STUDY REPORT ON THE PROJECT FOR IMPROVEMENT OF PRIMARY HEALTH CARE IN LUSAKA IN THE REPUBLIC OF ZAMBIA

February 1995

Japan International Cooperation Agency

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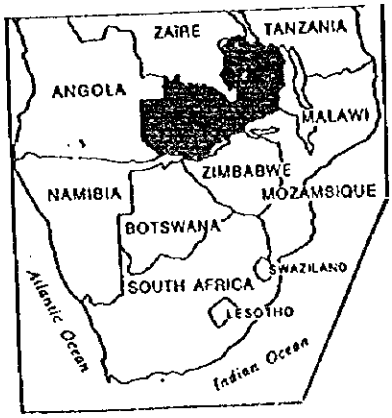
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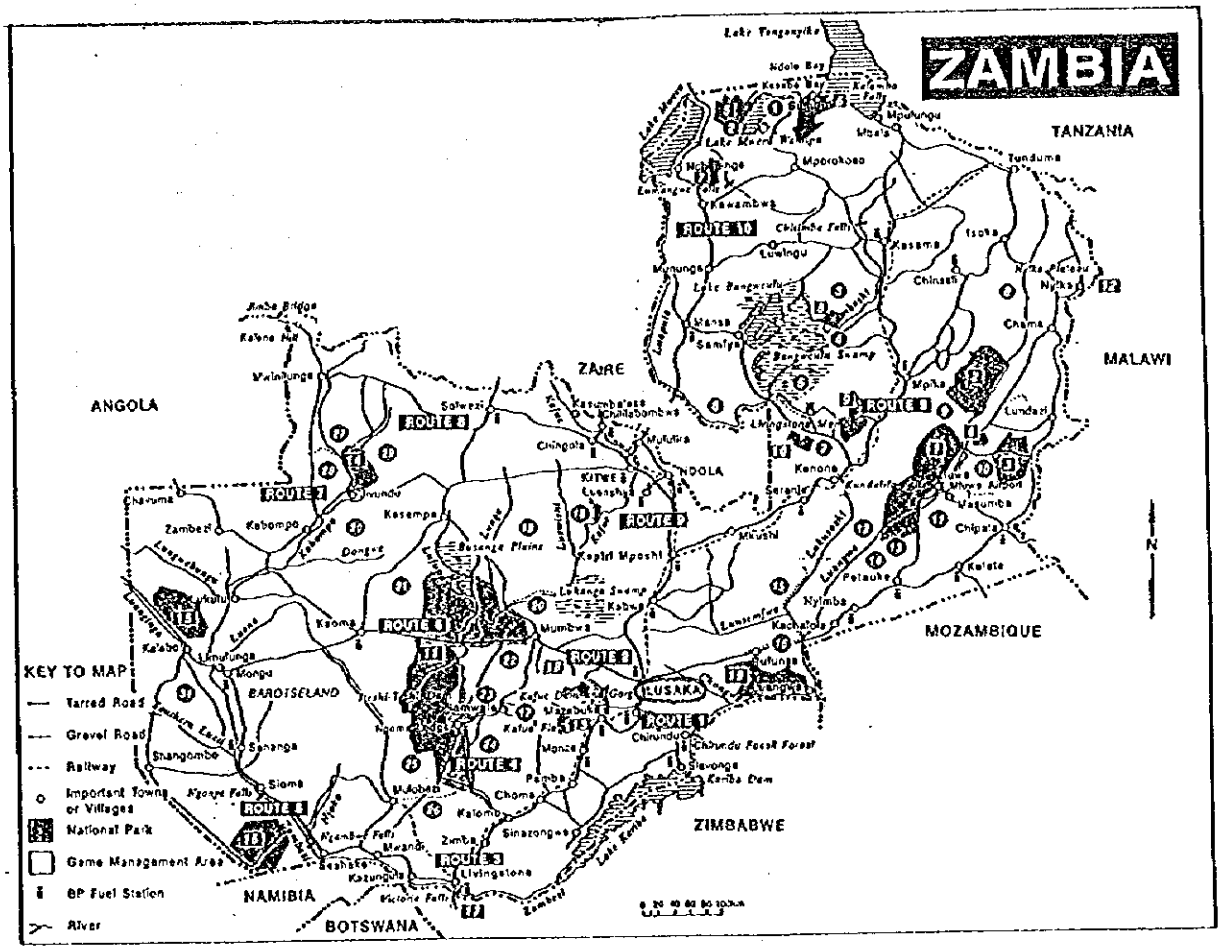
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ROUTE III
ROUTE IV
KEY TO MAP
Tarred Road
Gravel Road
Railway
Important Towns or Villages
National Park
Game Management Area
BP Fuel Station
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Chapter 1 Background of the Project

1. Background and Contents of the Request

① Background of the Request

1) National Land and Natural Conditions

The Republic of Zambia (hereinafter referred to as "Zambia"), situated between Long. 9° - 18° S. and Lat. 23° - 34° E., is a landlocked country in south-central Africa surrounded by Angola, Zaire, Malawi, Mozambique, Zimbabwe and Botswana. The national land area of Zambia is 753,000 km², or roughly twice that of Japan. Except for the low ground around the basins of the Zambezi River and Luangwa River, the country is located on high rolling plateaux with an altitude ranging from 1,000 m to 1,350 m. The altitude makes the potentially tropical climate relatively moderate. The climate is broadly divided into the dry season lasting from May to November and the rainy season lasting from December to April, and the annual rainfall is 800 mm and 1,400 mm in the southern and northern parts of the country respectively.

The population of Zambia stood at approximately 8,300,000 in 1992. Zambia is a multi-tribal state with roughly 73 tribes possessing different languages and customs, however, following independence in 1964, English has been adopted as the official language.

2) National Economy

Since independence, the economy of Zambia has continued to be monocultural with a heavy reliance on the production of copper, which dominates 90% of the country's exports and 20% of the GDP. However, the fall in the level of copper production brought about by its low price since the mid-1970s, the difficulty in exporting due to the civil wars in surrounding countries, the droughts at the start of the 1980s and the increased costs of mining, has been a damaging blow to the economy, and domestic problems such as a large fiscal deficit, rising inflation and growing unemployment, together with external problems such as an international balance of payments deficit and an increasing foreign cumulative debt have become apparent.

In an attempt to counter these problems, the country changed over from a socialist controlled and managed economy and commenced a structural adjustment plan led by the IMF from 1983. Then in 1987, following the securing of a domestic political system, the Government of Zambia compiled its own economic rehabilitation plan in place of the structural adjustment plan. However, this failed to improve the poor showing of the national economy and so in 1989, it was agreed

to adopt an economic structural adjustment plan in consultations with the IMF and World Bank, and structural adjustments are currently being implemented.

In October 1991, the country moved over to a multiple party democratic system, and the single party dictatorship, which had continued ever since independence, collapsed to be replaced by a new administration. Currently, development plans are being implemented under the Public Investment Plan 1993-95, which was compiled in 1993, and the Economic and Financial Policy Framework, which was constructed with the cooperation of the IMF and the World Bank. The investment plan is being implemented with particular emphasis being placed on the health care policies of ① taking countermeasures against infectious diseases, ② expanding preventive and primary health care, and ③ improving the water supply and sanitation.

3) Outline of the Sector

The Government of Zambia, as part of its National Strategic Health Plan (1995-1999), is advancing a plan which treats the improvement of the primary health care system as a priority issue. The plan includes measures ranging from education in domestic medicine and environmental sanitation, to plans for the expansion of urban health centers (UHC) which act as primary health care centers, and the improvement of facilities and equipment at the university teaching hospital (UTH) to enable it to act as a referral hospital.

The estimated population of Zambia in 1992 was 8,300,000 with an annual rate of increase of 3.3%. Around 1,300,000 or 16% of the country's population is concentrated in and around the capital Lusaka, and this trend of concentration to the capital is growing even more stronger. The average life expectancy in Zambia is 56 years, which is roughly the same as in other African countries, and although the infant mortality rate has been falling, it still remains high at 107 per 1,000. Moreover, as is the case with other developing nations, patients suffering from diseases of the respiratory system, infections, parasite diseases and diseases of the digestive system are common.

As a result of improvements made to health care facilities in Zambia since independence, the number of hospitals and beds in health centers roughly doubled between 1964 and 1990, and approximately 75% of the population is now living within 12 km or less from a health care facility. However, the number of health care facilities is still insufficient, and the system still does not allow all citizens to receive fair and equal medical examination and treatment. The following tables indicate the health care indices and number of health care workers for reference purposes.

Table 1 Health Care Indices in the Republic of Zambia

Rate of population increase	3.28%
Birth rate	4.95%
Infant mortality rate	107 per 1000
Death rate of pregnant women and women in labor	200 per 10000
Average life expectancy	Female 57.5 years
	Male 55.4 years

Source: National Strategic Health Plan 1995-1999 (Ministry of Health)

Table 2 Health Care Workers in the Republic of Zambia

	Total (whole country)	University Teaching Hospital	Urban Health Centers (23 institutions)
Doctors	508	184	8
Clinical officers	1,372	61	44
Registered nurses and midwives	2,307	852	84
General nurses and midwives	6,309		457
Laboratory Technician and assistants	300	36	14
Others	962	1,919	144
Total	11,758	3,052	751

Source: Application Form for Japan's Grant Aid

4) Background of the Project

In Lusaka City, the referral system exist between the urban health centers (UHC), which act as primary health care centers, and the university teaching hospital (UTH). Currently, approximately one-fifth of the UTH's pediatric patients have been referred from the UHC, and regarding the maternity department, in emergency cases and cases requiring caesarean section etc., ambulances are called for by wireless from the nine UHC possessing delivery centers, and all such patients are carried to the UTH.

However, although the UHC possess an adequate primary health care setup in terms of necessary staff, they do not possess the appropriate equipment necessary for providing sufficient

diagnosis and treatment for their patients. Moreover, of the 21 UHC in Lusaka, only nine possess clinical laboratories, and the fact that there is no equipment for HIV test and tuberculosis investigations etc. causes to the difficulty of preventive and primary health care and is contributing the increasing number of patients. Furthermore, UHC can not provide appropriate treatment for the increasing patients and they are sent to the UTH finally.

As a result of this situation, the UTH has no choice but to cover the primary health care which is essentially the responsibility of the UHC. As a result, the UTH becomes very congested, and patients who live far away from the UTH have to travel long distance to receive treatment there. Furthermore, the UTH is unable to prepare a system for concentrating on complicated health care, which is its original function, and it is lacking in the equipment that it should possess as a high level health care institution. It can thus be seen that a referral system for health care services is yet to be established, and that the system that does exist is not functioning properly.

In view of this situation, the Government of Zambia compiled the Project for the Improvement of Primary Health Care in Lusaka, with the aims to achieve the proper function of the primary health care system and referral system, and requested grant aid assistance to the Government of Japan for the implementation of the Project.

② Contents of the Request

The Government of Zambia has requested the procurement of primary health care equipment for the 21 UHC, which are the public health care facilities of Lusaka City, and the pediatric section, maternity section and maintenance section of the UTH, which is the sole general hospital within the city. The major items of equipment that have been requested for the UHC and UTH are as follows.

Requested Items

Equipment	Specifications and Contents	Quantity
1. UHC		
Autoclave	For two 18 cm casts	29
Centrifuge	Table-top type, 3,000-3,500 rpm	7
Photoelectric calorimeter	Glass filter 420, 470, 530, 620, 660 nm, meter type	8
Refrigerator	Min. 600 l, -30 ℃, stainless steel	8
Infant incubator (portable)	Portable type, both AC and DC possible	9
Delivery lithotomy bed	Manual (vertical movement)	17 sets
2. UTH		
Ambulance	4WD, stretcher (with wheels)	2
X-ray machine (portable)	100 KVA, portable type	1
Electrocardiograph	3 ch	1
Phototherapy unit	Leaning type	4
Vehicle for rounds	4WD van for carrying seven or more	2
Infant incubator	Servo control type	2
Infant incubator (portable)	Portable type, stand type with manual control	2
Autoclave	For three 27 cm round casts	3
Ultrasound scanning machine	For maternity section, with two probes	1
Fetal heart monitor	Heartbeat display range: 50-210/minute	2
Electrosurgical unit	To allow incision, coagulation, mixing and dipoling	3
Anesthetic machine	With safety device for low oxygen diseases, continuous type with 30% oxygen concentration	1
Operating table	Hydraulic pump, 75-100 cm (H)	2
Infant warmer	With resuscitation machine	1
Tool instrument set	23-piece, tool set etc.	1 set
Tool lifter	4WD	1

Chapter 2 Contents of the Project

1. Objectives of the Project

By replenishing the equipment of the UHC and UTH, the Project aims to improve the health care services in Lusaka City, and also to consolidate the city's referral system which is currently not functioning effectively.

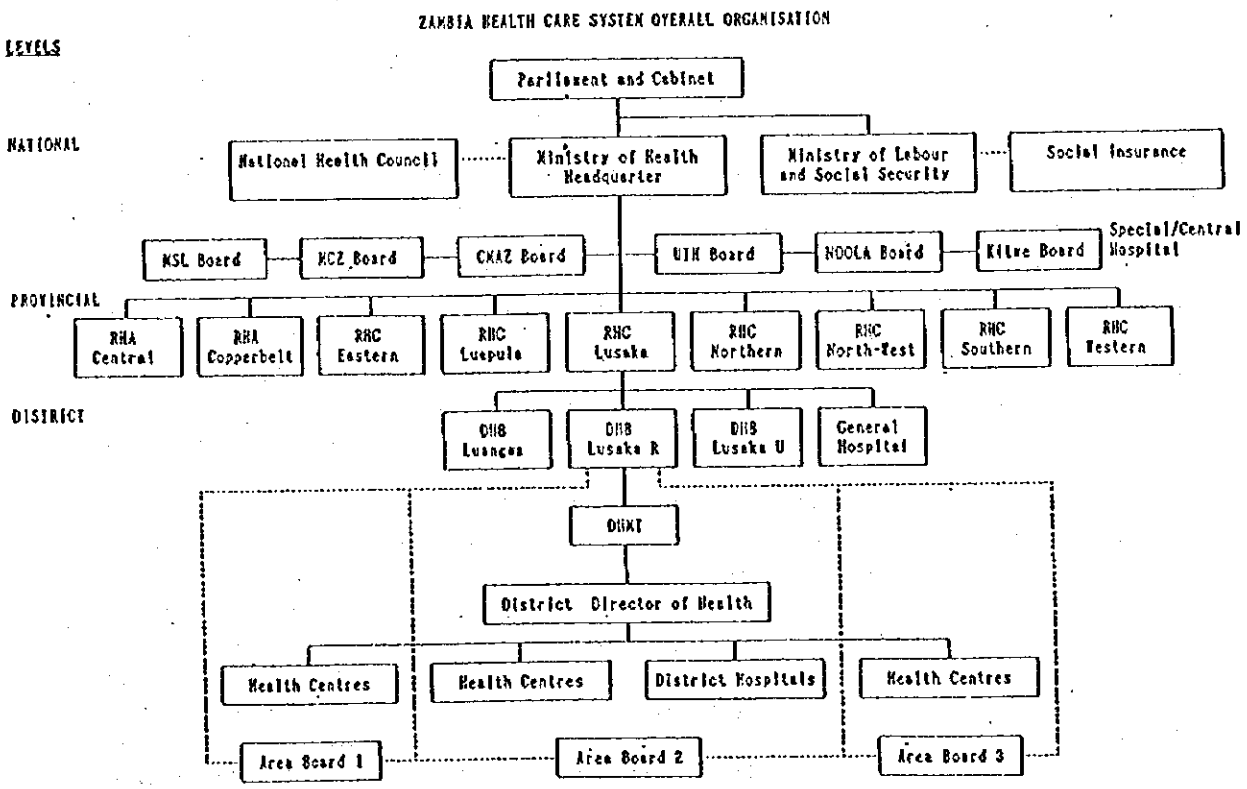
2. Outline of the Project

① Implementing Agencies and Operating Setup

1) Main agency: the Ministry of Health

2) Operating agencies:
The Lusaka City Health Department is responsible for the operation of the UHC, and the Hospital Management Division is for the UTH. The organizational structure of the health care service in Zambia is as illustrated in Figure 1.

Figure 1 Zambia Health Care System Overall Organization



② Maintenance Plan

The budget of the Ministry of Health, which is the implementing agency for the Project, is as indicated in the following table.

(Unit: 1000 kwacha)

	1989	1990	1991
1. Personnel emoluments	196,768	332,164	1,227,781
2. Recurrent departmental charges	323,380	733,435	933,983
3. Grants and other payments hospitals	204,341	584,764	915,205
4. Capital expenditure	135,966	185,772	485,324
5. Loans and investments	0	10,000	50,000
Total	860,455	1,846,135	3,612,293

An electrocardiograph and ultrasound scanning machine, for which expendable items (paper and paste) are needed, are included among the equipment to be procured to the UTH, however, maintenance costs for these shall be paid for from investigation charges collected from patients.

3. Design Concept

The conditions for selection of the equipment to be procured are that the equipment shall be necessary for the basic health care activities of the facilities which are related to the referral system in Lusaka, that the staff of the target facilities shall be able to use the equipment in technical terms, and that the equipment shall only require simple maintenance. Moreover, it has been decided not to renew existing equipment that is no longer useful, and to only provide items for which additional procurement is necessary.

Regarding the UHC, it has been decided to provide equipment for general examination and treatment, investigation equipment, medical checkup equipment and delivery equipment. Regarding the UTH, the pediatric section shall be provided with equipment ranging from that for primary examinations and treatment to a portable X-ray machine and electrocardiograph etc. for inpatients, and the maternity section shall be provided with primary examination and treatment equipment and also equipment for the new operating theater. The maintenance section of the UTH shall be provided with repair tools and equipment to be used in the maintenance training of health care staff. As well as this, an ambulance and vehicle for making rounds to the UHC shall be procured for the consolidation of the referral system.

1.3 MCH (18 institutions)

No.	Equipment	Specifications	Quantity
1	Examining and treatment set	22-piece, tonometer etc.	19 sets
2	Examination table	Back leaning type with square stainless pipes	14
3	Boiling sterilizer	For 36 cm	19
4	Refrigerator	Min. 300 l	11
5	Obstetric examining table	With thigh rests and forceps holder	13
6	Stainless instrument and cart set	6-piece, standing block etc.	19 sets
7	Instrument cabinet	Stainless, 900 (W)	44

1.4 Delivery Centers (9 institutions)

No.	Equipment	Specifications	Quantity
1	Examining and treatment set	21-piece, tonometer etc.	9 sets
2	Suction unit	Hand-carried type	8
3	Foot operated suction unit	Foot operated	14
4	Boiling sterilizer	For 36 cm	6
5	Refrigerator	Minimum 600 l, -30 ℃, stainless steel	8
6	Refrigerator	Min. 300 l	4
7	Autoclave	Table-top type, for two round 18 cm casts	9
8	Infant incubator (for transfer)	Portable type, both AC and DC possible	9
9	Stretcher	Removable stretcher type	9
10	Wheelchair	Folding type	6
11	Stainless instrument and cart set	10-piece, poultice can etc.	9
12	Delivery lithotomy bed	Manual (vertical movement)	17 sets
13	Instrument cabinet	Stainless, 900 (W)	22

4. Basic Design

The main specifications of the requested equipment are as follows.

1. Urban Health Centers

1.1 O.P.D Section (21 institutions)

No.	Equipment	Specifications	Quantity
1	Examining and treatment set	38-piece, diagnosis set etc.	21 sets
2	Sterilizer	Type that can sterilize syringes and needles	110
3	Suction unit	Hand-carried type	32
4	Foot operated suction unit	Foot operated	45
5	Examination table	Back leaning type with square stainless pipes	36
6	Bed	Extending type	74
7	Mattress	Covered with vinyl leather, min. thickness 100 mm	76
8	Screens	Folding type (3 screens)	39
9	Wheelchair	Folding type	31
10	Refrigerator	Min. capacity 300 l	24
11	Autoclave	For two 18 cm casts	20
12	Stainless instrument and cart set	12-piece, pus-basin set etc.	21 sets
13	Instrument cabinet	Stainless, 900 (W)	46

1.2 Laboratories (9 institutions)

No.	Equipment	Specifications	Quantity
1	Microscope	Double lens with built in halogen lamp	7
2	Centrifuge	Table-top type, 3,000-3,500 rpm	7
3	Mini rotor	20-120 rpm	4
4	Laboratory instrument set	29-piece, red cell sinking speed measurer etc.	9 sets
5	Balance	Min. 300 g, reciprocal sensibility 1 mg	9
6	Refrigerator	Min. capacity 30 Ml	7
7	Hot air drying oven	40-260 ℃, analog type	3
8	Photoelectric calorimeter	Glass filter 420, 470, 530, 620, 660 nm, meter type	8

2. University teaching Hospital

2.1 Pediatric Ward Section

No.	Equipment	Specifications	Quantity
1	Examining and treatment set	16-piece, medicine cart etc.	1 set
2	Instrument cabinet	Stainless, 900 (W)	8
3	Stretcher	Removable stretcher type	4
4	Filing cabinet	B4, four level	5
5	Refrigerator	Min. 300 l	2
6	Suction unit	Bottles (one 3,000 cc and 500 cc each), portable	6
7	Ambulance	4WD, stretcher (with wheels)	1
8	Portable X-ray machine	100 KVA, portable type	1
9	Electrocardiograph	3 ch	1
10	Film illuminator	Portable, for 4 films, semi-cut	2
11	Film illuminator	Wall type, for 2 films, semi-cut	5
12	Bed	Crank bed	8
13	Mattress	Covered with vinyl leather, min. thickness 100 mm	8
14	Oxygen tent	Folding type, transparent acryl resin	3
15	Phototherapy unit	Leaning type	4
16	Medical record carrier	For 60 B4 records	4
17	Station wagon	4WD van for carrying seven or more	1

2.2 Maternity Ward Section

No.	Equipment	Specifications	Quantity
1	Examining and treatment set	7-piece set, umbilical chord scissors etc.	1 set
2	Delivery lithotomy bed	Manual type (vertical movement)	16 sets
3	Electrical vacuum extractor	Suction pressure: 0-750 mmHg	2
4	Infant incubator	Servo control type	2
5	Infant incubator (for transfer)	Portable type, stand type with manual control	2
6	Autoclave	For three 27 cm round casts	3
7	Ultrasound scanning machine	For maternity section, with two probes	1
8	Fetal heart monitor	Heartbeat display range: 50-210/minute	2
9	Suction unit	Two 3,000 cc bottles, portable type	4
10	Stainless instrument and cart set	6-piece set, was basin etc.	1 set
11	Electrosurgical unit	To allow incision, coagulation, mixing and dipoling	3
12	Air conditioner and exhaust fan	Min air conditioning 140 m3 (4.6 KW)	3
13	Ambulance	4WD, stretcher (with wheels)	1
14	Anesthetic machine	With safety device for low oxygen diseases, continuous type with 30% oxygen concentration	1
15	Operating table	Hydraulic pump, 75-100 cm (H)	2
16	Station wagon	4WD van for carrying seven or more	1
17	Caesarean section instrument set	31-piece, surgical scissors etc.	3 sets
18	Infant warmer	With resuscitation machine	1

2.3 Maintenance Section

No.	Equipment	Specifications	Quantity
1	Tool instrument set	23-piece, tool instrument set	1 set
2	Industrial tool set	65-piece set, monkey wrench etc.	1 set
3	Solder eater	Min. 100 MΩ, 300° - 400°	2
4	Ratchet wrench	660 mm	1
5	Handy compressors	Min. 0.4 KW	1
6	Welding machine and transformer set	150 A, with welding bench	1 set
7	Electric tools	13 mm	1
8	Tools room unit set	8-piece set, with double side opening box	1 set
9	Work desk set	3,000 (W) x 750 (D), wood, 5-piece	1 set
10	Oscilloscope	DC-40 MHz, double developing	2
11	Electricity stabilizer	36 V/3 A	2
12	Frequency counter	80 MHz - 1.3 GHz	2
13	Single phase power slide transformers	Single phase, 3 KVA, 5 plug sockets	2
14	Drafter sets	5-piece, drafter etc.	1 set
15	Map cases	A2, with base	1
16	Stepladder sets	Min. 90, 200, aluminum	1 set
17	Haulage vehicle	4WD vehicle	1
18	Conference table set	Folding type, 1,800x1,600 mm	1 set
19	Locker	For 4 people	2
20	Desk	JIS No. 2, with foot rest	2
21	Desk	JIS No. 5. with foot rest	10
22	Chair	With back and wheels	10
23	Cabinet set	1,760 (W), glass and steel doors, with base	2 sets
24	Chair	With elbow rest, back and wheels	2
25	Black board	1,800 mm x 1,900 mm. stand type	1
26	Copier	Fixed, indirect statoelectric type, B5, A4, B4, A3	1
27	Video camera	PAL, 8 mm, handy type	1
28	Lifter	500 kg	1

Chapter 3 Project Evaluation and Recommendation

1. Project Effect

In the Project,the improvement of the health care equipment in the UHC and UTH is to be achieved which are currently unable to perform sufficient activities due to lack of such equipment, and it is expected that this will result in the following effects.

① The UHC will be able to fulfill their originally designed function of providing primary health care, and patients currently attending the UTH will be able to receive treatment at the UHC.

② As a result of ①, the referral system existing between the UHC and UTH will become functional.

③ As a result of ① and ②, the UTH will be relieved of the added responsibility of primary health care and be able to concentrate on high level care in its role as a referral hospital, thus resulting in a strengthening of the health care system throughout the whole of Zambia.

④ Through the introduction of necessary repair tools and instruments in the maintenance section of the UTH, the maintenance setup for equipment and instruments in both the UTH and the UHC will be improved.

2. Recommendation

In the project, the equipment are to be procured for each UHC and UTH, however, it is necessary to encourage the thorough management of the equipment and instruments. Furthermore, the Ministry of Health needs to educate the citizens to understand the health care system in which primary health care operates in UHC and patients will be send to the UTH only when necessary in order to strengthen the functions of the referral system.

With the equipment procured in the Project, strengthening of the function of UHC to take full responsibility for providing primary health care services, will help the UTH to place emphasis on the acceptance of referred patients which is its original role to play in and to function more efficiently. Furthermore, it is considered that by training large numbers of health care staff such as clinical officers at the UTH and then assigning them to primary health care facilities such as UHC, a major contribution can be made to improve health care services in Lusaka.

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