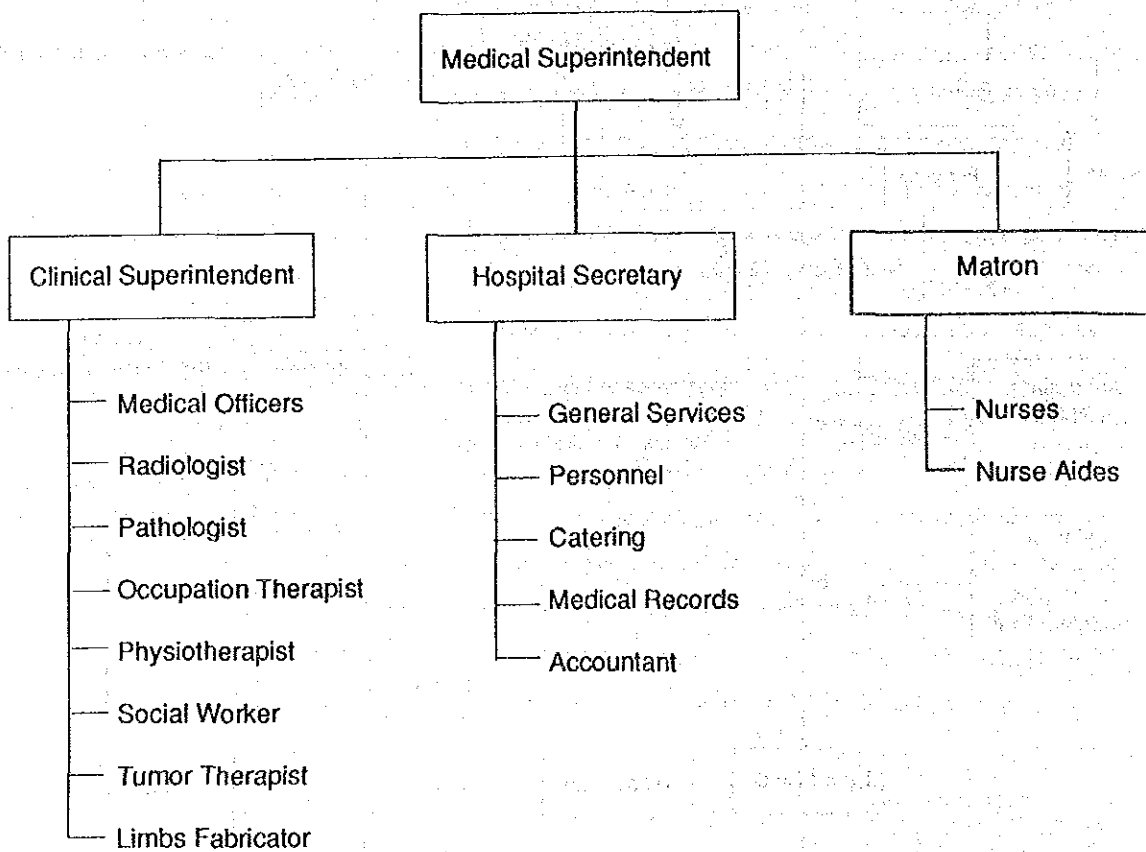
1: Executing Organisation

a) Organisation

Lae Hospital is a national base hospital under the direct control of the Secondary Health Services Division of the Department of Health. The hospital is to be operated and administered after completion of its redevelopment by the current organisation as shown on Fig. 2-5 in Chapter 2-4. This hospital is the only national hospital among many other provincial hospitals. Therefore, the operations and administration are similar to those of Port Moresby General Hospital under the direct control of the Department of Health. Acquisition, operation and maintenance of facilities, equipment are tasked to the Department of Works (DOW). The blood bank is operated and administered by the Red Cross, and the dispensary is administered by the Pharmaceutical Services Section of the Department of Health. The operational relationship between the hospital and the aforementioned agencies are illustrated in Fig. 3-1.

The Medical Superintendent is responsible for all aspects of operations and administration of Lae Hospital as described in the organisation chart. There are three independent departments of Hospital Secretary, Clinical Superintendent and Matron under the Medical Superintendent. These relationship is illustrated in Fig. 3-2.

FIG. 3-2 ORGANISATION OF STAFFING



(Source: Lae Hospital)

b) Staff: Table 3-1 shows the positions and number of staff of Lae Hospital as of 1988:

TABLE 3-1 STAFF AT LAE HOSPITAL, 1988

Department	Position	Number of Personnel
Medical Officers	Government employed	24
	Church employed	1
	(Sub Total)	25
Nursing Staff	Matron	1
	Deputy Matron	1
	Nursing Officers	146
	Nurse Aides	133
	Others	9
	(Sub Total)	290
Dentistry Paramedical Staff	Dental Officers	1
	Medical Technologists	9
	Radiographers	7
	Physiotherapists	2
	Occupational Therapists	2
	Social Worker	1
	(Sub Total)	22
Administrative Staff	Staff	194
Total Personnel		532

(Source: Lae Hospital)

In addition to the regular hospital staff listed above, maintenance personnel include one engineer, two painters, three carpenters and two plumbers who are stationed at the hospital, despatched from the Paramedical Engineering Section under DOW. The dispensary is operated and administered by the Pharmaceuticals Procurement Section, and six personnel including one pharmacist, three dispensers, and two storage men are despatched and stationed at the hospital.

2: Project Plans

Health services at Lae Hospital are provided at various units as shown on Fig. 2-5. The activities are to be continued with current staff and organisation after completion of the redevelopment plan. The following units are affected somewhat with the redevelopment project:

a) New Central Ward

- 1: General Outpatients Unit: Outpatients received at the reception are directed to an appropriate clinic by the sister receptionist for consultation and necessary treatment. Normal consultation hours start at 8:00 a.m. and end at 4:00 p.m., but 24-hour services are provided for emergencies. Medical officers, nursing officer, and paramedical technologists are on duty on three 8-hour working shifts.
- 2: Emergency Department: The emergency department provides for general medical services after normal hours and emergency treatment at the minor operating theatre. General services after hours are provided at the same location in the general outpatients unit. Emergency treatment will be provided for casualties at the emergency minor operating theatre.
- 3: Specialist Outpatients Unit: All patients who are diagnosed as requiring specialist consultation are referred to this unit to consult the appropriate specialist on appointment. There are five specialist units including surgery, internal medicine, ophthalmology, ENT and STD (separate unit for male and female) at Lae Hospital.

4: Dispensary: Medicines are dispensed for both child and adult patients at the dispensary located in the new central ward.

5: X-ray Examination Unit: Three X-ray rooms will be provided to take general radiographs using basic X-ray equipment.

6: Operating Theatre: One operating theatre will be provided under the project in addition to the existing three theatres to ensure redundant services.

b) Connecting Corridor

A new connecting corridor will be constructed between the existing surgical department and birth-related department. The new connecting corridor will enhance these two existing departments by providing a flow of traffic, and make it possible to utilise all these facilities for birth-related services.

(2) Mt. Hagen Hospital

1: Executing Organisation

a) Organisation

Mt. Hagen is a provincial base hospital under the direct control of the Provincial Hospital Section (see Fig. 2-2) in the Secondary Health Services Division of the Department of Health as shown on Fig. 2-3, and the hospital is to be operated and administered after completion of its redevelopment by the current organisation and staff as shown on Fig. 2-6.

Acquisition and maintenance of facilities, equipment and supplies are tasked to DOW. The blood bank is operated and

administered by the Red Cross, and the dispensary is administered by the Pharmaceutical Services Section of the Department of Health.

This hospital is relatively small-scaled and is not clearly organised as shown on Fig. 3-2, and divided into the three distinct departments of clinical specialists, administration, and nursing staff. All units except the administration and nursing staff are under direct control of the medical superintendent. However, the current organisation will be reorganised in future similarly to that of Lae Hospital to ensure proper operations and administration.

- b) Staff: As of 1988, there were 14 medical officers, 338 nursing staff, eight medical technicians, and 69 administrative staff at Mt. Hagen Hospital as described below:

TABLE 3-2 STAFF AT MT. HAGEN, 1988

	Government Employed	Locally Employed
Administrative Staff	3	4
Accounting and Finance	1	2
Regional Health Services	1	2
Medical Records	1	3
Catering Service	4	6
Laundry Service	-	5
Transport Service	1	7
Security Service	-	12
Maintenance	3	-
Sanitation	1	13
TOTAL	15	54

(Source: Mt. Hagen Hospital)

Nursing staff are assigned to various sections as listed in Table 3-3 below.

TABLE 3-3 NURSING STAFF AT MT. HAGEN HOSPITAL

Assignment	Matron	Sr. Sister	Deputy Matron	Sr. Nurse	Nurse	Nursing Aides	Admin Staff	Orderlies
Nursing Management	2	4						
Paediatrics			2	2	14	14	2	2
Internal Medicine			2	2	11	10	2	2
Surgery			2	2	14	16	2	2
Parturition			1	1	5	5	1	1
Gynaecology			1	1	4	5	1	1
Delivery			1	1	5	5	1	1
Special Care Nursery			1	1	4	4	1	1
Intermediate Ward			1	1	4	7	4	1
ICU			1	1	11	8		
Psychiatric Ward			1	1	2	4	1	
OPD			1	1	8	12		1
COPD			1	1	7	11		1
Child Day Care Nursing				1		1		
Consulting			1		2	4		1
Post Partum Consulting			1		1	2		
Blood Bank			1	1	2			1
Operating Theatre			1	1	5	9		1
Central Supply				1		12		
Nutrition Unit				1		2		
Typhos Patients Ward			1	1	4	7	1	1
Isolation Ward			1	1	4	8	1	1
TOTAL	2	4	21	21	106	148	17	19

There are 4 assistants each assigned at OPD and Operating Theatre in addition to the above listed, aggregating to 338 staff members.

Medical officers are presently assigned as follows:

Adult Outpatients	1
Administration	1
Dentistry	1
Obstetrics and Delivery	3
Paediatric	3
Internal Medicine	2
Surgery	3
Total	14

2: Project Plans:

Health service activities are provided by the departments as shown on Fig. 2-6 at Mt. Hagen Hospital, and the activities will be continued by the currently assigned organisation and staff after completion of the redevelopment project.

Health services in sectors of outpatient, emergency, and nursing care are available throughout 24 hours in PNG. The following units are somewhat affected by the construction work:

a) New MCH Building

Various units including obstetric beds, special care nursery, delivery room, and ICU and its affiliate are to be accommodated in this new ward. The functions are enhanced when compared to the current loose alignment, and organisational and improved maternity health services will be provided upon completion. New obstetric wards and paediatric wards will be aligned based on the Nightingale ward system to utilise the limited nursing staff most effectively.

b) New OPD Building

Four major units including dispensary, pathology examination, specialist clinics, and on-call staff room will be accommodated in new OPD building.

- The existing dispensary is located at a remote place in the lower floor of the administration unit apart from the outpatient building, and is inconvenient and crowded. Under the new project, the dispensary would be located inside the main outpatient building, and its space and convenience will be much improved.

• Four specialist clinics will be also located in the main ward with sufficient room space.

(3) Wewak Hospital

1: Executing Organisation

a) Organisation: Wewak Hospital is a provincial hospital at Level One, but is acknowledged as a substantial general hospital. The hospital is under the direct control of the Health Services Superintendent of East Sepik Province, and is indirectly under the control of the Provincial Hospital Section (see Fig. 2-3) in the Secondary Health Services Division of the Department of Health. The hospital will be operated and administered after completion of redevelopment by the current organisation and staff as shown on Fig. 2-7.

Acquisition and maintenance of facilities, equipment and supplies are tasked to DOW. The blood bank is operated and administered by the Red Cross, and the dispensary is administered by the Pharmaceutical Services Section of the Department of Health.

This hospital is relatively small-scaled and is not clearly organised as shown on Fig. 3-2, and divided into three distinctive departments of the clinical specialists, administration and nursing staff. All units except the administration and nursing staff are under direct control of the medical superintendent, as well as Mt. Hagen Hospital. However, the current organisation will be reorganised in future similarly to that of Lae Hospital to ensure proper operations and administration.

b) Staff

As of 1988, there were six medical officers, 139 nursing staff, three paramedical technologists, and 11