

**MINISTRY OF HEALTH
REPUBLIC OF ALBANIA**

**BASIC DESIGN STUDY
ON
THE PROJECT
FOR
THE IMPROVEMENT
OF
MEDICAL EQUIPMENT
FOR
THE PEDIATRIC HOSPITAL "MOTHER TERESA"
OF
UNIVERSITY CENTER OF TIRANA
IN
THE REPUBLIC OF ALBANIA**

NOVEMBER 2000

**JAPAN INTERNATIONAL COOPERATION AGENCY
SYSTEM SCIENCE CONSULTANTS INC.**

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PREFACE

In response to a request from the Government of the Republic of Albania, the Government of Japan decided to conduct a basic design study on the Project for the Improvement of Medical Equipment for the Pediatric Hospital "Mother Teresa" of University Center of Tirana and entrusted the study to the Japan International Cooperation Agency (JICA).


JICA sent to Albania a study team from April 2 to May 1, 2000.

The team held discussions with the officials concerned of the Government of Albania, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Albania in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Republic of Albania for their close cooperation extended to the teams.

November, 2000



Saito Kunihiko

President

Japan International Cooperation Agency

November, 2000

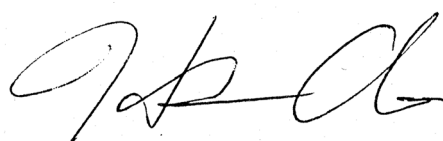
LETTER OF TRANSMITTAL

We are pleased to submit to you the basic design study report on the Project for the Improvement of Medical Equipment for the Pediatric Hospital "Mother Teresa" of University Center of Tirana.

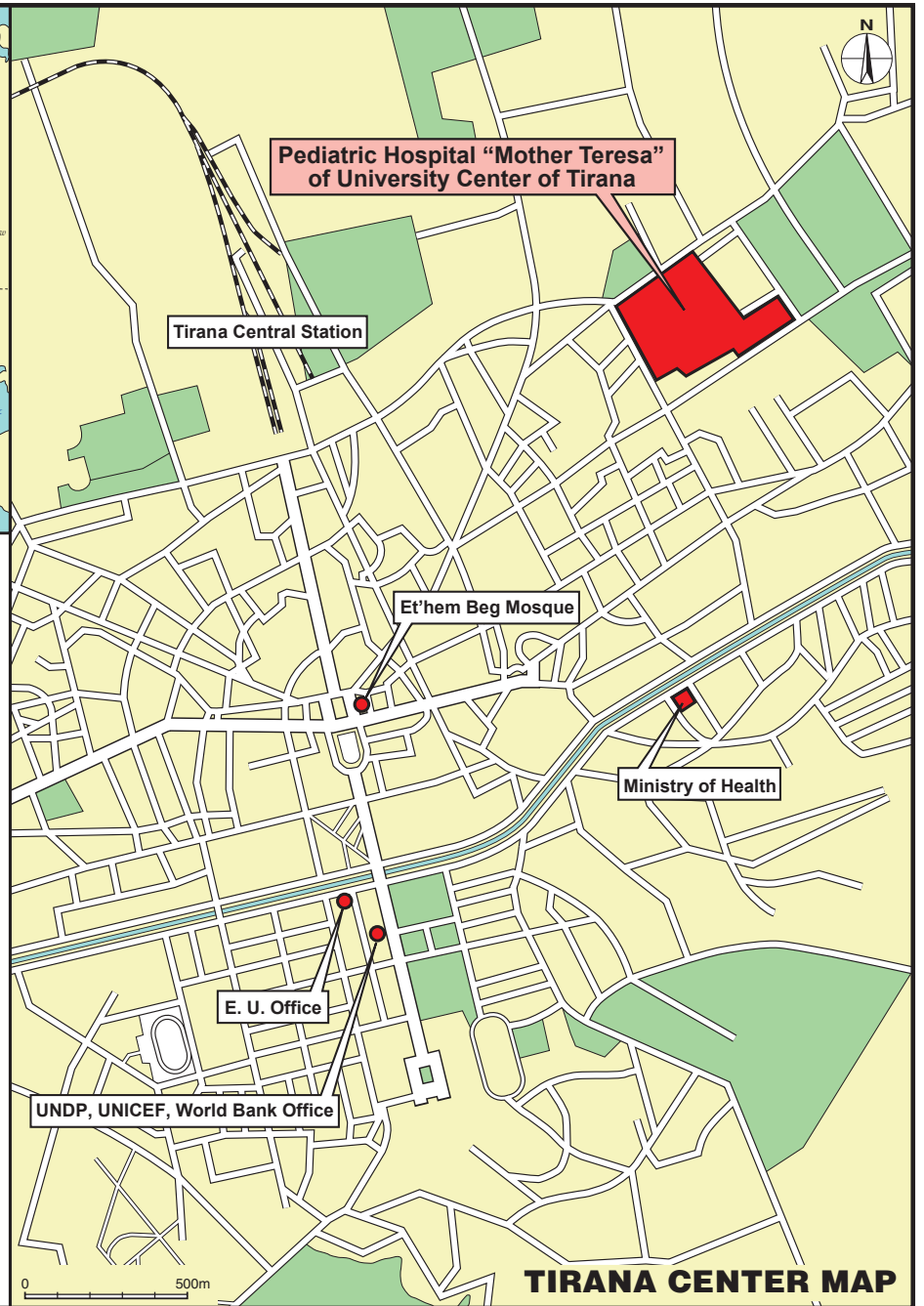
This study was conducted by System Science Consultants Inc., under a contract to JICA, during the period from March 13, 2000 to November 24, 2000. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Albania and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

A handwritten signature in black ink, appearing to be 'H. Abo', written in a cursive style.

Hiroshi Abo
Project manager,
Basic design study team on the Project
for the Improvement of Medical
Equipment for the Pediatric Hospital
"Mother Teresa"
of University Center of Tirana
System Science Consultants Inc.





«LAYOUT PLAN OF THE PEDIATRIC HOSPITAL “MOTHER TERESA” OF UNIVERSITY CENTER OF TIRANA»



Signing of Minutes with Minister of Health.
(Basic Design Study)



Signing of Minutes with Deputy Minister of Health.
(Draft Basic Design)



Main Gate of University Hospital Center.



Pediatric Hospital New Building.



Pediatric Hospital Old Building.



Renovation for Ward.

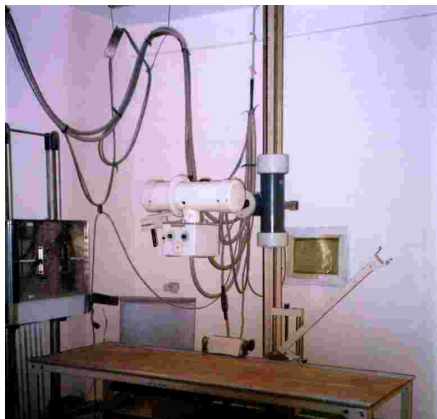
PHOTOGRAPH



Bed Room. (Patient and Attending Mother)



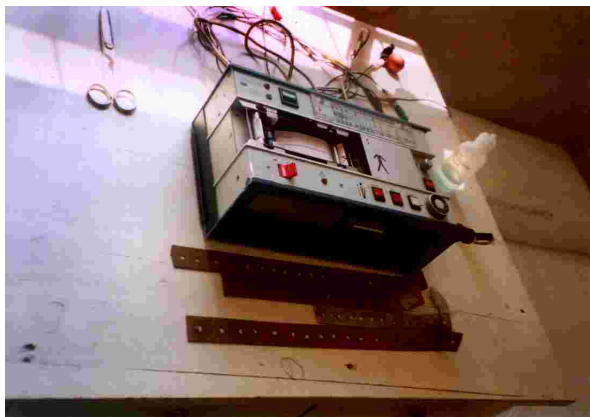
Emergency Laboratory.
(Hematological Examination by Manual)



Old Building. (Existing X-ray Unit)



New Building. (Out of Ordered X-ray Unit)



New Building. (Existing 1 Channel ECG)



Operating Room of New Building.
(Existing Ventilation)

ABBREVIATIONS

Organization

BENC	Biochemical Engineering National Center
CINS	Cooperazione Italiana Nord Sud
ECHO	European Community Humanitarian Office
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HII	Health Insurance Institute of Albania
INSTAT	Institute of Statistics
JICA	Japan International Cooperation Agency
NATO	North Atlantic Treaty Organization
NGO	Non-Governmental Organization
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
USAID	US Agency for International Development
WHO	World Health Organization
WHO-EURO	WHO Regional Office for Europe

Others

ABR	Acoustic Brain Reaction
AVR	Automatic Voltage Regulator
CPU	Central Processing Unit
CT	Computer Topography
ECG	Electro Cardiograph
EEG	Electro Encephalograph
EMG	Electro Myograph
GDP	Gross Domestic Product
ICU	Intensive Care Unit
IMR	Infant Mortality Rate
MRI	Magnetic Resonance Imaging
PCR	Polymerase Chain Reaction
PHC	Primary Health Care
SEP	Sensual Evoked Potential
UPS	Un-interruptible Power Supply
VEP	Visual Evoked Potential

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Chapter 1 Background of the Project

Chapter 1 Background of the Project

1-1 Background of the Request

The Republic of Albania (henceforth referred to as "Albania") is located in the southern area of the European continent, specifically in the western part of the Balkan Peninsula. The capital is Tirana City. It shares its borders with former Yugoslavia and Greece, and the Republic of Serbia, the Republic of Montenegro and the Autonomous Province of Kosovo to the north, Macedonia to the southeast and Greece to the south. It also borders the Adriatic Sea to the west and Italy is located about 100m across the Adriatic Sea.

The country has a total land area of 28,000 km², which is about 1.5 times larger than the Japanese island of Shikoku. Approximately 80 percent of the land area are mountainous and it is about 708m above sea level. Limited areas of level land are found along the Adriatic coast of the country.

The infant mortality rate (IMR) in 1995 was 30 per 1,000 births. This number has improved over the past several decades, but it greatly surpasses the WHO standard of 20. It is also higher than the average IMR of 24.9 of the former Soviet Union and its neighboring countries of the Balkan Peninsula and immediate measures to improve this rate are needed. The major causes of infant mortality in Albania are respiratory and infectious diseases and diarrhea.

In view of these circumstances, the Ministry of Health formulated the "Albanian Health System Reform", a health care development plan that was prepared with the assistance of the WHO Regional Office for Europe (WHO-EURO) in September 1999. One of the focal policies of the reform plan is to improve the quality of health care services by providing comprehensive health care facilities and equipment and maternal and child health care services.

The Pediatric Hospital "Mother Teresa" of University Center of Tirana (henceforth referred to as "Pediatric Hospital"), that is the focus of the Project, is located in the suburbs of Tirana City. It is comprised of two buildings—one old (containing the General Pediatric Service) and one new (containing the

Specialized Pediatric Service). The number of beds at the hospital is 285 and the annual number of inpatients is approximately 9,000.

The Pediatric Hospital is the nation's top referral medical facility in pediatric health care and it is also the primary and secondary health care facility in Tirana City. It also provides health care services for outpatients throughout the country and it is a training hospital for the Medical University of Tirana.

However, due to Albania's long years of isolationism and the economic turmoil that has resulted with the introduction of a free-market economy, the equipment and facilities of the Pediatric Hospital are badly depreciated and basic equipment is lacking. Consequently, the Pediatric Hospital has been unable to conduct adequate diagnoses and treatment activities.

In view of these circumstances, the Government of Albania formulated an equipment and facility project for the Pediatric Hospital, aimed at improving health care services for the Pediatric Hospital's patients, and requested the Government of Japan for Grant Aid assistance to implement the Project.

1-2 Summary of the Request

The Project will provide the following equipment requested by the Albanian side.

(1) Targeted area (site) :

- Pediatric Hospital "Mother Teresa" of the University Center of Tirana
- 372 Dibrës Street, Tirana city

(2) Requested equipment

The equipment requested in the Project are General Pediatric Service, Special Pediatric Services (Clinic of Pediatric Cardiology, Clinic Pediatric Gastro-Hepatology, Clinic of Nutritional Unit, Medical Genetics Service, Pediatric ICU, Clinic of Pediatric Surgery etc.), physical functional examination and computer, etc.

The major components of equipment that have been requested for the Project are shown in the table below.

TABLE 1-1 Major Equipment in the Request Application Form

1)	General Pediatric Service	Electric Aspirator, Nebulizer, Defibrillator, Small Scales, Computer, etc.
2)	Clinic of Pediatric Cardiology	Color Doppler Ultrasound Unit, Holter System, ECG Machine, etc.
3)	Clinic Pediatric Gastro-Hepatology, Clinic of Nutritional Unit	Enteral Nutritional Pump and Assessors, Parenteral Nutritional Pump and Assessors, etc.
4)	G/I Endoscopic and G/I Functional Examination Room	Pediatric Fibergastroscope and Assessors, Video Endoscopic System, pH-Meter, Server Computer, etc.
5)	Medical Genetics Service	PCR Apparatus, Analytical Balance, Refrigerator (+2 ~ -15 °C), etc.
6)	Pediatric ICU	ECG and Pulse Oximetry with Accumulator incorporated, Blood Pressure Meter for Children, X-ray Unit Portable, etc.
7)	Clinic of Pediatric Nephrology	Pertoneal Dialysis Automatic Machine, Renal Biopsy Needles, Pediatric Blood Pressure Meters, etc.
8)	Clinic of Pediatric Neurology	Electromyography Machine, Electro Encephalography (EEG) Machine, Portable EEG Machine, etc.
9)	Clinic of Onco-Hematology	Electric Syringes, Ultraviolet Sterilizing Lamp (for Sterile Boxes), Aspiration Machine for Cryostatics, etc.
10)	Clinic of Pediatric Pneumology	Pediatric Fiberbronchoscope, Rigid Fiberbronchoscope, Spirometer, etc.
11)	Clinic of Pediatric Surgery	Nebulizer, Defibrillator, Respiratory Machine, etc.

Chapter 2 Contents of the Project

Chapter 2 Contents of the Project

2-1 Objectives of the Project

The total population of Albania in 1999 was estimated at 33,640,000 people and the population growth rate over the past 15 years has averaged about 1.5 percent. The population of its capital, Tirana was 480,000 (1998) or about one-seventh of the total population and it has the highest population growth rate in comparison to other regions of the country. Presently, the population in Tirana City is estimated to be over 500,000 and 32.6 percent of the total population is comprised of children.

The IMR in 1995 was 30 deaths per 1,000 births and although the IMR has improved over the past ten years, it exceeds the WHO standard of 20. In addition, this figure is higher than the average of neighboring countries and immediate reforms are needed.

Confronted by these circumstances, the Ministry of Health formulated a health care development plan entitled "Albanian Health System Reform" in September 1999. Some of the important policies in this plan include installing health care facilities and equipment aimed at improving the quality of health care services, improving maternal and child health care, and others.

The recipient Pediatric Hospital of the Project is located in the suburbs of Tirana and the country's sole pediatric hospital. It is comprised of an old and new building and it is the top-referral health care facility for children as well as the primary and secondary health care facility in Tirana City. It has 285 beds and the annual number of hospitalized inpatients exceeds 9,000.

However, due to Albania's long years of isolationism and the economic turbulence that has accompanied the introduction of a market economy, the equipment and facilities of the Pediatric Hospital are badly depreciated and the number of basic equipment is lacking. Consequently, the Pediatric Hospital has been unable to carry out adequate diagnoses and treatment activities.

The Project will provide medical equipment for the Pediatric Hospital in order to help improve its diagnosis and treatment system and to improve the quality of medical and health care services. The goal of the Project is to contribute to improving the health of the children of Albania.

2-2 Basic Concept of the Project

2-2-1 Concept of the Cooperation

The policy on the specific cooperation that will be provided under the Project is explained below.

(1) Equipment required to implement health care services

The Project will address the major problems that have impeded health care activities at the Pediatric Hospital, which are badly depreciated basic medical equipment and a shortage in the essential number of equipment needed. In view of the fact that the Pediatric Hospital is a top referral medical institution in Albania, equipment that will enable the Pediatric Hospital to maintain the standards of a primary and secondary health care facility to carry out essential medical care services will also be provided.

(2) A medical equipment plan that promotes common utilization and centralization of medical equipment management

Equipment such as weighing scales, bedside monitor, syringe pump, etc., will be centrally managed and equipment with uniform specifications will be selected in order to facilitate easy maintenance and repair. Additionally, the fiberscope, X-ray unit, ultrasound apparatus (color doppler), ECG, etc., will be installed in a common utilization room and the equipment will be centrally managed to ensure that it is efficiently used.

(3) Progress of the Tirana Plan and equipment installation at the Pediatric Hospital

Due to the lack of specific progress, the Tirana Plan, which focuses on the University Hospital Center of Tirana "Mother Teresa" (henceforth referred to as "Hospital Center") is currently under revision by the Ministry of Health and it

will not be implemented for a few more years. Therefore, the Project has focused on the Pediatric Hospital and its health care services, independently of the Tirana Plan.

(4) Avoiding duplication with other donors and institutions

The Pediatric Hospital has received donations of individual items of medical equipment from ECHO (European Community Humanitarian Office), GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit), EU Phare, other donors and institutions. Therefore, the Project will carefully review the equipment, which the Pediatric Hospital has received from other donors, in order to avoid duplicating the equipment.

(5) Financial conditions of the Pediatric Hospital have been considered in the equipment plan

The management cost of the Pediatric Hospital is covered within the budget of the Ministry of Health. Hence the projected costs of the Pediatric Hospital and the Ministry of Health will be adequately reviewed and the maintenance cost of the equipment will be kept within the scope of this budget.

2-2-2 Review of the Request

(1) Requested equipment

The major items of equipment, which have been re-requested in the stage of Basic Design Study by the Albanian side, are listed below.

Table 2-1 Major Equipment Re-requested at Basic Design Study

Item	Name of Equipment
1. Common Utilization	Weight Scale, Height Measure, Sphygmomanometer, Hanger Stand, etc.
2. General Pediatric Service	
1) Ward - 7	Diagnostic set
2) Ward - 8, 9	Diagnostic set
3) Ward - 10	Diagnostic set, Lumber Anesthesia Needles, Oxygen Flowmeter Set, etc.
4) Ward - 11	Infant Warmer, Oxygen Face Mask, Resuscitation Bag, etc.
5) Emergency Unit/Day Hospital	Oxygen Flowmeter Set, Defibrillator, Pulse Oxymeter, etc.
3. Special pediatric Service	
1) Clinic of Pediatric Cardiology	Ultrasonic Nebulizer
2) Clinic of Pediatric Neurology	Portable EEG
3) Ward - 4	Blood Transfusion Warmer
4) Clinic of Pediatric Nephrology	Renal Biopsy Needles, Hemofiltration Apparatus
5) Clinic of Pediatric Onco - Hematology	Lumber Puncture Needles, Osseal Puncture Needles
8) Ward - 6	Blood Transfusion Warmer
7) Clinic of Pediatric Pneumology	Spirometer, Pulse Oxymeter
8) Ward - 2, 3	Pulse Oxymeter, Ultrasonic Nebulizer, Oxygen Hood
9) Operation Room	Operation Table, Operation Light, Electric Suction Unit, Electrosurgical Unit, Monitor
10) Surgical Intensive Care Unit	Defibrillator, Oxygen Tent, Oxygen Monitor, Infant Warmer with Food, etc.
11) Pediatric Intensive Unit	Defibrillator, Oxygen Tent, UV Sterilizing Lamp, Resuscitation Bag, etc.
4. Centralization	
1) Radiation Room	Tomography X-ray Unit, Conventional X-ray Unit, etc.
2) Endoscopy Room	Figergastroscope, Fibercolonoscope, Cystofiberscope, etc.
3) Ultrasound Room	Ultrasound Apparatus, Ultrasound apparatus (Color Doppler), etc.
4) ECG Room	Holter ECG System, ECG, Portable ECG, etc.
5) EEG Room	EEG, Examination Table, etc.
6) EMG Room	EMG, Examination Bed
7) Central Pharmacy	Electric Analysis Balance, Medical Refrigerator, Cabinet for Medicine Storage, etc.
5. Pediatric Emergency Laboratory	Refrigerator, Blood Cell Counter, Staining Set, etc.
No. of Items	161

(2) Review of the requested equipment list

The list of equipment requested by the Albanian side was reviewed in terms of need and appropriateness, based on the role, functions and current conditions of the Pediatric Hospital, and the results are explained below. The equipment was categorized as general, specialized, common use and function of building (the old building for general pediatric service and the new building for special pediatric service).

1) Equipment for common utilization

The advantage to providing equipment with same specifications is the ability to utilize the equipment between wards in the event of a mechanical breakdown or depreciation. Additionally, spare parts are easy to obtain.

Equipment such as height measures, weight scales, thermometers, sphyngmomanometers, in addition to pediatric examining tables, beds, instrument cabinets, hanger stands, and other essential hospital equipment fall into this category. In addition, they do not incur maintenance costs and have been judged as appropriate for the Project.

The following number and name of the equipment are according to “Table 2-2 Review of the Requested Equipment”.

1-13 Monitor

The monitor is a device used to observe the patient’s vital signs such as ECG, pulse rate, blood pressure, respiration count and body temperature. Especially, children are incapable of explaining their difficulties in breathing or illness symptoms, the monitor in discovering abnormal conditions is vitally important. Therefore, monitors with uniform specifications will be provided to enable the Pediatric Hospital to cope with the rise and fall in the number of patients: and since it will be used in wards with high utilization needs, it will be installed in those wards dealing with acute and serious diseases.

2) Equipment for general pediatric service

Of the list of equipment requested for the general pediatrics service in the old building, including equipment with uniform specifications, the following items were judged as essential in terms of speciality and disease structure and examination system. The equipment which will be provided by the Project is also essential in the examination activities of the General Pediatric Service, wards for Acute Gastro-enterology and Acute Aerogen and Infectious, and use in the Day Hospital Stay where outpatients are placed under 24-hour observation prior to hospitalization and treatment. The equipment designated for the General Pediatric Service will be provided by the Project since it is

mainly equipment needed for internal diagnoses and there are no special maintenance costs.

2-16 Tympanometer

In contrast to the audiometer, which is used to conduct threshold stimulus tests, the tympanometer is used to conduct hearing sensory tests to differentiate transmission and perceptive deafness and carry out tests and examinations of the inner ear and tympanic cavity for infectious diseases. When a child complains of an earache, it must be ascertained whether it is a disorder of the auditory organ itself or a disorder of the surrounding organ since earaches are felt in the dominant area of complex nerves related to the auditory organ. Particularly in the case of children where speech understanding has not yet developed, it is difficult to make an accurate diagnosis based strictly on tests of spontaneous reactions using the audiometer. Although the hearing of four (4) and five (5) year old has reached adult levels, multiple tests must be carried out in the case of infants since it is difficult to confirm the range of sounds which has been heard near the ear.

Therefore, the Project will provide a tympanometer since it will be utilized to diagnose infectious tympanitis and utilized to the same degree as the existing audiometer.

3) Equipment for special pediatric service

Of the list of equipment requested for the Special Pediatric Service in the new building, including equipment with uniform specifications, the following items were judged as essential in terms of speciality and the disease structure and examination system. The need and the effectiveness of equipment with anticipated maintenance costs were reviewed for its appropriateness.

3-5 Hemofiltration apparatus

Lowered renal blood flow and renal ischemia which occurs in a few days or hours due to acute renal failure, dehydration, shock, urinary obstruction and glomerulonephritis, and when bodily fluids can not be maintained at normal levels, kidney dialysis, kidney transplantation and

other terminal forms of treatment that are costly both physically and economically can be avoided if the body's uremic condition is rapidly returned to normal.

The hemofiltration apparatus eliminates the poisonous substances and excreted cells from the blood. It offers the most effective and inexpensive form of treatment for serious cases such as acute renal failure. This unit can cure such cases if it is utilized three times during a two-week hospitalization period.

However, due to the lack of a blood filtration unit in Albania, pediatric patients with acute renal failure are unable to receive treatment for several hours or days; this leads to chronic renal failure or even death. There are approximately 10 to 20 such cases annually. In addition, it is estimated that there are about 50 patients annually, who require emergency treatment at the Pediatric Hospital, and about 500 such cases throughout the country.

Through the assistance of the NGOs, seriously ill patients have been sent to the neighboring countries of Italy, Greece, and Turkey, for treatment, but the number of patients that can be helped by such measures has been limited. Only young children are the recipients of such treatment and consequently, the mental and emotional burden on the patients and their families is great. This is especially true, when the treatment is too late and results in the patient's death abroad. The aftermath of such incidents has produced numerous problems.

In view of these circumstances, the project will provide a blood filtration unit for the purpose of treating and saving the lives of seriously ill patients.

3-9 Spirometer

In order to diagnose respiratory ailments, pulmonary function tests (PTF) such as the pulmonary ventilatory capacity test and alveolar function test are required in addition to chest X-rays, bronchoscopy and other morphological diagnoses. The spirometer is especially effective in determining the degree of ventilation function disorders. Basic tests on

lung capacity, gas distribution in the lung and lung diffusion strength are needed in the pediatric wards. The Project will provide one (1) spirometer for the pneumology that can be used in the aforementioned tests.

3-54 Surgical Incubator

Neonates more than one week old are often placed under observation in the pediatrics ward. Consequently, an infant warmer with hood is needed. Additionally, an infant warmer with hood is also needed for the ICU in the surgery ward separate from the unit that is used for general neonate use in dispensing respiratory care. Therefore, two (2) surgical incubators will be provided by the Project for patients with infectious ailments and noninfectious ailments.

3-62 Intubation set (Ventilator)

A ventilator is needed to assist spontaneous breathing after air conduction has been secured in the internal ICU. Due to the undeveloped respiratory tract of children, recovering spontaneous breathing is a time-consuming process for children who suffer from inflammation. Therefore, a ventilator is a vital item of equipment needed to alleviate the burden and drain on the patient's stamina. The Project will provide two (2) ICU intubation sets for patients with infectious ailments and one (1) set for noninfectious ailments, in view of the high frequency of infectious ailments.

4) Equipment for centralization (Physical functional examination section)

The requested equipment is basic items that are essential to conducting the medical services and functions of the Pediatric Hospital. The provision of this equipment by the Project will enable Albania's sole Pediatric Hospital to fulfill its diagnostic and treatment functions. When the disease or ailment has been identified and advanced medical treatment is required, it will become possible for the Pediatric Hospital to introduce the patient to a medical facility in Italy or other neighboring country.

However, in the view of the condition of existing equipment, there is only one X-ray unit which is presently out of order and the other unit is more than 30 years old, and many items of equipment are lacking or the depreciation is severe and there is a need to replace or provide new equipment.

Centralization of the equipment is recommended in order to circumvent the problem of exclusivity between wards, to improve the frequency of the equipment's use, to clarify the party responsible for maintaining the equipment, to ensure the safety factor, and to improve the efficiency of patient movement and flow in the Pediatric Hospital.

4-1, 2 X-ray unit

Tomographic X-rays are effective in diagnosing the location and degree of fractures and internal bleeding that are frequent among children, in addition to invagination, ileus, mesenteric vascular occlusion and other ailments. Tomographic X-rays are also essential in the diagnosis and treatment process of tuberculosis, which is still prevalent in Albania. According to WHO statistics, despite a vaccine inoculation ratio of over 90 percent, in actuality, 20 percent of the hospitalized and 30 percent of the outpatients suffer from tuberculosis. Therefore, in addition to a need to collect detailed data on vaccinations, there is a high demand for a tomography X-ray unit to provide an accurate and high level of quantified treatment for patients, who have been introduced to the Pediatric Hospital following a qualitative screening process for tuberculosis.

A tomography X-ray unit does not generate test costs, as in the case of the CT scanner, and it does not arouse the children's fears of the equipment, thereby enabling the test to be completed in a short period of time. Therefore, an X-ray unit capable of producing tomographic images will be provided for the X-ray room in the new building by the Project.

The Pediatric Hospital also maintains 24-hour emergency services and there is a need for a conventional X-ray unit for emergency outpatients who are admitted at night. Therefore, a conventional X-ray unit will be provided X-ray room for emergency outpatient services in the old building.

4-5~17 Fiberscope

A fiberscope enables internal organs to be directly observed and eliminates the need for a laparotomy. It alleviates the physical burden on the patient and due to the good condition of the patient following the test, it is an effective for observing internal organs. In addition, a fiberscope for use with children is needed since the size of the organs differ from those of adults. Additionally, it is also effectively used during surgery for invagination, peritonitis and other common children's ailments. It is the one accurate diagnostic equipment that is used in a Pediatric Hospital without a MRI or scintillation counter. Therefore, excluding the bronco-fiberscope provided by other donors, the provision of a fiberscope for observing the stomach, colon, and bladder, areas where a high frequency of use is expected for the general pediatric service, has been judged as appropriate.

4-19 Ultrasound apparatus (Color doppler)

The ultrasound color doppler is used to produce ultrasonic imaging and enables the integrated relation between the spleen and the internal structure to be stereoscopically observed. It used in the diagnosis of intracranial abnormalities (tumor, hematoma, etc.), thyroid diseases, abdominal organs (liver, gallstone, spleen, etc.), heart diseases (valvular disorders, congenital malformation, etc.) of pediatric patients. It also registers time-lapse changes in the location of moving organs such as the liver and cardiac wall, and takes echograms. In addition, it measures the pulse, blood flow and cardiac rate of fetuses by adjusting the signals of the Doppler.

Based on a review of existing cases, the provision of an ultrasound color doppler that will provide imaging of the cranial, endocrine, digestive, and urological and heart areas, as well as echograms, is recommended.

4-23 Electrocardiography (ECG)

The ECG is used to diagnose heart conditions such as arrhythmia, hypertrophy and diastole, electrolyte metabolic errors and myocardial functions, and it is an effective item of equipment in determining the

progress and treatment of ailments. Heart abnormalities are life threatening and there is a need to make quick decisions on treatment methods not only in the Cardiology, but in the other wards as well. The existing ECG is out-moded and ECG tests are time consuming and the building is unable to cope with the patient demand. Therefore, one (1) unit each will be provided for both the new and old buildings in order to cope with the outpatients and inpatients.

4-26 Electroencephalography (EEG)

In the diagnoses and treatment of cerebral disorders, a combination of tests such as morphological tests based on X-ray images, peripheral function tests based on blood circulation and others are used. EEG tests are an auxiliary diagnostic method, which enables time-lapse functional tests that do not discomfort the patient to be carried out.

The majorities are psychiatric patients and the major illnesses that comprise half the cases are epilepsy, headaches and meningitis. Therefore, there is a high need for an EEG and compounded by the fact that many children suffer from sensory nerve disorders during their development, this unit is needed to distinguish and observe evoked potential such as auditory brain stem response (ABR), somatosensory evoked potential (SEP), and visual evoked potential (VEP). The existing EEG unit is 25 years old and depreciated. It is recommended that a new unit be provided by the Project to replace the existing unit.

4-28 Audiometer

The hearing range of neonates is 60 to 90 decibels (dB), 20 to 30 decibels for infants at 12 months, and reaches adult levels for children at four to five years of age. Since hearing development occurs from the stage of infancy, it is important to determine whether hearing disorders for infants stem from a functional or cerebral cause. The existing audiometer is badly depreciated, the cord is held together by tape and its functional accuracy is doubtful. Therefore, one (1) unit will be provided by the Project.

4-29 Electromyograph (EMG)

The EMG is an effective item of equipment that is used to diagnose the location of disorders of the central nerve, muscular system, peripheral nerve, motor disorders and other development disorders. Among the current patients, there are a few cases of muscular dystrophy, progressive spinal muscular distrophy (PSMA), Parkinson's disease, myasthenia gravis (MG) and other serious illnesses. The EMG is also vital in determining the progress of the disease.

The EMG currently owned by the Pediatric Hospital is out of order. In a review of the number of past cases, the Pediatric Hospital conducts more than 100 tests annually. Since many muscular disorders involve myocardial disorders as well, the start of a treatment program based on early diagnoses is important in controlling the gravity of the symptoms. It is also important in terms of alleviating the burden of the Pediatric Hospital.

Outsourcing this large number of tests to other hospitals is a great loss of time for the primary physician who must travel between the Pediatric Hospital and the other facility. In the diagnoses and observation of the progress of one disease, an EMG as well as numerous other tests are required. In terms of alleviating the patient's burden, these tests must be swiftly and continuously implemented within the hospital premises. Therefore, in view of these factors, it has been concluded that an EMG will be provided for the Pediatric Hospital.

4-37 Sweat testing device for mucoviscidosis

The sympathetic ganglion in the spleen controls the body temperature. This unit is used to diagnose splenic fibrosis that disrupts the perspiration from the sweat gland.

In principle, mainly the perspiration and the electrical activity of the skin, which is measured using this device, cause the electrical resistance of the skin and the potential changes, and it is commonly used for the autonomic nerve function test. Hence, its provision by the Project has been judged appropriate.

4-38 Blood cell counter

The blood cell counter is a basic item of equipment, but the Pediatric Emergency Laboratory is only equipped with a manually operated microscope to conduct the tests. Despite the fact that in some cases, the test results must be known within 15 minutes, the tests are manually carried out and require more than 30 minutes to complete. In many cases, adequate measures can not be taken. The Pediatric Hospital conducts more than 10,000 tests per year with only a staff of six (6) lab technicians. Each staff member can only carry out a maximum of 80 to 100 tests per day. Therefore, a blood cell counter is needed in order to enable the Pediatric Hospital to cope with the demand.

4-39 Spectrophotometer

Due to the rapid changes in the condition of pediatric patients, there is a need for various biochemical tests. However, under the current operating conditions of the Pediatric Hospital, conducting all the test items is difficult since some test items have a low frequency of need. It would require the use of large amounts of reagents and contributes to high costs. Therefore, providing a spectrophotometer for emergency tests will improve the situation by fulfilling the need for tests on emergency patients.

Hence, the provision of one precision spectrophotometer by the Project to measure the small specimens of pediatric patients within a short period of time is considered appropriate.

4-42 Binocular microscope

Among the tests that are commonly conducted are the blood and fluid tests such as blood tests, urine and stool tests, general tests, and bacterial and sputum tests. In view of the flow of tests and the hygienic care of the specimens, several microscopes will be provided by the Project. The Pediatric Hospital presently has six (6) microscopes, but their accuracy is low and they are suited only for carrying out blood counts. Therefore, in view of the circumstances, there is a need for an optical microscope with high magnification to observe the blood cell morphology of fluids and

seramia of patients with meningitis. The Project will provide two (2) units for the Pediatric Hemato-oncology and two (2) units for the Pediatric Emergency Laboratory. Further, one (1) extra unit with a camera will be provided to record the blood morphology at the time of the diagnosis since the morphology of the hemogram becomes irreversible with the passing of time.

(3) Equipment selection criteria

Based on a review of the requested equipment, the equipment for the Project was selected based on the needs of the medical care service demanded of the Pediatric Hospital, its management and maintenance capabilities, the condition of the existing equipment, and the assistance provided by other donors. The selection criteria, which were used to determine the priority or elimination of the requested equipment, are given below.

[Criteria for Priority Equipment]

1. *Existing equipment that must be replaced due to deterioration*
2. *Equipment, which will supplement the number of, required units that are clearly lacking*
3. *Equipment that is essential for diagnostic activities*
4. *Equipment that can be easily operated and maintained by the Pediatric Hospital*
5. *Equipment that is suited to the technical capabilities of the medical staff members*
6. *Equipment that meet the demands of the patients and meets the needs of the Pediatric Hospital's medical care services*
7. *Equipment with clearly designated installation sites*

[Criteria of Equipment Eliminated from the Request]

1. *Equipment that is not directly related to medical services*
2. *Highly advanced and very expensive medical equipment or equipment that is needed for special research needs*
3. *Equipment with excessive maintenance costs that will place an inordinate financial burden on the Pediatric Hospital administration*

4. *Equipment that is difficult to operate or maintain with the existing level of technical capabilities*
5. *Equipment that will duplicate existing equipment or equipment provided by other donors*
6. *Equipment that is not directly related to the medical activities of the Pediatric Hospital*
7. *Equipment with a low demand in terms of patient needs and medical services*
8. *Disposable equipment and consumables*

Based on the criteria listed above, the results of the review on the selection of the equipment are given in "Table 2-2 Review of the Requested Equipment". The results are based on an integration of such components as the content of the request, field survey results and analysis items, and these were further reviewed against such factors as the needs of the medical care service demanded of the Pediatric Hospital, its management and maintenance capabilities, the condition of the existing equipment, and the assistance provided by other donors. The criteria for each evaluation standard are shown below.

1) Equipment standard

- A: Basic medical equipment, general equipment that is essential to conduct medical services
- B: Equipment that requires some specialized knowledge
- C: Equipment that requires a high level of specialized knowledge
- : Not applicable

2) Equipment consumables

- : Equipment that will be used long-term
- X: Disposable consumables

3) Integrated with patient needs/medical services

- : Equipment that can be integrated with the position of the Pediatric Hospital, content of the health services that are in demand, structure of the diseases and patient needs
- X: Equipment can not be integrated

4) Technical evaluation (medical, operation, maintenance technology)

- : Equipment that meet the medical, maintenance, and operational capabilities of the Pediatric Hospital
- △ : Equipment that can be adequately operated by the existing Pediatric Hospital staff with a short period of study and training
- X: Equipment requiring a high level of technical expertise and equipment to operate and difficult to maintain sustained operations with the existing level of technical expertise
- : Equipment, which does not require technical expertise

5) Maintenance costs

- A: Equipment with minimal maintenance costs, no special problems are foreseen
- B: Equipment with slight maintenance costs, which the Pediatric Hospital will be able to adequately cover in their budget
- C: Equipment with high maintenance costs that are anticipated to impact the finances of the Pediatric Hospital
- : Equipment, which does not generate maintenance, costs

6) Duplication of equipment provided by other donors

- : Equipment which will not duplicate equipment that has been provided or will be provided by other donors
- X: Equipment that duplicates equipment provided by other donors

7) Overall evaluation

- ◎ : Equipment that has been judged as appropriate according to the review findings
- X: Equipment, which will not be included in the Project

Table 2-2 Review of Requested Equipment

Item	Equipment Name	No. of Item by Priority			Evaluation Criteria								Overall Evaluation	
					Equipment Standard, Contents		Integrated with Patient Need/Medical Services	Technical Evaluation			Maintenance Cost	Duplication by Donors		
		A : High	B : Middle	C : Low	Standard	Contents		Medical	Equipment Operation	Equipment Maintenance				
1 - COMMON UTILIZATION														
1	Small weight scale	17			A	○	○	○	○	○	○	—	○	◎
2	Large weight scale	17			A	○	○	○	○	○	○	—	○	◎
3	Infant ruler	17			A	○	○	○	○	○	○	—	○	◎
4	Height measure	17			A	○	○	○	○	○	○	—	○	◎
5	Infrared thermometer	5			A	○	○	○	○	○	○	○	○	◎
6	Conventional thermometer	17	28		A	○	○	○	○	○	○	—	○	◎
7	Rectal-thermometer	4			A	○	○	○	○	○	○	—	○	◎
8	Digital-thermometer	17	17		A	○	○	○	○	○	○	—	○	◎
9	Sphygmomanometer (stand-type)	32			A	○	○	○	○	○	○	○	○	◎
10	Sphygmomanometer (tabletop-type)	2			A	○	○	○	○	○	○	—	○	◎
11	Hanger stand	84			A	○	○	○	○	○	—	—	○	◎
12	X-ray film illuminator (negatoscope)	28			A	○	○	○	○	○	○	○	○	◎
13	Monitor	38	29		A	○	○	○	○	○	○	○	○	◎
14	Electric suction unit	28			A	○	○	○	○	○	○	○	○	◎
15	Syringe infusion pump	15			A	○	○	○	○	○	○	○	○	◎
16	Infusion pump	34			A	○	○	○	○	○	○	○	○	◎
17	Medicine cabinet		14		A	○	○	○	—	—	—	—	○	◎
18	Instrument cabinet	14			A	○	○	○	—	—	—	—	○	◎
19	Instrument carriage		14		A	○	○	○	—	—	—	—	○	◎
20	Pediatric examining table	22			A	○	○	○	—	—	—	—	○	◎
21	Infant cot	30			A	○	○	○	—	—	—	—	○	◎
22	Infant bed	20	20		A	○	○	○	—	—	—	—	○	◎
23	Bed	25	25		A	○	○	○	—	—	—	—	○	◎
24	Folding bed		50		A	○	×	×	—	—	—	—	○	×
25	ICU bed	10	10		A	○	○	○	○	○	○	○	○	◎
26	Mattress	45	45		A	○	○	○	—	—	—	—	○	◎
27	Overbed table		50		A	○	○	○	—	—	—	—	○	◎
28	Laundry cart	17			A	○	○	○	—	—	—	—	○	◎
29	Stretcher	7			A	○	○	○	—	—	—	—	○	◎
30	Wheel chair	5	4		A	○	○	○	—	—	—	—	○	◎

Item	Equipment Name	No. of Item by Priority			Evaluation Criteria									Overall Evaluation
					Equipment Standard, Contents		Integrated with Patient Need/Medical Services	Technical Evaluation			Maintenance Cost	Duplication by Donors		
		A : High	B : Middle	C : Low	Standard	Contents		Medical	Equipment Operation	Equipment Maintenance				
2 - GENERAL PEDIATRIC SERVICE														
WARD-7														
1	Diagnostic set	2			A	○	○	○	○	○	○	—	○	◎
WARD-8, 9														
2	Diagnostic set	5			A	○	○	○	○	○	○	—	○	◎
WARD-10														
3	Diagnostic set	3			A	○	○	○	○	○	○	—	○	◎
4	Lumbar anaesthesia needles			500	A	×	○	○	○	○	—	○	○	✘
5	Oxygen flowmeter set	2			A	○	○	○	○	○	○	○	○	◎
6	Hot water bottle	4			A	○	○	○	○	○	○	—	○	◎
WARD-11														
7	Diagnostic set	1			A	○	○	○	○	○	○	—	○	◎
8	Infant warmer	1			A	○	○	○	○	○	○	○	○	◎
9	Oxygen face mask (small & medium size)	2X2			A	○	○	○	○	○	○	○	○	◎
10	Resuscitation bag (small & medium size)	2X2			A	○	○	○	○	○	○	—	○	◎
11	Oxygen flowmeter set	2			A	○	○	○	○	○	○	○	○	◎
12	Pulse oxymeter	2			A	○	○	○	○	○	○	○	○	◎
13	High pressure steam sterilizer set	1			A	○	○	○	○	○	○	○	○	◎
14	Stainless steel butt	2			A	○	○	○	—	—	—	—	○	◎
15	UV sterilizing lamp	2			A	○	○	○	○	○	○	○	○	◎
16	Tympanometer		1		B	○	○	○	○	○	○	○	○	◎
17	Ultrasonic nebulizer	2			A	○	○	○	○	○	○	○	○	◎
18	Blood transfusion warmer	1			A	○	○	○	○	○	○	○	○	◎
EMERGENCY UNIT/ DAY HOSPITAL														
19	Diagnostic set	3			A	○	○	○	○	○	○	—	○	◎
20	Oxygen flowmeter set	5			A	○	○	○	○	○	○	○	○	◎
21	Defibrillator	1			B	○	○	○	○	○	○	○	○	◎
22	Pulse oxymeter	1			A	○	○	○	○	○	○	○	○	◎
23	Ultrasonic nebulizer	2			A	○	○	○	○	○	○	○	○	◎
24	Blood transfusion warmer	1			A	○	○	○	○	○	○	○	○	◎

Item	Equipment Name	No. of Item by Priority			Evaluation Criteria									Overall Evaluation
					Equipment Standard, Contents		Integrated with Patient Need/Medical Services	Technical Evaluation			Maintenance Cost	Duplication by Donors		
		A : High	B : Middle	C : Low	Standard	Contents		Medical	Equipment Operation	Equipment Maintenance				
3 - SPECIAL PEDIATRIC SERVICE														
CLINIC OF PEDIATRIC CARDIOLOGY														
1	Ultrasonic nebulizer	2			A	○	○	○	○	○	○	○	○	◎
CLINIC OF PEDIATRIC NEUROLOGY														
2	Portable EEG	1			B	○	○	○	○	○	○	○	○	◎
WARD-4														
3	Blood transfusion warmer	1			A	○	○	○	○	○	○	○	○	◎
CLINIC OF PEDIATRIC NEPHROLOGY														
4	Renal biopsy needles			100	A	×	○	○	○	○	○	○	○	×
5	Haemofiltration apparatus		1		C	○	○	○	○	○	△	△	○	◎
CLINIC OF PEDIATRIC ONCO-HEMATOLOGY														
6	Lumbar puncture needles			100	A	×	○	○	○	○	—	○	○	×
7	Osseal puncture needles			100	A	×	○	○	○	○	—	○	○	×
WARD-5														
8	Blood transfusion warmer	1			A	○	○	○	○	○	○	○	○	◎
CLINIC OF PEDIATRIC PNEUMOLOGY														
9	Spirometer	1			B	○	○	○	○	○	○	○	○	◎
10	Pulse oxymeter	1			A	○	○	○	○	○	○	○	○	◎
WARD-2, 3														
11	Pulse oxymeter	1			A	○	○	○	○	○	○	○	○	◎
12	Ultrasonic nebulizer	5			A	○	○	○	○	○	○	○	○	◎
13	Oxygen hood	10			A	○	○	○	○	○	○	○	○	◎
OPERATING ROOM														
14	Operating table			1	A	○	○	○	○	○	○	○	×	×
15	Electrical mattress (for operation table)			4	B	○	○	○	○	○	○	○	×	×
16	Operating light			1	A	○	○	○	○	○	○	○	×	×
17	Operating light			1	A	○	○	○	○	○	○	○	×	×
18	Electric suction unit			1	A	○	○	○	○	○	○	○	×	×
19	Surgical suction tube			1	A	○	○	○	○	○	○	○	×	×
20	Anesthesia apparatus			1	B	○	○	○	○	○	○	○	×	×
21	Infant anesthesia circuit			1	C	○	○	○	○	○	○	○	×	×
22	Face mask			1+1	A	○	○	○	○	○	○	○	×	×
23	Electrosurgical unit			1	B	○	○	○	○	○	○	○	×	×
24	Electrode			1	B	○	○	○	○	○	○	○	×	×

Item	Equipment Name	No. of Item by Priority			Evaluation Criteria								Overall Evaluation	
					Equipment Standard, Contents		Integrated with Patient Need/Medical Services	Technical Evaluation			Maintenance Cost	Duplication by Donors		
		A : High	B : Middle	C : Low	Standard	Contents		Medical	Equipment Operation	Equipment Maintenance				
25	Sliding stretcher			1	A	○	○	○	○	○	○	○	×	×
26	Infant stretcher			1	A	○	○	○	○	○	○	○	×	×
27	Pediatric fibercystroscope			1	B	○	○	○	○	○	○	○	×	×
28	Pediatric rigid fibercystroscope			1	B	○	○	○	○	○	○	○	×	×
29	Electrical syringe			1	A	○	○	○	○	○	○	○	×	×
30	Monitors (ECG, Respiratory Rate, Temp etc.)			1	A	○	○	○	○	○	○	○	×	×
31	Echo color doppler			1	B	○	○	○	○	○	○	○	×	×
32	Pulse oxymeter			2	A	○	○	○	○	○	○	○	×	×
33	Defibrillator			1	B	○	○	○	○	○	○	○	×	×
34	Nephrectomy instrument set (in metal case)			2	A	○	○	○	○	○	○	○	×	×
35	Mobile X-ray unit with accessories for processing (and visual facilities)			1	B	○	○	○	○	○	○	○	×	×
36	Stand (for single bassin)			4	A	○	○	—	—	—	—	—	×	×
37	Stand (for double bassins)			4	A	○	○	—	—	—	—	—	×	×
38	Stand (for double dressing drums)			4	A	○	○	—	—	—	—	—	×	×
39	Stand (for instrument tray)			4	A	○	○	—	—	—	—	—	×	×
40	Stand (solution bottle)			4	A	○	○	○	○	—	—	—	×	×
41	Foot stool			4	A	○	○	—	—	—	—	—	×	×
42	Dressing receptacle			4	A	○	○	—	—	—	—	—	×	×
43	Revolving chair			4	A	○	○	—	—	—	—	—	×	×
44	Instrument cabinet			4	A	○	○	—	—	—	—	—	×	×
45	X-ray film illuminator (negatoscope)			2	A	○	○	○	○	○	○	○	×	×
46	Digital camera			1	—	○	×	○	○	○	○	○	×	×
SURGICAL INTENSIVE CARE UNIT														
47	Defibrillator	1			B	○	○	○	○	○	○	○	○	◎
48	Oxygen tent for infant	2			A	○	○	○	○	○	○	○	○	◎
49	Oxygen monitor	4			A	○	○	○	○	○	○	○	○	◎
50	Infant warmer with hood	2			A	○	○	○	○	○	○	○	○	◎
51	Germicide lamp (ultraviolet sterilizing lamp)	1			A	○	○	○	○	○	○	○	○	◎
52	Intubation set	3			A	○	○	○	○	○	○	○	○	◎
53	Resuscitation bag (small & medium size)	5X2			A	○	○	○	○	○	○	○	○	◎
54	Surgical incubator	2			A	○	○	○	○	○	○	○	○	◎
55	Pulse oxymeter	2			A	○	○	○	○	○	○	○	○	◎
56	Ultrasonic nebulizer	2			A	○	○	○	○	○	○	○	○	◎
57	Blood transfusion warmer	1			A	○	○	○	○	○	○	○	○	◎
58	Sliding stretcher		1		A	○	○	○	—	—	—	—	○	◎

Item	Equipment Name	No. of Item by Priority			Evaluation Criteria								Overall Evaluation
					Equipment Standard, Contents		Integrated with Patient Need/Medical Services	Technical Evaluation			Maintenance Cost	Duplication by Donors	
		A : High	B : Middle	C : Low	Standard	Contents		Medical	Equipment Operation	Equipment Maintenance			
PEDIATRIC INTENSIVE CARE UNIT													
59	Defibrillator	1			B	○	○	○	○	○	○	○	○
60	Oxygen tent	5			A	○	○	○	○	○	○	○	○
61	UV sterilizing lamp		2		A	○	○	○	○	○	○	○	○
62	Intubation set	3			A	○	○	○	○	○	○	○	○
63	Resuscitation bag (small & midium size)	5X2			A	○	○	○	○	○	○	○	○
64	Ultrasonic nebulizer	5			A	○	○	○	○	○	○	○	○
65	Blood transfusion warmer	1			A	○	○	○	○	○	○	○	○

4 - CENTRALIZATION**RADIATION ROOM**

1	Tomography X-ray unit	1			B	○	○	○	○	○	○	○	○
2	Conventional X-ray unit	1			B	○	○	○	○	○	○	○	○
3	Film processing set	1			A	○	○	○	○	○	○	○	○
4	X-ray film illuminator (negatoscope)	4			A	○	○	○	○	○	○	○	○

ENDOSCOPY ROOM

5	Pediatric fibergastroscope and accessories	1			B	○	○	○	○	○	○	○	○
6	Pediatric fibercolonoscope and accessories	1			B	○	○	○	○	○	○	○	○
7	Pediatric cystofiberscope and accessories	1			B	○	○	○	○	○	○	○	○
8	Video endoscopic system	1			A	○	○	○	○	○	○	○	○
9	pH-Meter	2			A	○	○	○	○	○	○	○	○
10	Liver biopsy needles, 1mm, 1.2mm, 1.4mm			100	A	×	○	○	○	○	○	○	×
11	X-ray film illuminator (negatoscope)	2			A	○	○	○	○	○	○	○	○
12	Universal xenon light source for endoscope	1			A	○	○	○	○	○	○	○	○
13	Washing machine for endoscope	1			A	○	○	○	○	○	○	○	○
14	Endoscopic suction unit	1			A	○	○	○	○	○	○	○	○
15	Electro surgical unit for endoscopy	1			B	○	○	○	○	○	○	○	○
16	Endoscopic cabinet	1			A	○	○	○	-	-	-	○	○
17	Endoscopic table	1			A	○	○	○	-	-	-	○	○

ULTRASOUND ROOM

18	Ultrasound apparatus	1			B	○	×	○	○	○	○	○	×
19	Ultrasound apparatus (color doppler)	1			B	○	○	○	○	○	○	○	○
20	Partition	1			A	○	○	○	-	-	-	○	○
21	Examination table		2		A	○	○	○	-	-	-	○	○

Item	Equipment Name	No. of Item by Priority			Evaluation Criteria								Overall Evaluation
					Equipment Standard, Contents		Integrated with Patient Need/Medical Services	Technical Evaluation			Maintenance Cost	Duplication by Donors	
		A : High	B : Middle	C : Low	Standard	Contents		Medical	Equipment Operation	Equipment Maintenance			
ECG ROOM													
22	Holter ECG system		1		C	○	△	×	△	△	△	○	×
23	Electrocardiography (ECG)	2			B	○	○	○	○	○	○	○	◎
24	Portable ECG	2			B	○	○	○	○	○	○	○	◎
25	Examination table		2		A	○	○	—	—	—	—	○	◎
EEG ROOM													
26	Electro encephalography (EEG)	1			B	○	○	○	○	○	○	○	◎
27	Examination bed		1		A	○	○	—	—	—	—	○	◎
28	Audiometer	1			A	○	○	○	○	○	○	○	◎
EMG ROOM													
29	Electromyography (EMG)	1			B	○	○	○	○	○	○	○	◎
30	Examination table		1		A	○	○	—	—	—	—	○	◎
CENTRAL PHARMACY													
31	Electric analytical balance	1			A	○	○	○	○	○	○	○	◎
32	Medical refrigerator	1			A	○	○	○	○	○	○	○	◎
33	Cabinet for medicine storage	1			A	○	○	—	—	—	—	○	◎
34	Prescription counter	1			A	○	○	—	—	—	—	○	◎
PEDIATRIC EMERGENCY LABORATORY													
35	Refrigerator	1			A	○	○	○	○	○	○	○	◎
36	Freezer	1			A	○	○	○	○	○	○	○	◎
37	Sweat testing device for mucoviscidosis	1			B	○	○	○	○	○	○	○	◎
38	Blood cell counter	1			B	○	○	○	○	○	○	○	◎
39	Spectrophotometer	1			A	○	○	○	○	○	○	○	◎
40	Centrifuge	1			A	○	○	○	○	○	○	○	◎
41	Staining set	1			A	○	○	○	○	○	○	○	◎
42	Binocular microscope	4			A	○	○	○	○	○	○	○	◎

2-3 Basic Design

2-3-1 Design Concept

The design concept of specific equipment is explained below.

(1) Policy on natural conditions

The average temperature of Tirana City according to each month is similar to the temperatures in Tokyo and equipment disorders due to the temperature differences are not expected. However, due to the poor road and ground conditions within the Hospital Center and its environs, dust is a consideration. Keeping the hospital facilities airtight is not a good solution and anti-dust measures such as providing the electric analysis balance with a hood will be considered in the selection process.

(2) Policy on infrastructure

1) Electricity

There is a high frequency of power outages in Albania and due to the unstable voltage, the following plan will be implemented to counter equipment breakdowns stemming from power failures.

- a. Equipment with UPS (Un-interruptible Power Supply) will be provided as protection against sudden accidents, power failures, or lowered voltage in order to prevent the loss of data.
- b. Electronic medical instruments that utilize a CPU (Central Processing Unit) will have an AVR (Automatic Voltage Regulator) that will enable the equipment to withstand a 15 percent fluctuation in voltage in order to protect the equipment from damage.

2) Tap water supply

Italy has conducted water quality tests within the Hospital Center in the past and the water is hard according to Japanese standards. However, the water quality is good and it meets the Japanese standards for drinking water. The

only item of equipment under review, which requires the use of tap water, is a high pressure steam sterilizer and the Hospital Center has a shared facility for ultra purified water. In view of these circumstances, a water softener unit will not be included in the Project.

The high pressure steam sterilizer will not have a tap water device or sprayer, but will utilize a humidification tray, which will circumvent the use of tap water.

3) Oxygen pipe

Oxygen is supplied to the Pediatric Hospital from an oxygen storage room located adjacent to the Pediatric Hospital through a pipe. However, the oxygen pipe in the facility is not in the best of condition. Therefore, a small oxygen cylinder will be provided for use with the oxygen flowmeter.

(3) Policy on maintenance

1) Technical aspects

The Pediatric Hospital has a staff of 51 physicians. Many of these physicians have studied and worked abroad and possess an adequate level of technical expertise and knowledge. The repair and maintenance work of the medical equipment of national hospitals are carried out by the Biomedical Engineering National Center (BENC) that was organized under the Ministry of Health. In addition, the technical level of the staff members of the Bio-medical Department at the Hospital Center is also adequate. However, the equipment that will be provided by the Project will be selected based on the technical capabilities of the medical staff, lab technicians and maintenance staff members. The equipment with specifications, level and grade that will allow immediate operation and maintenance by the Pediatric Hospital, the Hospital Center and BENC staff members will be selected.

When the equipment is turned over to the Albanian side, the operations and maintenance manuals will be prepared in the Albanian language and technical transfer activities will also be carried out. In addition, in order to avoid predominant use of the equipment by any one building or clinic and to ensure

its effective use, the cooperation of soft component for establishment of centralization management system will be introduced.

2) Financial aspects

In order to ensure the constant use of the equipment provided, it is important to secure a budget for consumables and spare parts. Although the majority of the requested equipment is basic equipment that does not have any maintenance costs, some of the equipment does. As a result, the operating costs of the equipment that will be provided by the Project will be within the means of the Pediatric Hospital budget. The scope of the equipment plan will also be within the scope of the management and operational capabilities of the Pediatric Hospital and it will be financially sustainable. A review of the specific details on maintenance costs is discussed in section "3-3 Operation and Maintenance Cost".

3) After service system

In order to effectively maintain the equipment, it is important to set up after service system of spare parts supply and equipment repair in Albania. It is anticipated that it will be difficult for the BENC and the Hospital Center maintenance staff to handle the complete maintenance and repair of the equipment. Therefore, priority considerations will be given to creating a back-up system in Albania that will utilize the branch offices of the manufacturers. The after service system will be responsible for supplying consumables for equipment such as the X-ray unit, the ECG, ultrasound apparatus (color doppler), blood cell counter, etc.

(4) Policy on equipment specifications and grade

- 1) The equipment that will be provided by the Project will be items that are needed for diagnoses, treatment, and fulfilling the patient and the medical service needs of the Pediatric Hospital. Basic equipment that will replace existing depreciated items or will supplement the shortage in the number of equipment, which is essential to conducting medical services, will be provided.

- 2) The specifications and grade of the equipment that will be provided will enable the physician and maintenance staff member to use the equipment immediately. However, general and easy-to-operate the equipment with uniform specifications will be selected irrespective of the preference of the staff members or preferred mode of operation.
 - 3) The equipment that requires complex maintenance or a high level of technical expertise will be avoided and equipment that is easy-to-operate and repair with minimal repair costs will be selected.
 - 4) The equipment whose operating procedures and use are fully understood by the medical staff and which are in line with the technical capabilities of the current staff members will be selected.
 - 5) A minimum number of consumables or supplementary parts that are needed to operate the equipment will be provided following the Project's implementation.
- (5) Design policy based on environmental considerations

The following is planned in order to minimize the effect of medical wastes produced by the equipment on the environment.

- 1) Suggestions will be made on countermeasures against the leakage of radiation on avoiding danger, and problems stemming from the use of the X-ray unit.
 - 2) Precautions will be taken to use non-CFC for the medical refrigerator in order to avoid future environmental pollution problems.
 - 3) The Hospital Center does not have a disposal facility for wastes such as used medical supplies and reagents. These wastes are disposed of through the general drainage system. Therefore, a non-cyanide reagent with a minimal amount of toxins will be considered for use with the blood cell counter.
- (6) Other donor equipment plan

Presently, the ECHO is renovating the old building of the Pediatric Hospital and is providing equipment; and the GTZ is renovating four (4) surgery rooms in the new building, the water supply and drainage facilities, and is providing surgery

equipment for three rooms. In addition, Switzerland is providing kitchen equipment for the nutrition department. The surgery related equipment that will be provided by GTZ and the bronco-fiberscope would be excluded from the Project. In principle, the equipment provided by the Project will be carefully reviewed to avoid duplicating the equipment provided by other donors. In addition, the specifications and grade of the equipment included in the Project will also be carefully planned based on a review of the content of the equipment provided by other donors.

(7) Policy on the quantity of the equipment

1) Basic concept regarding the quantity of the equipment

The quantity and number of equipment items that will be provided by the Project, will be decided according to the basic number of outpatient consultation rooms, the number of wards and clinics, the number of physicians, the number of patients, etc. The Pediatric Hospital is comprised of two (2) buildings in the old and new. The Pediatric Hospital is going to reconsider its organization to avoid the problem of exclusivity between wards. The plan is changing the existing 12 ward (Ward 1 to 12) to new 7 sections (S-1 to 7). However, the content of consultation room and number of medical staff are not changed. Therefore, basic concept regarding the quantity of the equipment is determined according to the existing ward number of 12.

An outline of the existing and future plan of the Pediatric Hospital for the organization, number of consultation room, ward and so on is shown below.

**Table 2-3 Outline of the Existing and
Planned Pediatric Hospital Organization**

Old Building (3F) : General Pediatric Service

Name of Clinic	No. of Ward	Name of NewSection	No. of Bed Room	No. of Bed	Existing Location	New Location	No. of Consultation Room	Existing Location	New Location	No. of Physician
Acute Gastro-enterology (Infectious)	8, 9	S-1	16	30	3F	←	1	1F	←	5
Acute Gastro-enterology (Non-Infectious)	10		18	35	2F	←	1	1F	←	-
Acute Aerogen & Infection	11		14	25	3F	←	1	1F	←	3
General Pediatric	7	S-2	14	15	2F	←	1	1F	←	2
Day Hospital Stay	-		11	15	1F	←	-	-	-	7
X-ray Room	-	-	-	-	-	-	4	1F	←	-
Central Pharmacy	-	-	-	-	-	-	5	1F	←	-
Lecture Room	-	-	-	-	-	-	4	1F	←	-
Total	5 Wards	2 Sections		120						17

New Building (4F) : Special Pediatric Service

Name of Clinic	No. of Ward	Name of NewSection	No. of Bed Room	No. of Bed	Existing Location	New Location	No. of Consultation Room	Existing Location	New Location	No. of Physician
Haemato-oncology	5	S-3	5	15	4F	2F	1	1F	←	4
Pneumology	2	S-6	11	30	2F	3F	1	1F	←	3
Allergiology	3		13	35	3F	←	1	1F	←	3
Rheumatology	12		-	-	-	-	1	1F	←	1
Cardiology	4		4	5	3F	←	1	1F	←	4
Neurology	4	S-7	8	10	3F	4F	1	1F	←	2
Endocrinology	5		4	10	4F	←	1	1F	←	1
Nephrology	5		4	10	4F	←	1	1F	←	2
Chronic Gastro-enterology	6		10	10	4F	←	1	1F	←	1
E.N.T.	12	(S-7)	-	-	-	-	4	1F	←	1
Physiotherapy	-		10	(11)	1F	←	4	1F	←	-
Surgery	-	S-4	10	20	2F	←	1	1F	←	8
Surgical ICU	-	S-5	4	10	2F	←	-	-	-	-
Internal ICU	-		10	10	3F	←	-	-	-	5
Operation Room	-	-	3	-	2F	←	-	-	-	-
Laboratory	-	-	-	-	-	-	-	-	-	-
Imaging Diagnosis	-	-	-	-	-	-	6	1F	←	-
X-ray Room	-	-	-	-	-	-	4	1F	←	-
Total	7 Wards	5 Sections		165						34

Remarks : Night duty room, nurse station, dressing room, etc. are not included in the number of rooms
30 number of bed in the Pneumology is included 11 number of bed in the Physiotherapy

2) Quantity of common equipment items

The quantity of common equipment was determined according to the basic unit of 17 wards above mentioned – wards x 12 (5 wards in the old building, 7 wards in the new building), ICU x 2 (one unit in pediatric ICU, one unit in surgical ICU) and outpatient consultation room x 3 (day hospital stay x 1, outpatient consultation room in the old building for common use x 1, outpatient consultation room in the new building for common use x 1). The policy on the specific number of the equipment is explained below. Consequently, A-O is shown in "Table 2-5 Quantity of Equipment and Usage".

- A: As a rule, one unit will be provided for each of the 17 wards mentioned above.
- B: One (1) unit of the infrared thermometer and so on will be provided for special wards with high needs such as the Pneumology (Ward-2).
- C: As a rule, two (2) units will be provided for each of the 17 wards mentioned above. However, three (3) units will be provided for wards with a high demand and frequency of use.
- D: The conditions of each ward will be studied to determine the number of hanger stands that will be provided. Hanger stands equivalent in number to about one-half the number of beds will be provided in such wards as the Hemato-oncology (Ward-5) or the Acute Aerogen and Infection (Ward-11), where there is a high demand. In wards with a lower demand such as the Acute Gastro-enterology, Infectious (Ward- 8 and 9), hanger stands equivalent in number to about one-third the number of beds in the ward will be provided. Hanger stands equivalent in number to about ten (10) percent of the number of beds in wards such as the Acute Gastro-enterology, Non-Infectious (Ward-10), with a relatively lower demand than the former clinics and wards, will be provided.
- E: As a rule, one (1) unit will be provided for 12 wards and the outpatient consultation rooms (6 rooms in the new building and 4 rooms in the old building). However, two units will be provided for those wards with a high demand and frequency of use.
- F: As a rule, the number of monitors equivalent to about ten (10) percent of the number of beds in each ward will be provided. However, the number of monitors that will be provided for the ICU will be equivalent

to about one-half the number of beds in the ICU, due to the extremely high demand and frequency of use.

- G: In principle, one (1) to two (2) units of the electric suction unit will be provided for each ward based on a review of the demand and frequency of use. However, the number of electric suction units that will be provided for the ICU will be equivalent to about one-half the number of beds in the ICU, due to the extremely high demand and frequency of use.
- H: The number of syringe pumps required for each ward will be determined according to the number of hospitalized patients with special diseases.
- I: In principle, one (1) unit will be provided for each floor that requires the equipment. However, two (2) units will be provided for the floor if there is a high demand and frequency of use.

3) Quantity of beds

According to the Ministry of Health, 265 beds have been registered at the Pediatric Hospital. The justifications are given below.

a. Number of beds and the number of patients

The total population of Albania in 1999 was 33,620,000, of which the population of children was 10,970,000 (32.6 percent) and the ratio of hospitalized patients with acute ailments was two (2) percent. Based on these figures, it is estimated that there are about 21,900 hospitalized patients annually. The average number of hospitalized days was 7.2 (the median in 1996-1999), which signifies that 430 beds are needed to accommodate the demand. The total population in the suburbs of Tirana City is 2,080,000, of which the population of children was 678,000. The estimated number of hospitalized patients annually is 13,600, which means that 268 beds are needed. In view of these figures, the number of 265 beds registered at the Pediatric Hospital is the minimum number of beds that are needed.

b. Review of the data on the past number of hospitalized patients

The average total annual number of hospitalized patients at the Pediatric Hospital from 1996 to 1998 was 9,236 (excluding the Surgery, Ward-1 and the Day-Hospital Stay). The average number of hospitalized days was 7.2, the fluctuating coefficient for the maximum number of

hospitalized patients per day was 1.25 and the number of required beds was 228. This last figure does not include the 20 beds in the Surgery and the 15 beds in the Day-Hospital Stay. If these beds were included in the bed count, there are 263 beds. According to the interview survey, the 15 beds in the Day-Hospital Stay were set according the actual number of emergency patients. Therefore, all 15 beds were included in the estimation.

The annual number of hospitalized patients in 1999 was 8,191, when the shortage of beds due to depreciation actually surfaced. According to the calculation, the number of patients per day was 202, excluding patients admitted to the Day-Hospital Stay. The number of beds that can be actually utilized is 186 and if the 20 patients in the surgery ward were included during the peak time, about 16 patients from the Nephrology (Ward-5) clinic had to be hospitalized at the Hospital Center for adults. This information was confirmed with the General Pediatric Service during the field survey.

The number of hospitalized patients in 1999 had decreased by 1,000 patients in comparison to last year's figures. This drop is in conjunction with the decrease in the number of Pediatric Hospital beds available. The calculation based on 1998 data shows that the maximum number of hospitalized patients per day was 263. Based on this statistic, it was concluded that the number of beds, which the Pediatric Hospital is capable of accommodating, is 265 in view of actual patient demand.

c. Number of beds according INSTAT statistics

According to the "Quarterly Statistical Bulletin 1999 of the Institute of Statistics (INSTAT)", the actual number of beds at the Pediatric Hospital was 242 (excluding the surgery ward), which was nearly equivalent to the estimated value of hospitalized patients mentioned above. This also signifies that the actual bed count, including the surgery ward, is about 260.

d. Verification of the Tirana plan

The Tirana plan advocates that the 250 beds at the Pediatric Hospital (excluding the 20 beds of the surgery ward) should not be reduced as planned by the Government of Albania. Therefore, it was concluded that

the 270 beds, including the surgery ward, were appropriate in terms of the hospital's functions and health care services.

e. Number of beds according to the location of the facility

Based on the findings on the size, space, layout of each room, and allocation of beds in the renovated Pediatrics Hospital collected during the field survey, it was possible to adequately arrange 265 beds.

Therefore in reviewing items a.- e., the appropriate number of beds was established at 265. However, the actual number of beds that can be used is 186 and there is a shortage of 79 beds. Of this number only 179 beds are in good condition and 16 beds need to be replaced (186 beds – 170 beds). Therefore, it is recommended that the Project provide 95 beds as replacements.

Unlike adults, since children are unable to clearly communicate their symptoms to the physician, the patients are first screened at the General Pediatric Service and transferred to the Special Pediatric Service as needed. Therefore, the Project will provide beds for the General Pediatric Service (in the old building) where there is a higher demand for beds.

The types of beds that will be provided will be decided according to past data on the age and number of hospitalized patients (0-1 years 38%, 1-6 years 34.1%, 6-16 years 34%).

Based on the explanation above, the allocation plan for each ward is shown in the table below.

Table 2-4 Number of Planned Beds

General Pediatric Hospital (Old Building)	No. of Ward	Total	Infant Bed	Child Bed	Bed
Acute Gastro-enterology (Infectious)	Ward- 8 and 9	30	13	7	10
Acute Gastro-enterology (Non-Infectious)	Ward-10	35	12	12	11
General Pediatrics	Ward-7	15	5	5	5
Day Hospital Stay	-	15	5	6	4
Day Hospital Stay	-	95	35	30	30

The layout plan of the beds that will be provided by the Project is given in the Fig. 2-1.

3) Deciding the quantity of other equipment

The quantity of equipment for the General Pediatric Service, Special Pediatric Service and Centralization will be decided according to the following.

- J: One (1) diagnostic set will be provided for each physician of each ward.
- K: A minimum quantity of one (1) unit will be allocated for each ward.
- L: Two (2) units of equipment, which must be used, with several patients will be provided for each ward and functional diagnosis room.
- M: The quantity for equipment, which must be used with several patients and have a high demand and frequency of use in a specific ward, will be equivalent to ten (10) percent of the total number of beds in that ward.
- N: The minimum quantity of equipment required for each ward and laboratory will be decided based on the past number of patients and samples handled by that ward and functional diagnosis room.
- O: The quantity of equipment allocated for the ICU and equipment used in emergencies, with a high demand and frequency of use, will be equivalent to one-half the number of beds in that ward.

2-3-2 Basic Design

(1) Equipment that will be provided by the Project

The content and quantity of the equipment that will be provided by the Project are given in "Table 2-5". The selections were based on the review findings explained in section "2-2-2 Review of the Request" and section "2-3-1 Design Concept". Items A-O, which delineates the policy by which the quantity was decided, is explained in section "(7) Policy on Quantity of the equipment". The quantity of beds that will be provided by the Project was calculated according the explanation provided above.

Table 2-5 Quantity of Equipment and Usage

No.	Equipment Name	Q'ty	Evaluation	Purpose
I. COMMON UTILIZATION				
I-1	Small weight scale	17	A	to measure infant weight by basket
I-2	Large weight scale	17	A	to measure weight for upper child to adult
I-3	Infant ruler	17	A	to measure infant height by railway
I-4	Height measure	17	A	to measure standing height of upper child
I-5	Infrared thermometer	5	B	to measure temperature by infra-red from ear
I-6	Conventional thermometer	17	A	to measure accurate temperature with mercury
I-7	Rectal-thermometer	4	B	to measure temperature from rectum
I-8	Digital-thermometer	17	A	to measure temperature electrically
I-9	Sphygmomanometer (stand-type)	32	C	to measure blood pressure at bedside
I-10	Sphygmomanometer (tabletop-type)	2	C	to measure blood pressure with mercury
I-11	Hanger stand	84	D	to hold intravenous drip and making enable to carry it in injection treatment
I-12	X-ray film illuminator (negatoscope)	28	E	to illuminate x-ray films for diagnosis
I-13	Monitor	38	E	to manage patient's vital sign
I-14	Electric suction unit	28	G	to suck exudative blood and fluid, to secure air tract, and to anesthetize patient
I-15	Syringe infusion pump	15	H	to keep speed of ntravenous drip and to prescribe accurate dozen of medicine
I-16	Infusion pump	34	C	to keep speed of ntravenous drip
I-17	Medicine cabinet	14	A	to keep general equipment in ward or treatment room
I-18	Instrument cabinet	14	A	to preserve general drug in ward or treatment room
I-19	Instrument carriage	14	A	to carry out general instrument and drug for bedside treatment
I-20	Pediatric examining table	22	E	to treat and diagnose patient body in ward or consultation room
I-21	Infant bed	30	*	infant size bed
I-22	Child bed	30	*	child size bed
I-23	Bed	35	*	adult size bed
I-24	ICU bed	20	*	for ICU use, specifying x-ray penetration and artifact noise reduction
I-25	Mattress	65	*	mattress for child size bed and adult size bed
I-26	Overbed table	30	*	to support patient's reading and writing for long term hospital stay
I-27	Laundry cart	17	A	to collect dirty laundry from bed rooms for hygiene management of hospital
I-28	Stretcher	4	I	to carry patient lying in safe and quietly condition and climb stairs by separating parts of it
I-29	Wheel chair	4	I	to carry conscious patient in sitting position
II. GENERAL PEDIATRIC SERVICE				
GENERAL PEDIATRICS (WARD-7)				
II-1	Diagnostic set (A)	2	J	to observe and examine facial organs directly
ACUTE GASTRO-ENTEROLOGY (WARD-8, 9)				
II-2	Diagnostic set (A)	5	J	to observe and examine facial organs directly
ACUTE GASTRO-ENTEROLOGY (WARD-10)				
II-3	Diagnostic set (B)	3	J	to observe and examine facial organs directly

No.	Equipment Name	Q'ty	Evaluation	Purpose
II-4	Oxygen flowmeter set	2	L	to give patient adjusting oxygen and control oxygen flow rate
II-5	Hot water bottle	4	M	to warm patient foot and control temperature
ACUTE GASTRO-ENTEROLOGY (WARD-11)				
II-6	Diagnostic set (A)	1	J	to observe and examine facial organs directly
II-7	Infant warmer	1	K	to warm infant by top-heater in room air condition
II-8	Oxygen face mask (small & medium size)	2X2	L	pediatric size mask for oxygen inhalation
II-9	Resuscitation bag (small & medium size)	2X2	L	to send air, anesthetic and high density oxygen for patient by one way valve
II-10	Oxygen flowmeter set	2	L	to give patient adjusting oxygen and control oxygen flow rate
II-11	Pulse oxymeter	2	L	to examine SpO ₂ non-invasively, control respiration and protect low oxygen condition
II-12	High pressure steam sterilizer set	1	K	plain sterilization instruments by high pressure and temperature before and after use in treatment
II-13	Stainless steel butt	2	L	to put beside patient to take out dirt immediately
II-14	UV sterilizing lamp	2	L	to sterilize simply water harmful instrument by ultraviolet lamp to protect from infection
II-15	Tympanometer	1	K	to diagnose infectious tympanum inflammation by objective audiometry examination
II-16	Ultrasonic nebulizer	2	L	to inhale aerosal medicine directly by ultrasound and treat respiratory disorder such as asthma, bronchial infection
II-17	Blood transfusion warmer (A)	1	K	to warm blood pack in moderate temperature before transfusion
DAY HOSPITAL				
II-18	Diagnostic set (A)	3	J	to observe and examine facial organs directly
II-19	Oxygen flowmeter set	5	N	to give patient adjusting oxygen and control oxygen flow rate
II-20	Defibrillator	1	K	to take off fibrillation and recover regular heart rhythm by direct current
II-21	Pulse oxymeter	1	K	to examine SpO ₂ non-invasively, control respiration and protect low oxygen condition
II-22	Ultrasonic nebulizer	2	L	to inhale aerosal medicine directly by ultrasound and treat respiratory disorder such as asthma, bronchial infection
II-23	Blood transfusion warmer (B)	1	K	to warm blood pack in moderate temperature before transfusion

III. SPECIAL PEDIATRIC SERVICE**CLINIC OF CARDIOLOGY**

III-1	Ultrasonic nebulizer	2	L	to inhale aerosal medicine directly by ultrasound and treat respiratory disorder such as asthma, bronchial infection
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NEUROLOGY & CARDIOLOGY (WARD-4)

III-2	Portable EEG	1	K	to examine electro-encepharograph at bedside for the patient unable to move or unconscious condition
III-3	Blood transfusion warmer (A)	1	K	to warm blood pack in moderate temperature before transfusion

CLINIC OF PEDIATRIC NEPHROLOGY

III-4	Haemofiltration apparatus	1	K	to haemofiltrate for the patient of acute renal failure patient
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NEPHROLOGY & HEMATO-ONCOLOGY (WARD-5)

III-5	Blood transfusion warmer (B)	1	K	to warm blood pack in moderate temperature before transfusion
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No.	Equipment Name	Q'ty	Evaluation	Purpose
CLINIC OF PNEUMOLOGY				
III-6	Spirometer	1	K	to examine respiratory functions or pre-operation check
III-7	Pulse oxymeter	1	K	to examine SpO ₂ non-invasively, control respiration and protect low oxygen condition
PNEUMOLOGY & ALLERGIOLGY (WARD-2, 3)				
III-8	Pulse oxymeter	1	K	to examine SpO ₂ non-invasively, control respiration and protect low oxygen condition
III-9	Ultrasonic nebulizer	5	L	to inhale aerosol medicine directly by ultrasound and treat respiratory disorder such as asthma, bronchial infection
III-10	Oxygen hood	10	L	to cover head and supply high density oxygen for the patient who is unable for oxygen therapy or uncooperative condition such as infant
SURGICAL ICU				
III-11	Defibrillator	1	K	to take off fibrillation and recover regular heart rhythm by direct current
III-12	Oxygen tent	2	L	to cover head and supply high density oxygen for the patient who is unable for oxygen therapy or uncooperative condition by serious condition
III-13	Oxygen monitor	4	N	to measure oxygen flow for oxygen use and therapy
III-14	Infant warmer with hood	2	L	to take care and protect infant under 6 months born intensively in the covered and controlled condition
III-15	UV sterilizing lamp	1	K	to sterilize simply water harmful instrument by ultraviolet lamp to protect from infection
III-16	Intubation set	3	N	to keep air tract, put tubes from throat to upper respiratory passageway
III-17	Resuscitation bag (small & midium size)	5X2	O	to send air, anesthetic and high density oxygen for patient by one way valve
III-18	Surgical incubator	2	L	to take care and protect infant under 12 months born intensively in the covered and controlled condition
III-19	Pulse oxymeter	2	L	to examine SpO ₂ non-invasively, control respiration and protect low oxygen condition
III-20	Ultrasonic nebulizer	2	L	to inhale aerosol medicine directly by ultrasound and treat respiratory disorder such as asthma, bronchial infection
III-21	Blood transfusion warmer (B)	1	K	to warm blood pack in moderate temperature before transfusion
III-22	Sliding stretcher	1	K	to carry patient lying in safe and quietly condition
INTERNAL ICU				
III-23	Defibrillator	1	K	to take off fibrillation and recover regular heart rhythm by direct current
III-24	Oxygen tent	5	N	to cover head and supply high density oxygen for the patient who is unable for oxygen therapy or uncooperative condition by serious condition
III-25	UV sterilizing lamp	2	L	to sterilize simply water harmful instrument by ultraviolet lamp to protect from infection
III-26	Intubation set (ventilator)	3	N	to keep air tract and force breathing by objectively to reduce the burden of respiration
III-27	Resuscitation bag (small & midium size)	5X2	N	to send air, anesthetic and high density oxygen for patient by one way valve
III-28	Ultrasonic nebulizer	5	N	to inhale aerosol medicine directly by ultrasound and treat respiratory disorder such as asthma, bronchial infection
III-29	Blood transfusion warmer (B)	1	K	to warm blood pack in moderate temperature before transfusion

No.	Equipment Name	Q'ty	Evaluation	Purpose
IV. CENTRALIZATION				
RADIATION ROOM				
IV-1	Tomography X-ray unit	1	K	to determine the point of fracture and bleeding by tomographic and fluoroscopic mode
IV-2	Conventional X-ray unit	1	K	to examine emergency cases for 24 hours use or simple screening for mass T.B. control
IV-3	Film processing set	1	K	to develop films automatically all process quickly
IV-4	X-ray film illuminator (negatoscope)	4	N	to illuminate x-ray films for diagnosis
ENDOSCOPY ROOM				
IV-5	Pediatric fibergastroscope and accessories	1	K	to diagnose gastro-esophageal diseases, to observe internal organs directly and to cut out tissues for biopsy
IV-6	Pediatric fibercolonoscope and accessories	1	K	to observe gallbladder and liver, to cut out tissues or biopsy and to demolition of cholelith
IV-7	Pediatric cystofiberscope and accessories	1	K	to observe urinary tract and to treat focuses by cutting, coagulating and blending
IV-8	Video endoscopic system	1	K	to enlarge the scope view for operation by CCD video system
IV-9	pH-Meter	2	L	to measure pH of gastro-intestinal fluid directly
IV-10	X-ray film illuminator (negatoscope)	2	L	to illuminate x-ray films for diagnosis
IV-11	Universal xenon light source for endoscope	1	K	light resources to provide light to the endoscope tip
IV-12	Washing machine for endoscope	1	K	to sterilize endoscope for prevention of infection and erosion
IV-13	Endoscopic suction unit	1	K	to suck exudative blood and fluid for the endoscopic observation of focal point clearly
IV-14	Electro surgical unit for endoscopy	1	K	to cut , coagulate and blend tissue of inflammation by micro unit of endoscope
IV-15	Endoscopic cabinet	1	K	to store all endoscope unit safely and cleanly
IV-16	Endoscopic table	1	K	endoscopic examination table to insert endoscope and change body position easily to see
ULTRASOUND ROOM				
IV-17	Ultrasound apparatus(color doppler)	1	K	to determine the cardiovascular diseases by doppler method of ultrasound echogram
IV-18	Partition	1	K	to keep privacy and obscure light moderately for ultrasound examination
IV-19	Examination table	2	L	lying table to examine ultrasound echogram easily and safely
ECG ROOM				
IV-20	Electrocardiography (ECG)	2	L	to examine cardiological disorders and check the heart condition for operation
IV-21	Portable ECG	2	L	to examine cardiological disorders at bedside for the patient unable to move
IV-22	Examination table	2	L	lying table to examine electro cardiograph easily and safely
EEG ROOM				
IV-23	Electro encephalography (EEG)	1	L	to examine central nerve system and cerebrum abnormalities by amplifying cranium electric activity
IV-24	Examination bed	1	L	lying bed to examine electro encephalograph easily and safely especially for sleep activation
IV-25	Audiometer	1	L	to determine sensitive disorders and functional abnormalities by subjective audiometry examination

No.	Equipment Name	Q'ty	Evaluation	Purpose
EMG ROOM				
IV-26	Electromyography (EMG)	1	K	to examine peripheral nervous systems to determine nerve transmission disorders
IV-27	Examination table	1	K	lying table to examine electrocardiograph easily and safely
CENTRAL PHARMACY				
IV-28	Electric analytical balance	1	K	to measure drug precisely
IV-29	Medical refrigerator	1	K	to store reagent and drug in cool condition safely and stable
IV-30	Cabinet for medicine storage	1	K	to store reagent and drug safely and stable from poisoning
IV-31	Prescription counter	1	K	to dispense prescription safely in the pharmacy
EMERGENCY LABORATORY				
IV-32	Refrigerator	1	K	to store blood pack before blood transfusion treatment
IV-33	Freezer	1	K	to store samples stable for a while to send to the special diagnosis center or re-examine the sample resulted abnormal data
IV-34	Sweat testing device for mucoviscidosis	1	K	to determine endemic diseases such as mucoviscidosis by sweat test
IV-35	Blood cell counter	1	K	to analyze blood cell automatically in short time
IV-36	Spectrophotometer	1	K	to examine biochemistry test for emergency cases rapidly
IV-37	Centrifuge	1	K	to separate samples (blood, urine, exudative fluid, etc.) to prepare for examination
IV-38	Staining set	1	K	to stain cells and tissues for microscopic examination
IV-39	Binocular microscope	4	N	to observe and determine the abnormalities of cells and tissues

(2) Specification of the equipment

The summarized specification of the main equipment which decided according to the design concept, equipment specification and grade is shown in the "Table 2-6" on the following page.

Table 2-6 Specification of Main Equipment

Item No.	Equipment Name	Q'ty	Specification
I-2	Large weight scale	17	capacity : 150Kg, minimum graduation : 50~200g
I-11	Hanger stand	84	stainless steel, dimention:approx 2 m, double hanger type, provided caster, height adjustable
I-12	X-ray film illuminator (negatoscope)	28	desk or wall type, film capacity : 2 filmes
I-13	Monitor	38	CRT/TFT monitor, front panel, parameter : ECG, respiration, NIBP, temp, etc.
I-14	Electric suction unit	28	Motor type, pump : rotary type, suction power : approx 680 ml, suction bottle : 3,000 ml x 1,500 ml x 1, provided caster
I-15	Syringe infusion pump	15	flow rate setting : 10 ml syringe • 0.1~150 ml/h, using syringe : 10, 20, 30, 50 ml, alarm function
I-16	Infusion pump	34	floow volume : 0.1~999 ml/h, alarm function
I-17	Medicine cabinet	14	material : synthetic resin, upper section : approx 50 drawers, lower section : shelf/drawers, size : W750 x D400 x H1,600 mm
I-18	Instrument cabinet	14	material : stainless steel, uppersection : glass shelves, lower section : stainless steel shelves, size : W900 x D400 x H1700 mm
I-19	Instrument carriage	14	material : stainless steel, provided 3 shelves, provided caster
I-20 IV-21 IV-25 IV-30	Pediatric examining table	27	material : polyurethane foam coverd with vinyl learther, stainless steel pipe, size : L1,800 x D750 x H600 mm
I-21	Infant bed	30	material: stainless cage, with mattress, size : L1,400 x D800 x H1,350 mm
I-22	Child bed	30	materia l : stainless steel pipe, manual 1 crank type, provided caster, overbed table, IV pole, size : L2,000 x D900 x H1,000 mm
I-23	Bed	35	material : stainless steel pipe, manual 1 crank type, provided caster, overbed table, IV pole, size : L2,000 x D1,000 x H1,000 mm
I-24	ICU bed	20	material : stainless steel frame, polyurethane foam coverd with vinyl learther, manual 2crank type, provided caster, overbed table, IV pole, size : L2,000 x D900 x up-down H800~900 mm
I-25	Mattress	65	material : polyurethane foam, size : 30child bed (L1,800x D800x H100 mm), 35bed (L2,000x D900x H100 mm)
II-4 II-10 II-19	Oxygen flowmeter set	9	oxygen pressure gauge : 0~250 Kg/cm ² , provided humidifier, water capacity : 3.5 l, provided oxygen face mask
II-11 II-21 III-7 III-8 III-19	Pulse oxymeter	7	LCD display measurement : pO ₂ , SpO ₂ , pCO ₂ , SpO ₂ , measreing range : 100%

Item No.	Equipment Name	Q'ty	Specification
II-15	Tympanometer	1	compliance measurement system : 0.1~5.0 ml, air pressure system : ± 400 dapa, acoustic reflex : 0.5~5 kHz, provided headphone, earplug
II-16 III-1 III-9 III-20 III-28	Ultrasonic nebulizer	18	nebulizing rate : 3 ml/min, mist particle size : under 5 microns, provided timer
II-20 III-11 III-23	Defibrillator	3	power source : AC or DC (built-in rechargeable battery), ECG monitor display, ECG amplifier (heart rate count range) : under 360bpm
II-23 III-5 III-21 III-29	Blood transfusion warmer (B)	4	horizontal stroke movement, stroke speed : 70 rev./min timer control : 12 h bag capacity : 24 bags, temperature : $22^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$
III-2	Portable EEG	1	14 channel, recording method : inl writing, provided caster unit
III-4	Heamofiltration apparatus	1	flow rate range, blood : 5 ml/min. or more polypropylene filter, access line pressure : 50 mmHg or less
III-14	Infant warmer with hood	2	temp., himidity and oxygen servo control applied patient size : under 6 months, alarm fanchion with acryl window
III-18	Surgical incubator	2	servo temp. control, applied patient size : under 1 years, humidity supply, intensive care hood
III-26	Intubation set (ventilator)	3	applied patient : newborn to adult, hearter humidity type, air driven system time cycling, oxygen/air blender, bacteria filter, proided caste unit
IV-1	Tomography X-ray unit	1	x-ray generator : inverter type, fluoroscopic table, R/F control table, x-ray tube, CCD TV camera monitor, vertical bucky stand, floating top bucky table, x-ray tube support, etc.
IV-2	Conventional X-ray unit	1	x-ray generator, x-ray tube, x-ray tube support, floating top bucky table, etc.
IV-3	Film processing set	1	automatic processing type, agitation system : circulation system, processing capacity : 200 sheets/h. (10" x 12" size)
IV-5	Pediatric fibergastroscope and accessories	1	field of view:pprox.100° , direction of view:3~100 mm, depth of view:6~8 mm, range of distal end bending : updown and R/L100° or more, total length : 1,000 mm
IV-6	Pediatric fibercolonoscope and accessories	1	field of view:approx.100° , depth of view:3~100 mm, outer diameter:10~12mm, range of distal end bending : $\pm 150\sim 200^{\circ}$, total length : 1,000 mm or more
IV-7	Pediatric cystofiberscope and accessories	1	field of view:90~120° , depth of view:3~50mm, outer diameter:6mm, range of distal end bending : $\pm 120^{\circ}$
IV-8	Video endoscopic system	1	color CCD system, video processor, signal system : PAL
IV-11	Universal xenon light source for endoscope	1	light resource : xenon lamp
IV-14	Electro surgical unit for endoscopy	1	by foot switch, cut-mode, coagulation mode, blend-mode, base frequency : 350 KHz

Item No.	Equipment Name	Q'ty	Specification
IV-16	Endoscopic table	1	hydraulic-oil pump by manual foot pedal, table dimension : L2000 x W600mm, leg section : 90° down, lateral tilt : 0~25°
IV-17	Ultrasound apparatus (color doppler)	1	display mode : A, B, M, B/M, color, scanning method : electric convex, linear, sector, frequency selection : 3 or more
IV-20	Electrocardiography (ECG)	2	6 channel, standard 12 leads, LCD display, safety standard : class 1, printing method : thermal print head, provided caster unit
IV-21	Portable ECG	2	6 channel, standard 12 leads, LCD display, safety standard : class 1, printing method : thermal print head, provided portable unit case
IV-23	Electroencephalography (EEG)	1	18 channel and 2 marker channel, CRT display, evoked potential measuring system (ABR,SEP,VEP)
IV-25	Audiometer	1	2 channel, frequency:100~10000Hz, CRT display, provided headphone
IV-26	Electromyography (EMG)	1	2 channel, intensity:more than 90dB, provided recorder
IV-35	Blood cell counter	1	whole blood mode, 18 parameters, measuring method : non-cyanide hemoglobin method, test capacity : 60 samples/h, sample volume : whole blood mode 50 μ l • predilute mode 20 μ l
IV-36	Spectrophotometer	1	double beam optic mode, wave length range : 190 ~1,100 nm, accuracy : \pm 1 nm, spectral bandwidth : 2 nm
IV-39	Binocular microscope	4	light resource : halogen lamp, eyepiece : x10, objectives : x4, x10, x40, x100, 1 photomicrographic provided for 4

(3) Equipment layout plan

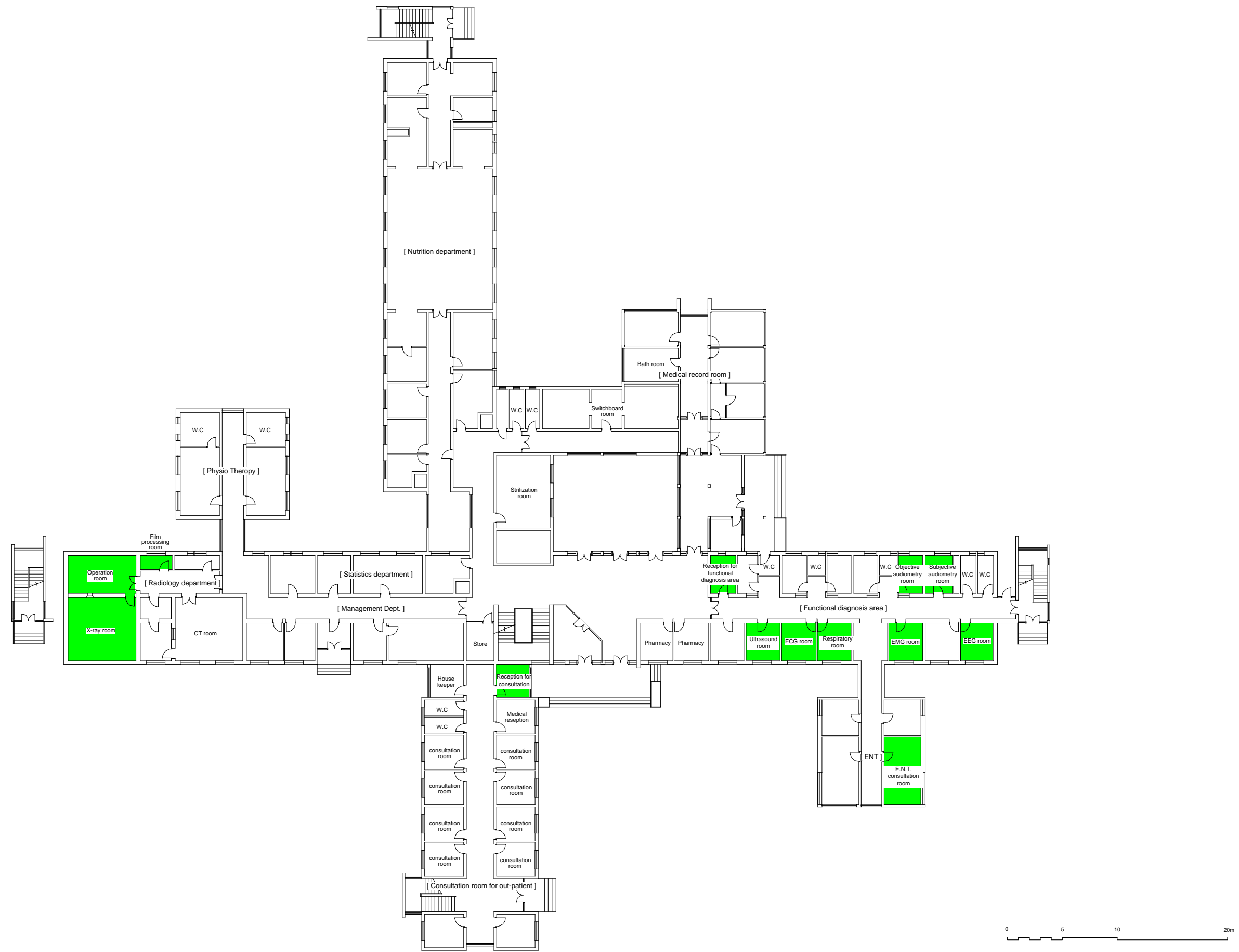
The layout plan for the equipment that will be provided by the Project for each ward and functional diagnosis room is shown in Table 2-7 and Fig. 2-1.

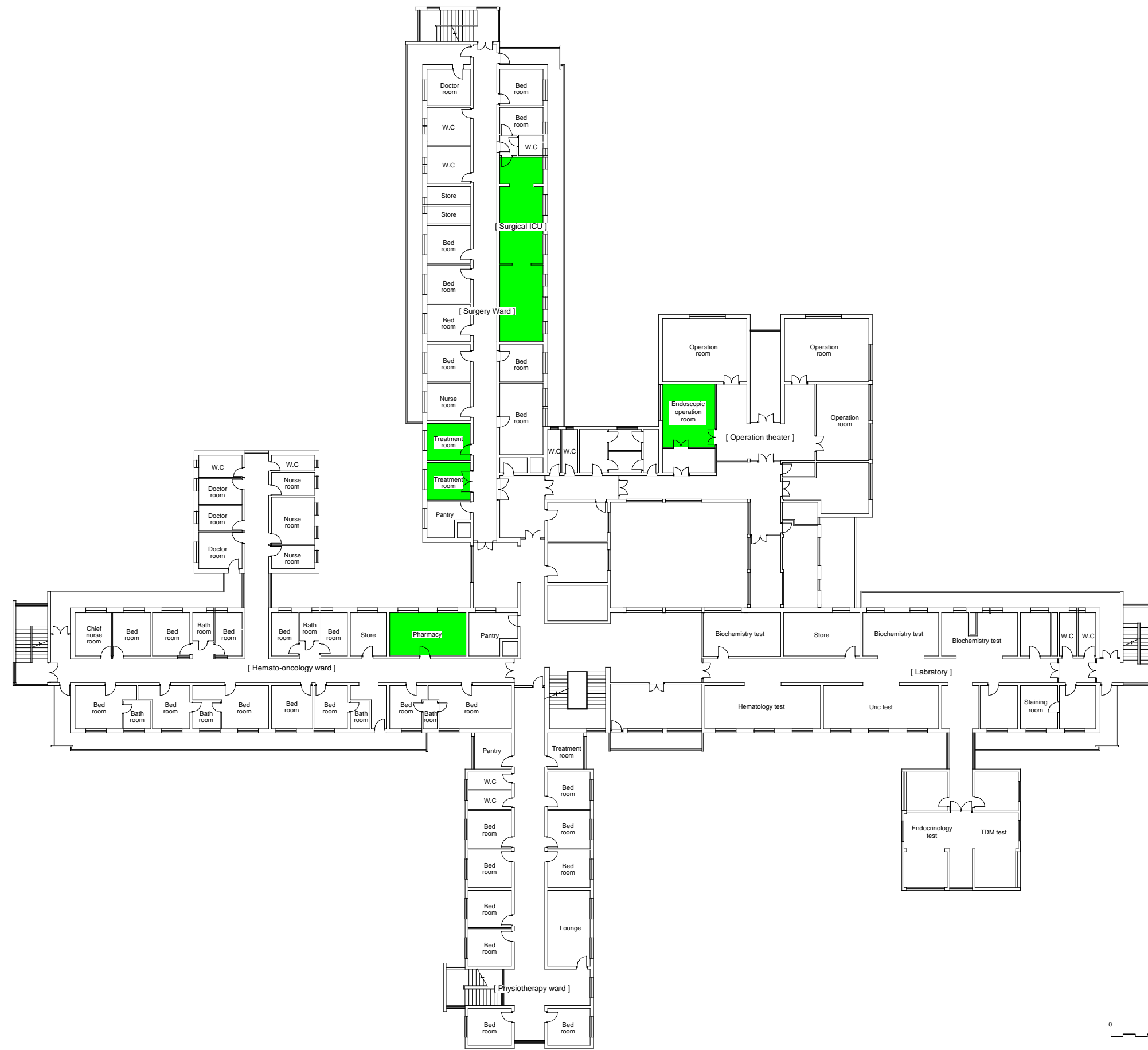
No.	Equipment Name	Qty	Clinic of Surgery	Pneumology (Ward-2, 3)	Clinic of Pneumology	Allergy (Ward-2, 3)	Neurology & Cardiology (Ward-4)	Clinic of Cardiology	Nephrology & Hemato-oncology (Ward-5)	Clinic of Nephrology & Hemato-oncology	Chronic Gastro-enterology (Ward-6)	General pediatrics (Ward-7)	Acute Gastro-enterology (ward-8)	Acute Gastro-enterology (ward-9)	Acute Gastro-enterology (ward-10)	Acute Aerogen & Infection (Ward-11)	Internal ICU	Surgical ICU	Reception for Out-patient in Old Building	Day Hospital	Reception for Out-patient in New Building	Clinic of E.N.T.	X-ray Room in New Building	X-ray Room in Old Building	Endoscopy Room	Ultrasound Room	ECG Room	EEG Room	EMG Room	Respiratory Room	Subjective Audiometry Room	Subjective Audiometry Room	Central Pharmacy	Laboratory	
WARD-10																																			
II-3	Diagnostic set (B)	3													3																				
II-4	Oxygen flowmeter set	2													2																				
II-5	Hot water bottle	4													4																				
WARD-11																																			
II-6	Diagnostic set (A)	1													1																				
II-7	Infant warmer	1													1																				
II-8	Oxygen face mask (small & medium size)	2X2													2X2																				
II-9	Resuscitation bag (small & medium size)	2X2													2X2																				
II-10	Oxygen flowmeter set	2													2																				
II-11	Pulse oxymeter	2													2																				
II-12	High pressure steam sterilizer set	1													1																				
II-13	Stainless steel butt	2													2																				
II-14	UV sterilizing lamp	2													2																				
II-15	Tympanometer	1																															1		
II-16	Ultrasonic nebulizer	2													2																				
II-17	Blood transfusion warmer (A)	1													1																				
DAY HOSPITAL																																			
II-18	Diagnostic set (A)	3																			3														
II-19	Oxygen flowmeter set	5																			5														
II-20	Defibrillator	1																			1														
II-21	Pulse oxymeter	1																			1														
II-22	Ultrasonic nebulizer	2													2																				
II-23	Blood transfusion warmer (B)	1													1																				
III. SPECIAL PEDIATRIC SERVICE																																			
CLINIC OF CARDIOLOGY																																			
III-1	Ultrasonic nebulizer	2					2																												
WARD-4																																			
III-2	Portable EEG	1				1																													
III-3	Blood transfusion warmer (A)	1				1																													
CLINIC OF PEDIATRIC NEPHROLOGY																																			
III-4	Haemofiltration apparatus	1						1																											
WARD-5																																			
III-5	Blood transfusion warmer (B)	1						1																											
CLINIC OF PNEUMOLOGY																																			
III-6	Spirometer	1																														1			
III-7	Pulse oxymeter	1			1																														

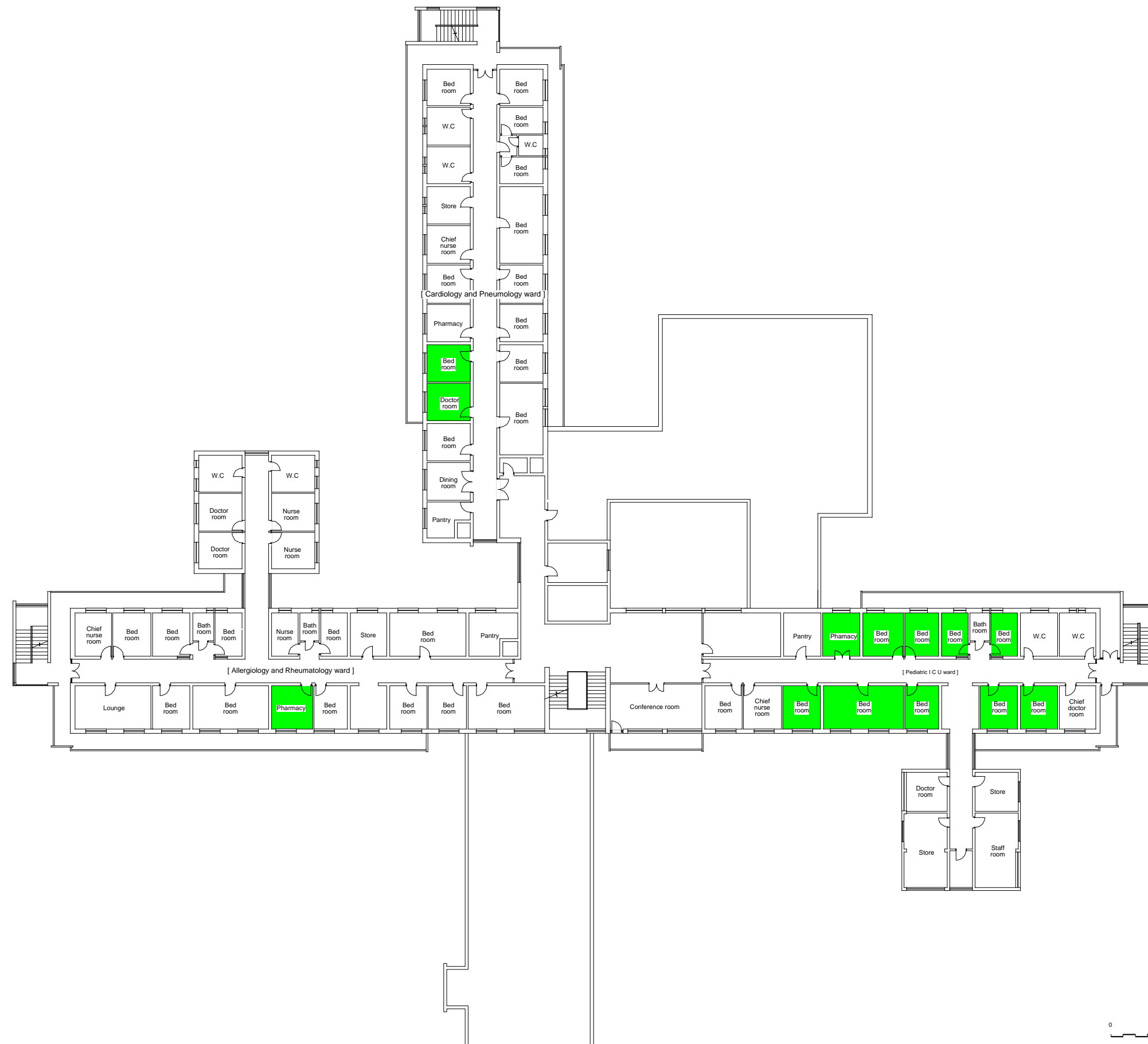
No.	Equipment Name	Qty	Clinic of Surgery	Pneumology (Ward-2, 3)	Clinic of Pneumology	Allergiology (Ward-2, 3)	Neurology & Cardiology (Ward-4)	Clinic of Cardiology	Nephrology & Hemato-oncology (Ward-5)	Clinic of Nephrology & Hemato-oncology	Chronic Gastro-enterology (Ward-6)	General pediatrics (Ward-7)	Acute Gastro-enterology (ward-8)	Acute Gastro-enterology (ward-9)	Acute Gastro-enterology (ward-10)	Acute Aerogen & Infection (Ward-11)	Internal ICU	Surgical ICU	Reception for Out-patient in Old Building	Day Hospital	Reception for Out-patient in New Building	Clinic of E.N.T.	X-ray Room in New Building	X-ray Room in Old Building	Endoscopy Room	Ultrasound Room	ECG Room	EEG Room	EMG Room	Respiratory Room	Subjective Audiometry Room	Subjective Audiometry Room	Central Pharmacy	Laboratory
WARD-2, 3																																		
III-8	Pulse oxymeter	1		1																														
III-9	Ultrasonic nebulizer	5		5																														
III-10	Oxygen hood	10		10																														
SURGICAL INTENSIVE CARE UNIT																																		
III-11	Defibrillator	1																1																
III-12	Oxygen tent	2																2																
III-13	Oxygen monitor	4																4																
III-14	Infant warmer with hood	2													1			1																
III-15	UV sterilizing lamp	1																1																
III-16	Intubation set	3																3																
III-17	Resuscitation bag (small & midium size)	5X2																5X2																
III-18	Surgical incubator	2																2																
III-19	Pulse oxymeter	2																2																
III-20	Ultrasonic nebulizer	2																2																
III-21	Blood transfusion warmer (B)	1																1																
III-22	Sliding stretcher	1																1																
INTERNAL INTENSIVE CARE UNIT																																		
III-23	Defibrillator	1																1																
III-24	Oxygen tent	5																5																
III-25	UV sterilizing lamp	2																2																
III-26	Intubation set (ventilator)	3																3																
III-27	Resuscitation bag (small & midium size)	5X2																5X2																
III-28	Ultrasonic nebulizer	5																5																
III-29	Blood transfusion warmer (B)	1																1																
IV. CENTRALIZATION																																		
RADIATION ROOM																																		
IV-1	Tomography X-ray unit	1																					1											
IV-2	Conventional X-ray unit	1																						1										
IV-3	Film processing set	1																					1											
IV-4	X-ray film illuminator (negatoscope)	4																					2	2										
ENDOSCOPY ROOM																																		
IV-5	Pediatric fibergastroscope and accessories	1																							1									
IV-6	Pediatric fibercolonoscope and accessories	1																							1									
IV-7	Pediatric cystofiberscope and accessories	1																							1									
IV-8	Video endoscopic system	1																							1									
IV-9	pH-Meter	2																							2									

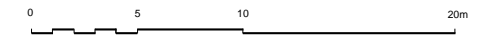
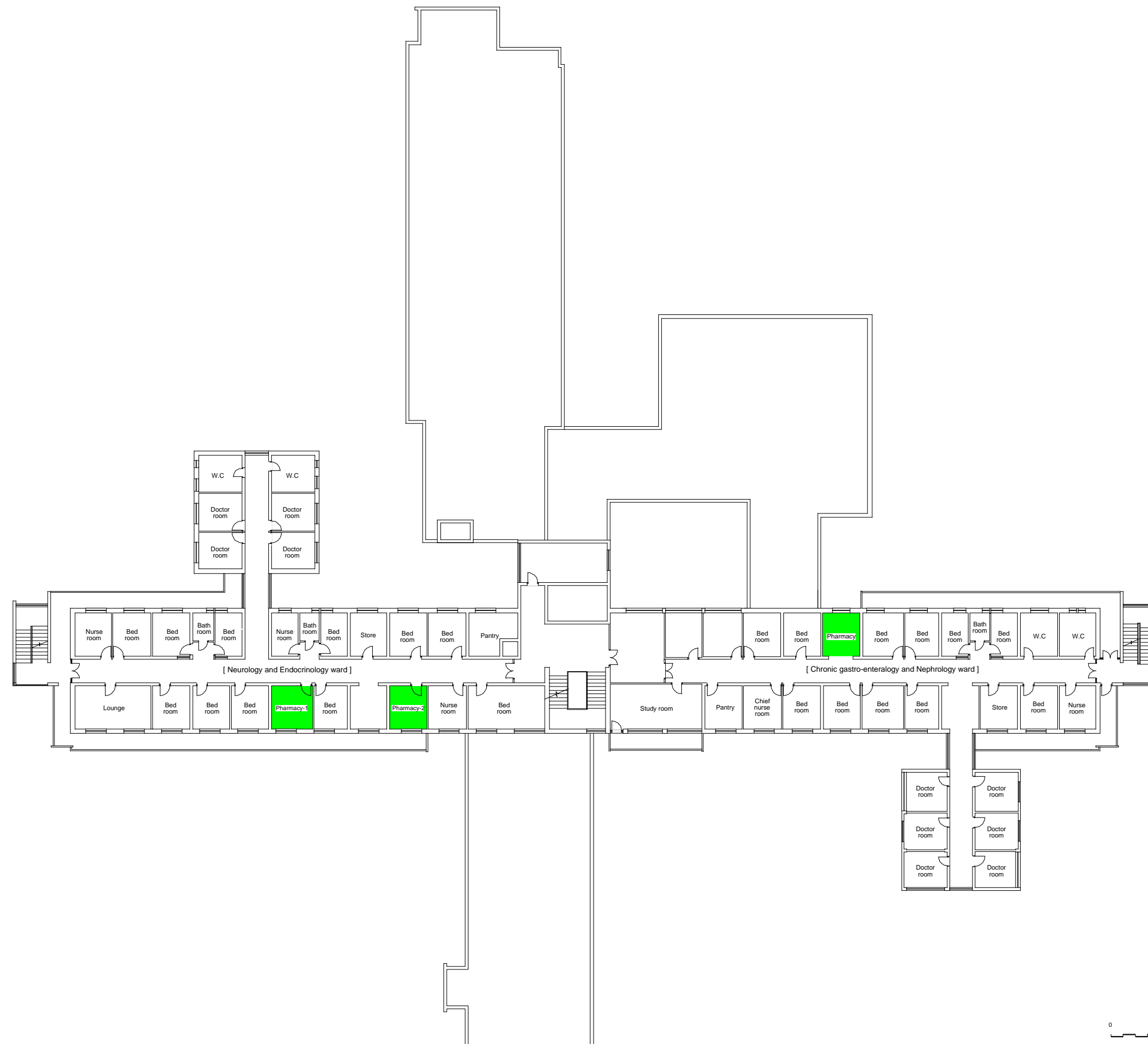
No.	Equipment Name	Qty	Clinic of Surgery	Pneumology (Ward-2, 3)	Clinic of Pneumology	Allergy (Ward-2, 3)	Neurology & Cardiology (Ward-4)	Clinic of Cardiology	Nephrology & Hemato-oncology (Ward-5)	Clinic of Nephrology & Hemato-oncology	Chronic Gastro-enterology (Ward-6)	General pediatrics (Ward-7)	Acute Gastro-enterology (ward-8)	Acute Gastro-enterology (ward-9)	Acute Gastro-enterology (ward-10)	Acute Aerogen & Infection (Ward-11)	Internal ICU	Surgical ICU	Reception for Out-patient in Old Building	Day Hospital	Reception for Out-patient in New Building	Clinic of E.N.T.	X-ray Room in New Building	X-ray Room in Old Building	Endoscopy Room	Ultrasound Room	ECG Room	EEG Room	EMG Room	Respiratory Room	Subjective Audiometry Room	Subjective Audiometry Room	Central Pharmacy	Laboratory			
IV-10	X-ray film illuminator (negatoscope)	2																							2												
IV-11	Universal xenon light source for endoscope	1																							1												
IV-12	Washing machine for endoscope	1																							1												
IV-13	Endoscopic suction unit	1																							1												
IV-14	Electro surgical unit for endoscopy	1																							1												
IV-15	Endoscopic cabinet	1																							1												
IV-16	Endoscopic table	1																							1												
ULTRASOUND ROOM																																					
IV-17	Ultrasound apparatus(color doppler)	1																								1											
IV-18	Partition	1																								1											
IV-19	Examination table	2																								2											
ECG ROOM																																					
IV-20	Electrocardiography (ECG)	2																									2										
IV-21	Portable ECG	2																									2										
IV-22	Examination table	2																									2										
EEG ROOM																																					
IV-23	Electro encephalography (EEG)	1																										1									
IV-24	Examination bed	1																										1									
IV-25	Audiometer	1																																1			
EMG ROOM																																					
IV-26	Electromyography (EMG)	1																											1								
IV-27	Examination table	1																											1								
CENTRAL PHARMACY																																					
IV-28	Electric analytical balance	1																																	1		
IV-29	Medical refrigerator	1																																		1	
IV-30	Cabinet for medicine storage	1																																		1	
IV-31	Prescription counter	1																																		1	
EMERGENCY LABORATORY																																					
IV-32	Refrigerator	1																																		1	
IV-33	Freezer	1																																		1	
IV-34	Sweat testing device for mucoviscidosis	1																																		1	
IV-35	Blood cell counter	1																																		1	
IV-36	Spectrophotometer	1																																		1	
IV-37	Centrifuge	1																																		1	
IV-38	Staining set	1																																		1	
IV-39	Binocular microscope	4																																		4	

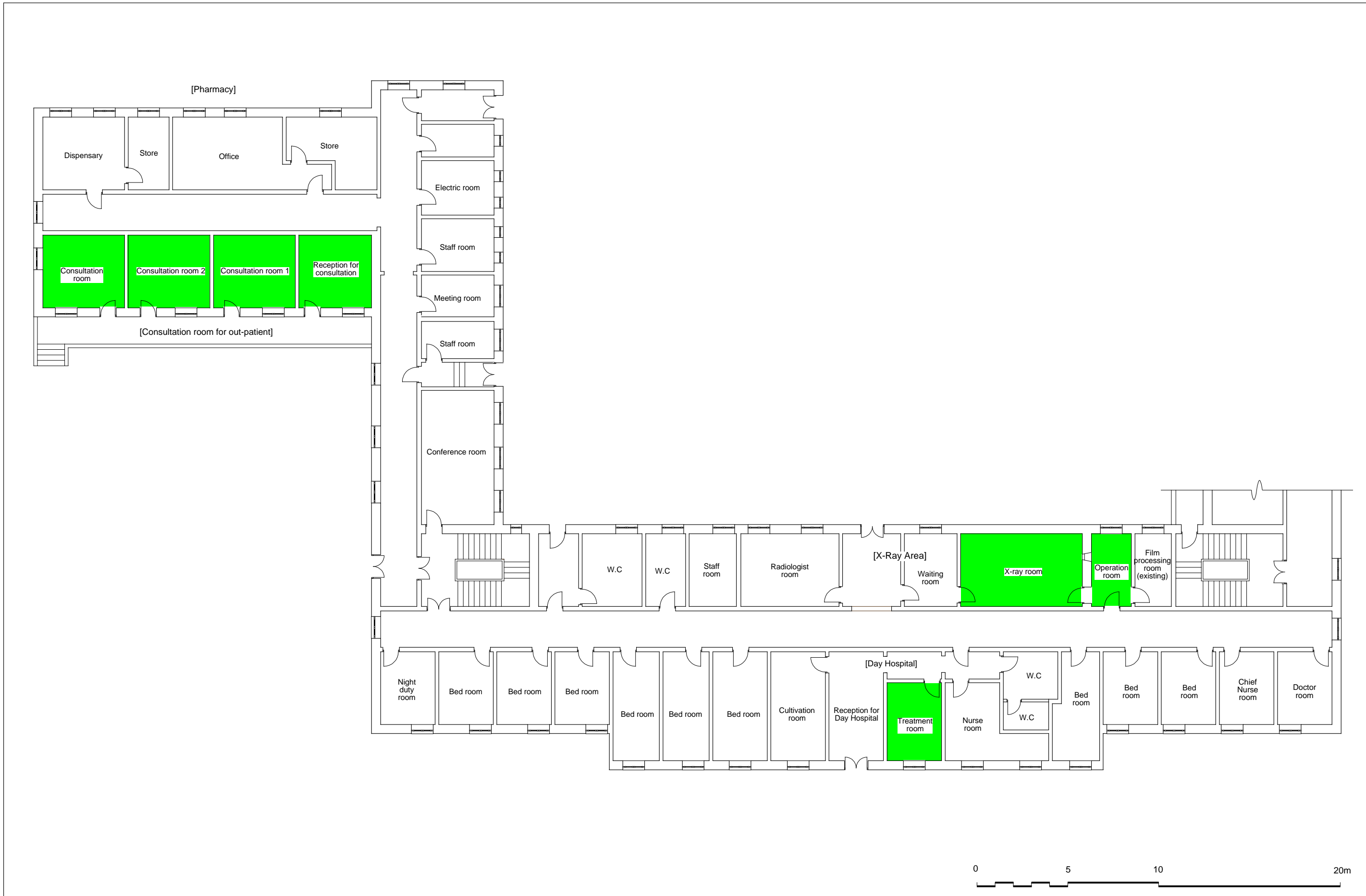
Fig 2 - 1 Equipment Layout Plan



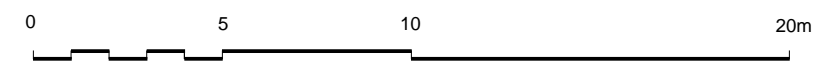
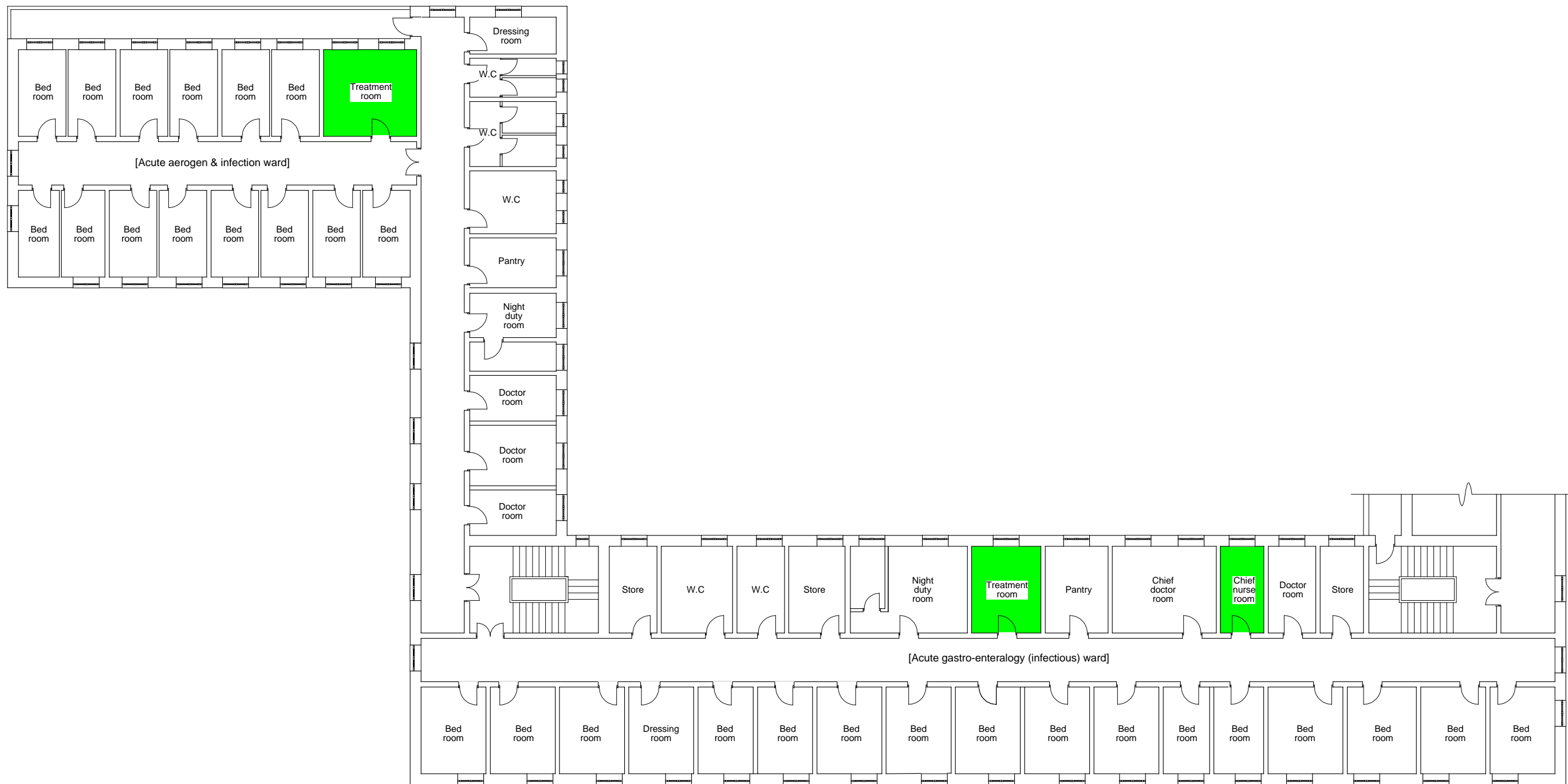






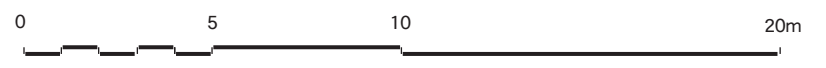


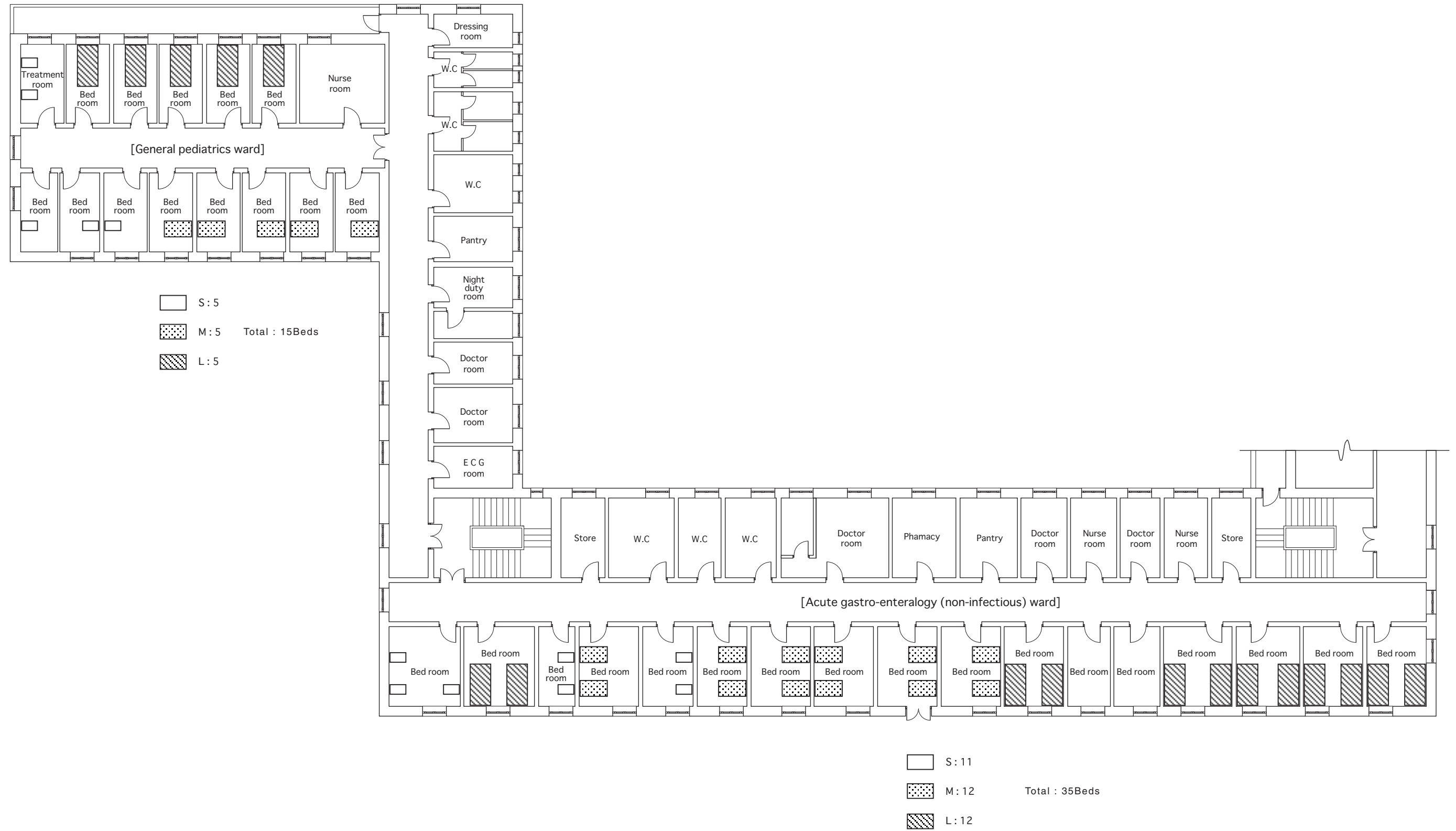


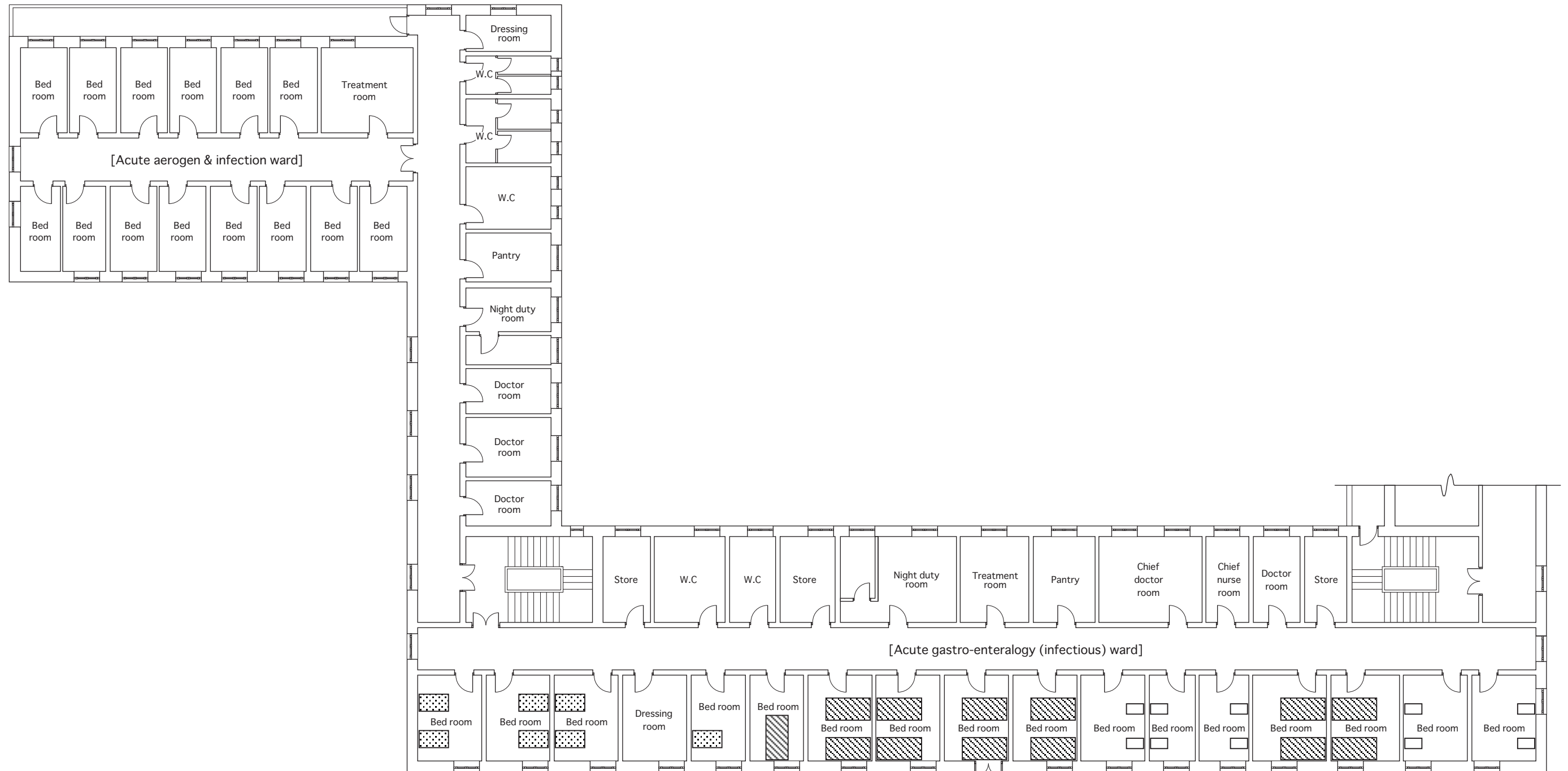




□ S : 4
 ▤ M : 6 Total : 15Beds
 ▨ L : 5



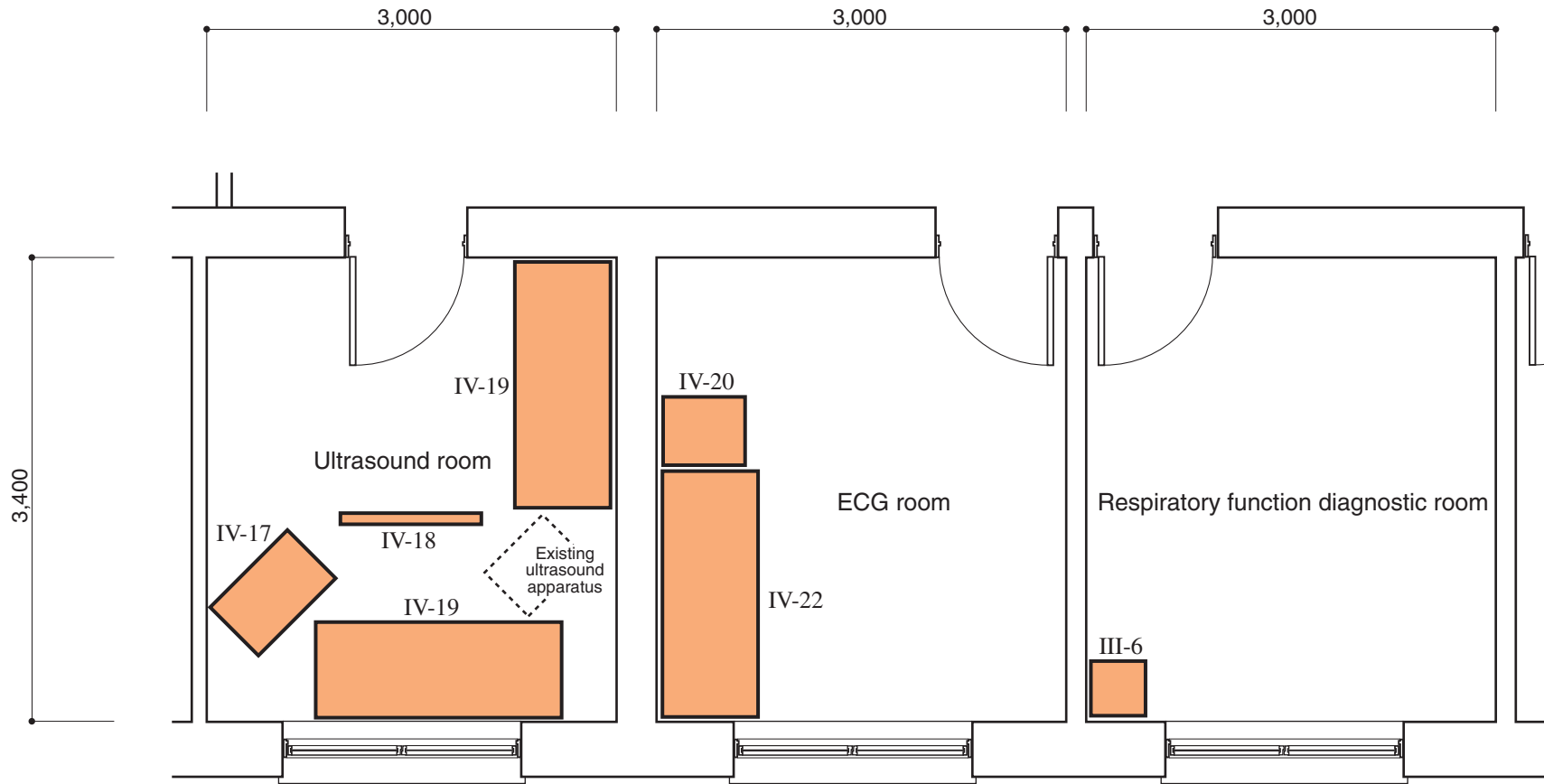






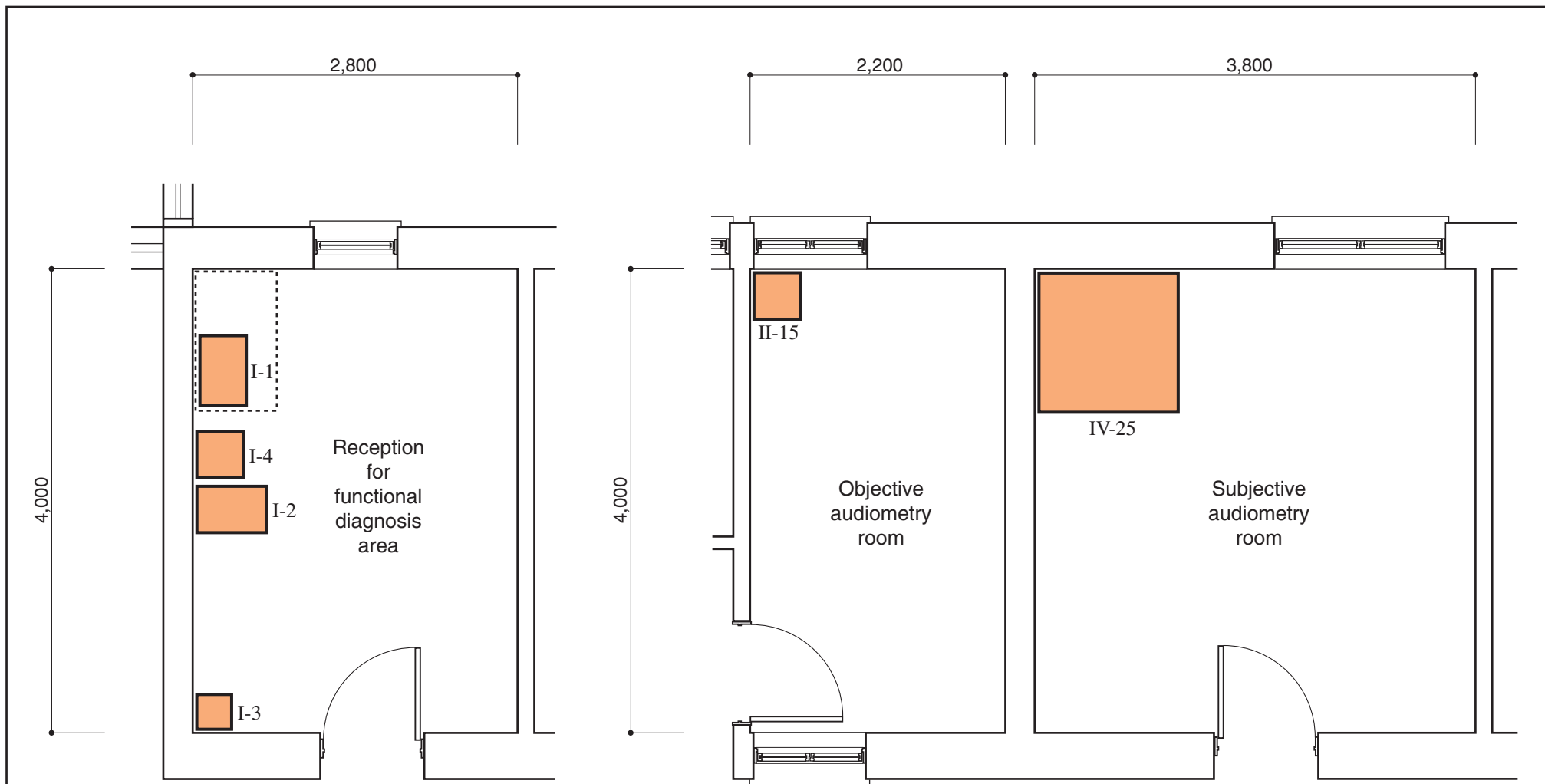
[Radiology department]

IV-1	Conventional X-ray unit
IV-3	Film processing set
IV-4	X-ray film illuminator (negatoscope)



[Functional diagnosis area]

III-6	Spirometer
IV-17	Ultrasound apparatus (color doppler)
IV-18	Partition
IV-19	Examination table
IV-20	Eletrocardiography (ECG)
IV-22	Examination table



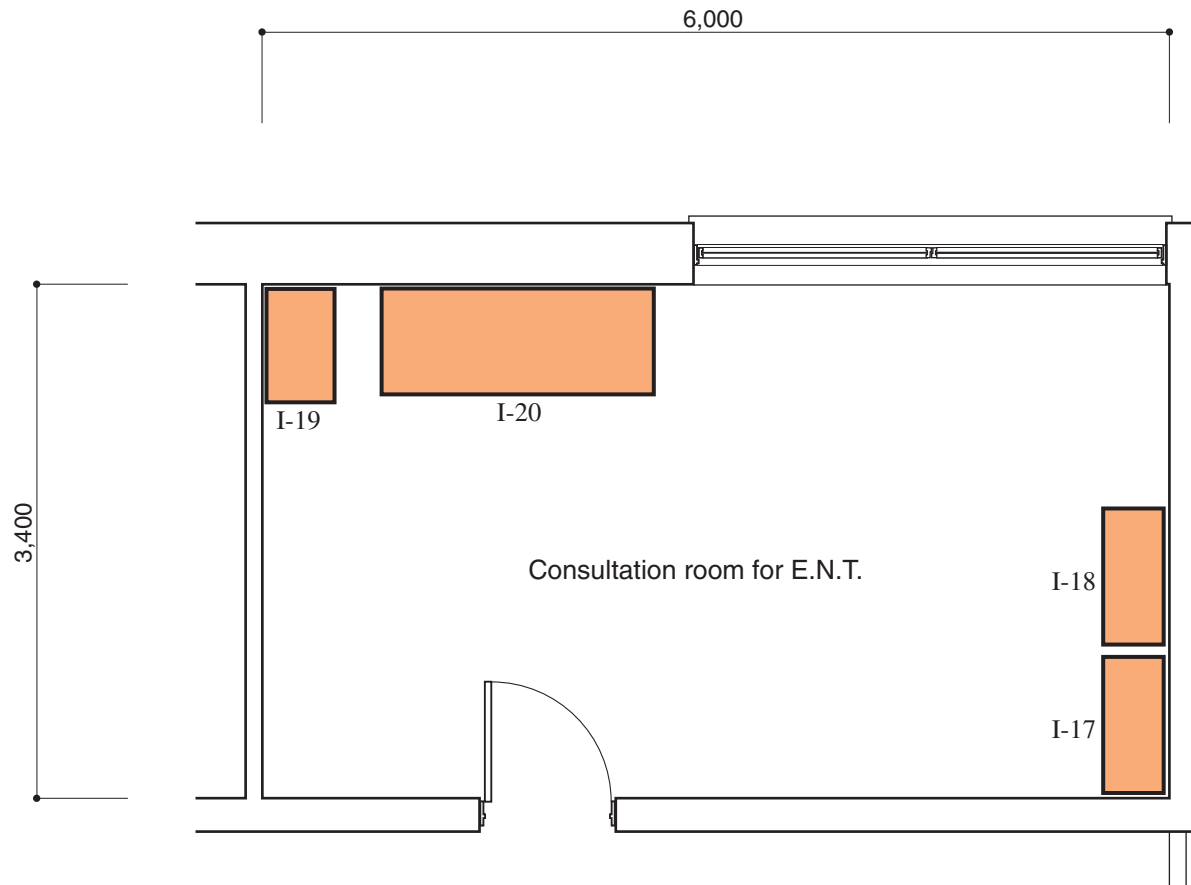
[Functional diagnosis area]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
II-15	Tympanometer
IV-25	Audiometer



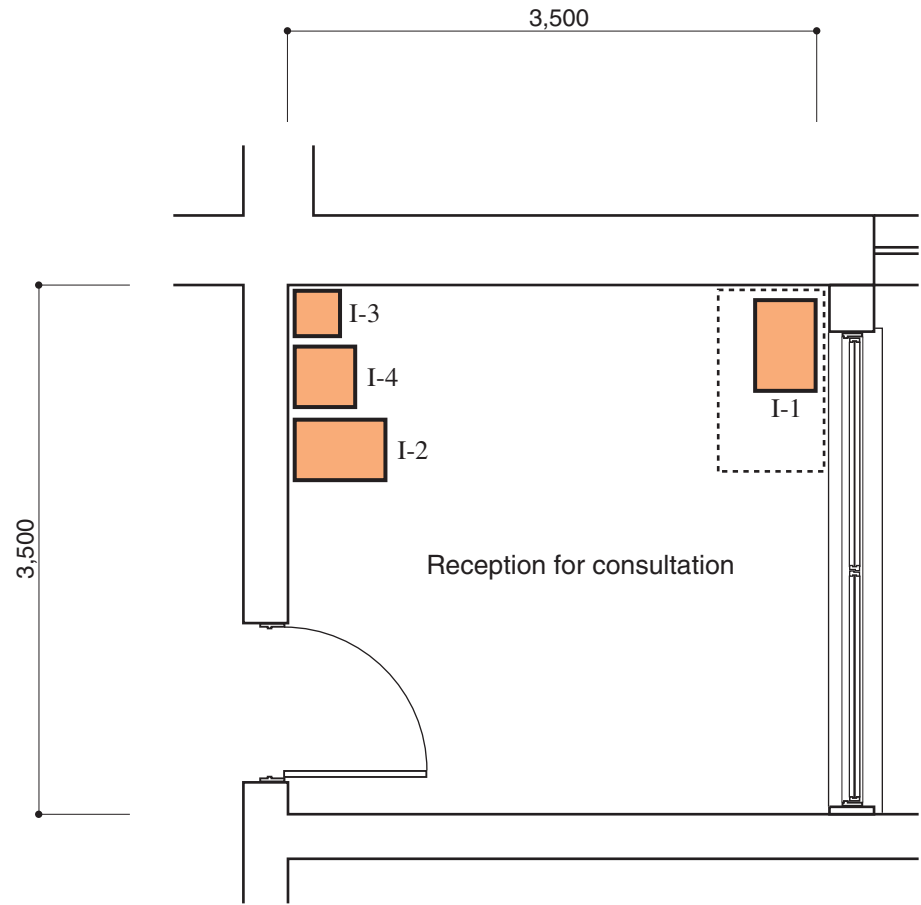
[Functional diagnosis area]

IV-23	Electro encephalography (EEG)
IV-24	Examination table
IV-26	Electromyography (EMG)
IV-27	Examination table



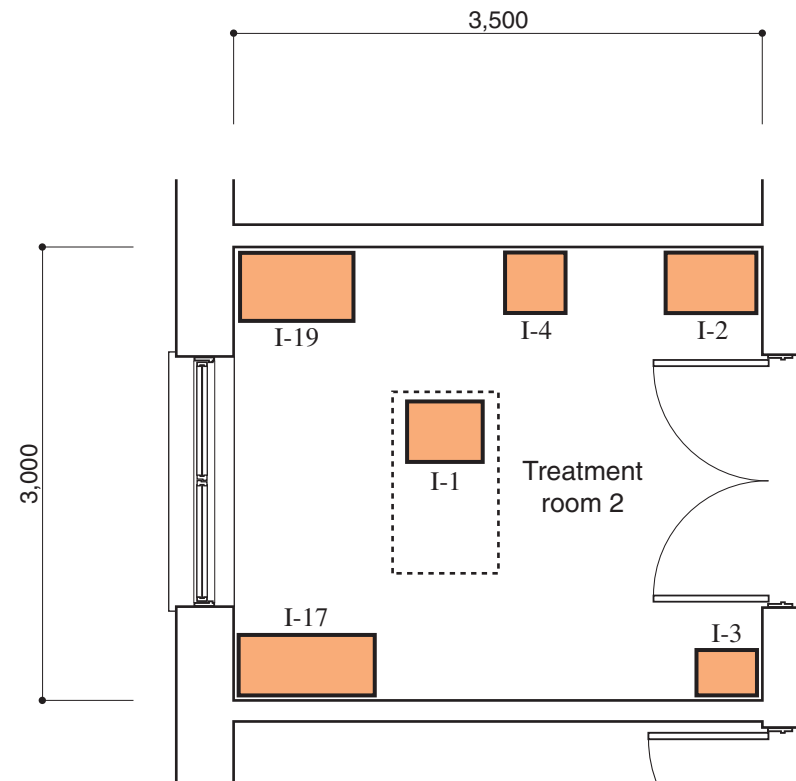
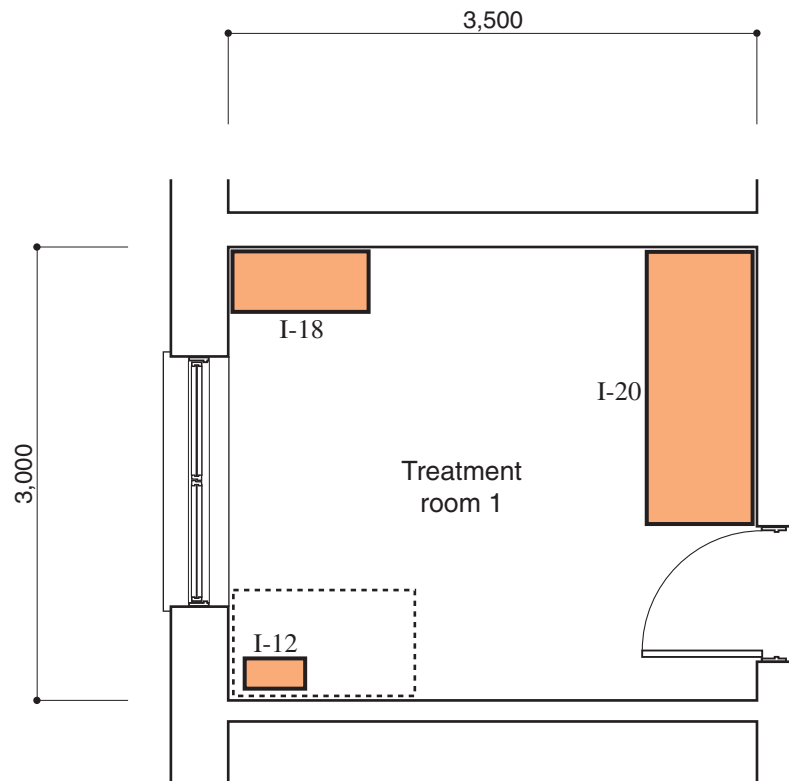
[Otorhinolaryngology (E.N.T.)]

I-17	Medicine cabinet
I-18	Instrument cabinet
I-19	Instrument carriage
I-20	Pediatric examining table



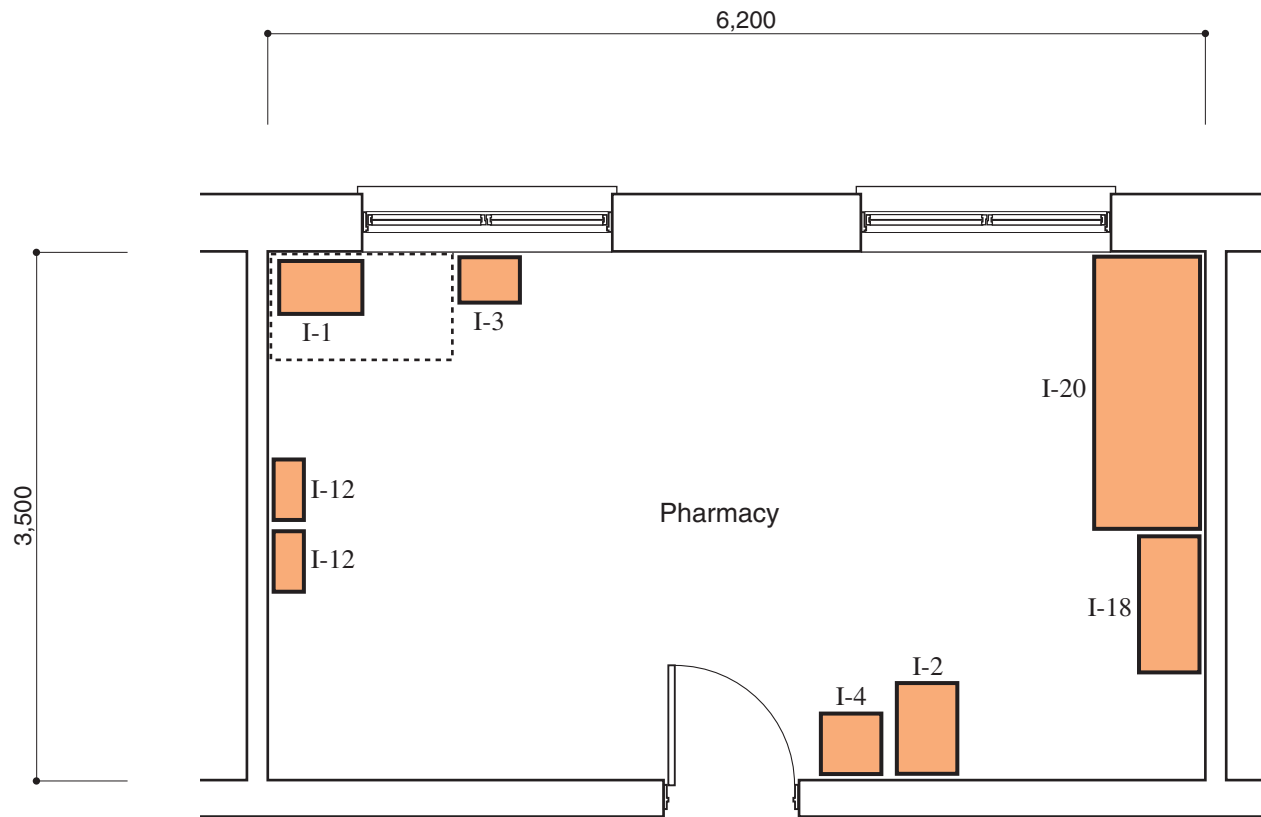
[Consultation room for out-patient]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure



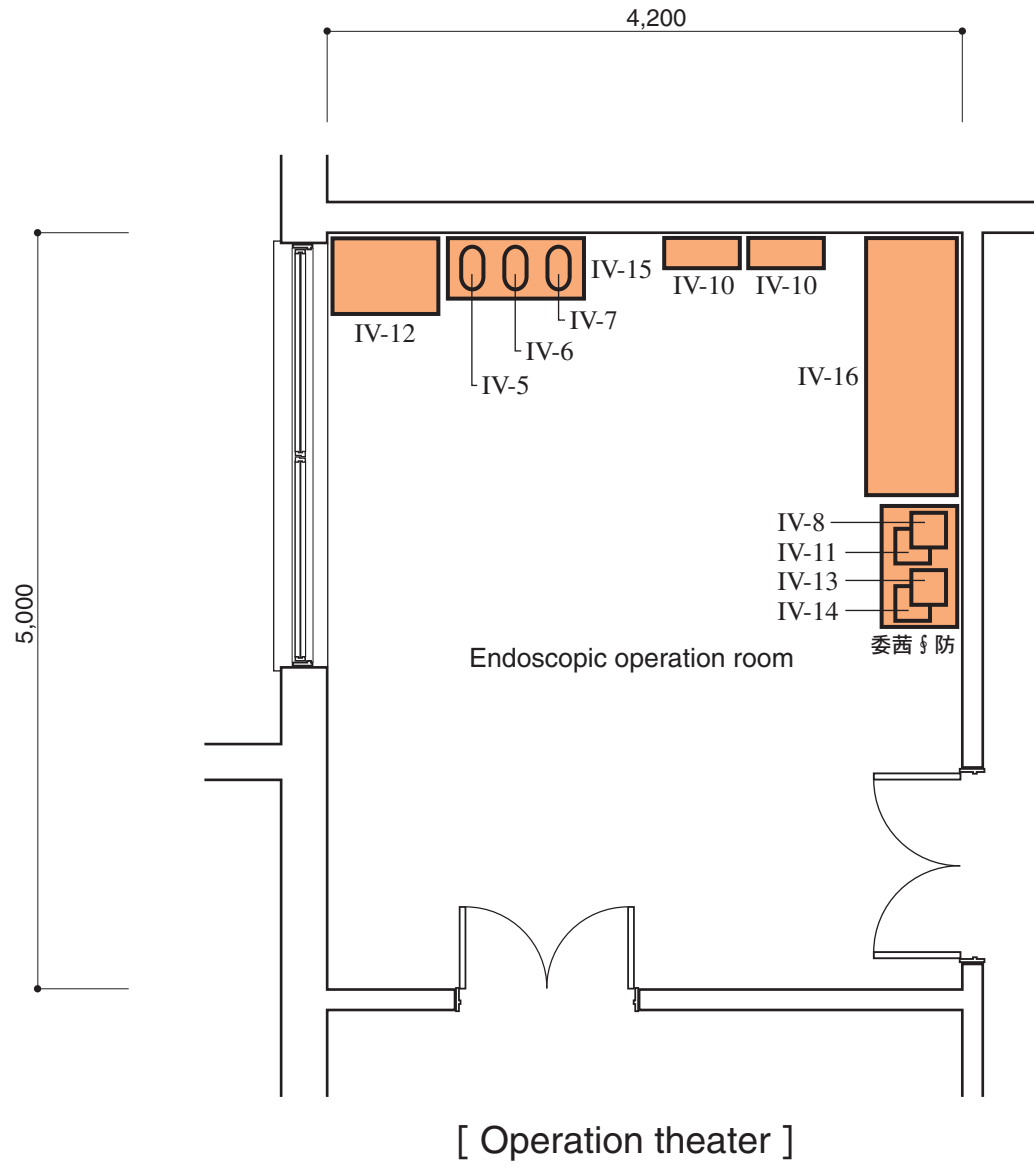
[Surgery ward]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-17	Medicine cabinet
I-18	Instrument cabinet
I-19	Instrument carriage
I-20	Pediatric examining table

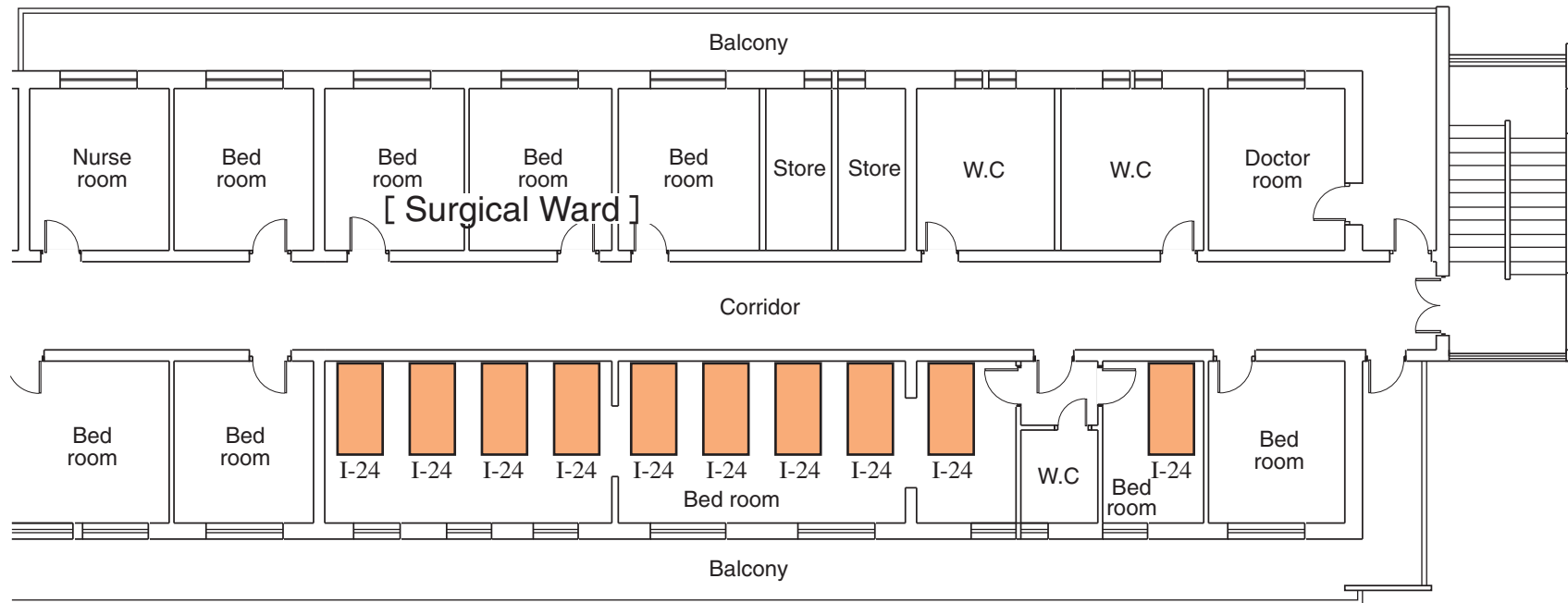


[Haemato-oncology ward]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-18	Instrument cabinet
I-20	Pediatric examining table



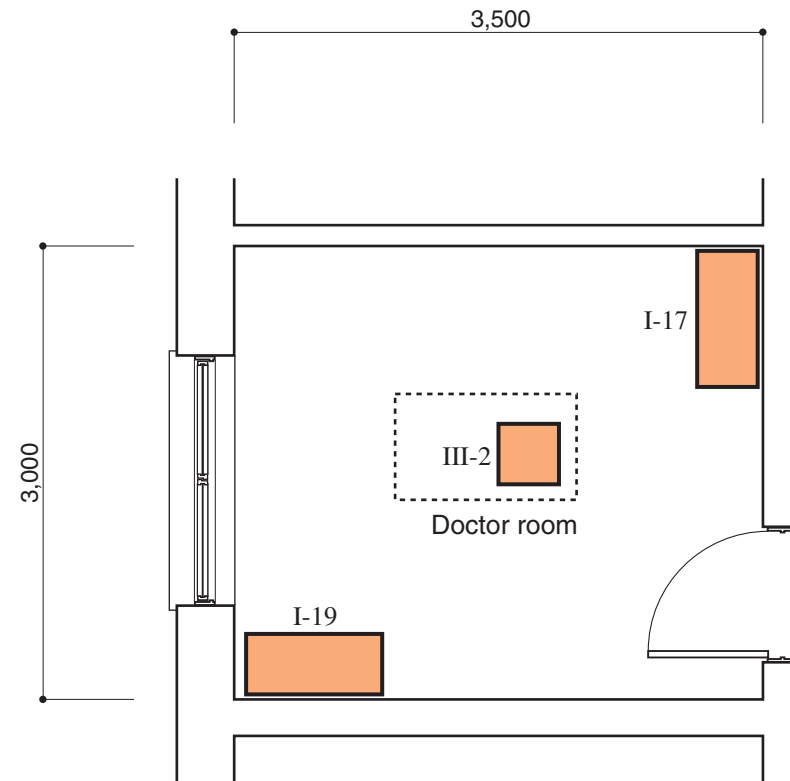
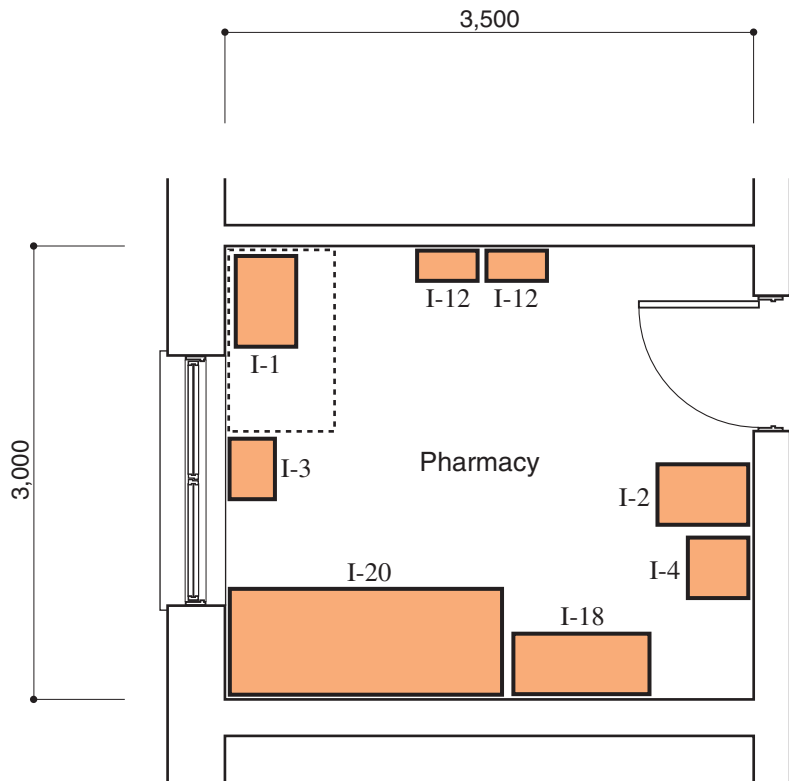
IV-5	Pediatric fibergastroscope and accessories
IV-6	Pediatric fibercolonoscope and accessories
IV-7	Pediatric cystofiberscope and accessories
IV-8	Video endoscopic system
IV-10	X-ray film illuminator (negatoscope)
IV-11	Universal xenon light source for endoscope
IV-12	Washing machine for endoscope
IV-13	Endoscopic suction unit
IV-14	Electro surgical unit for endoscopy
IV-15	Endoscopic cabinet
IV-16	Endoscopic table



[Surgical ICU]



I-24 ICU bed



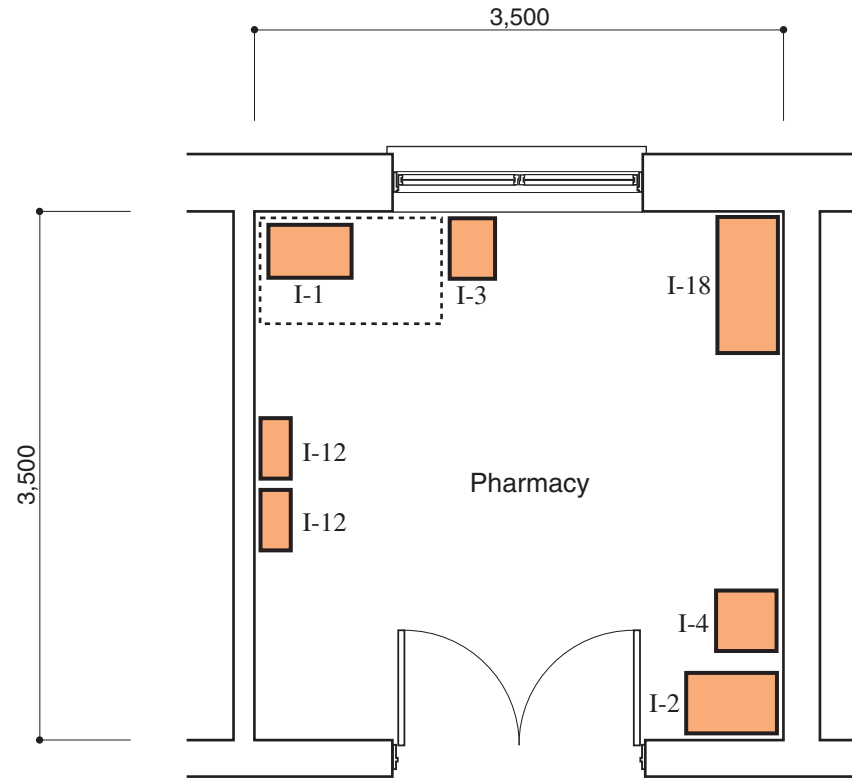
[Cardiology and Pneumology ward]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-17	Medicine cabinet
I-18	Instrument cabinet
I-19	Instrument carriage
I-20	Pediatric examining table
III-2	Portable ECG



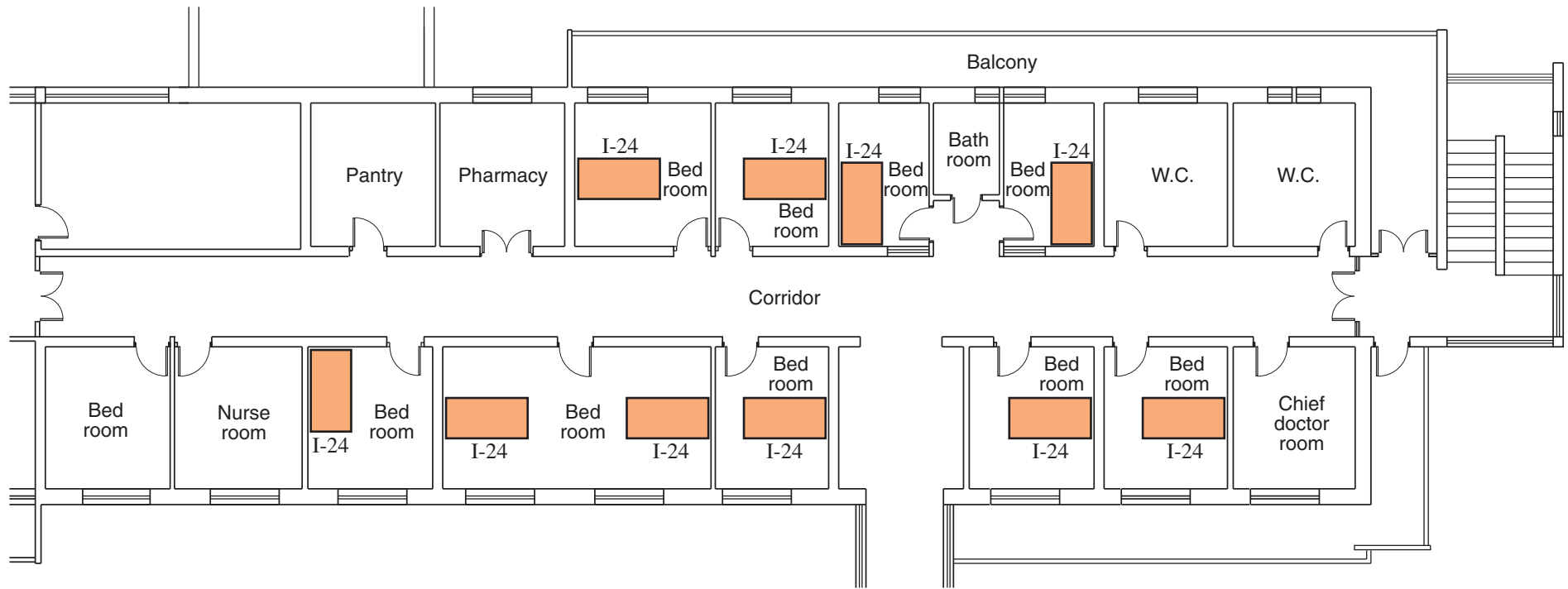
[Allergiology and Rheumatology ward]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-18	Instrument cabinet
I-20	Pediatric examining table



[Internal ICU]

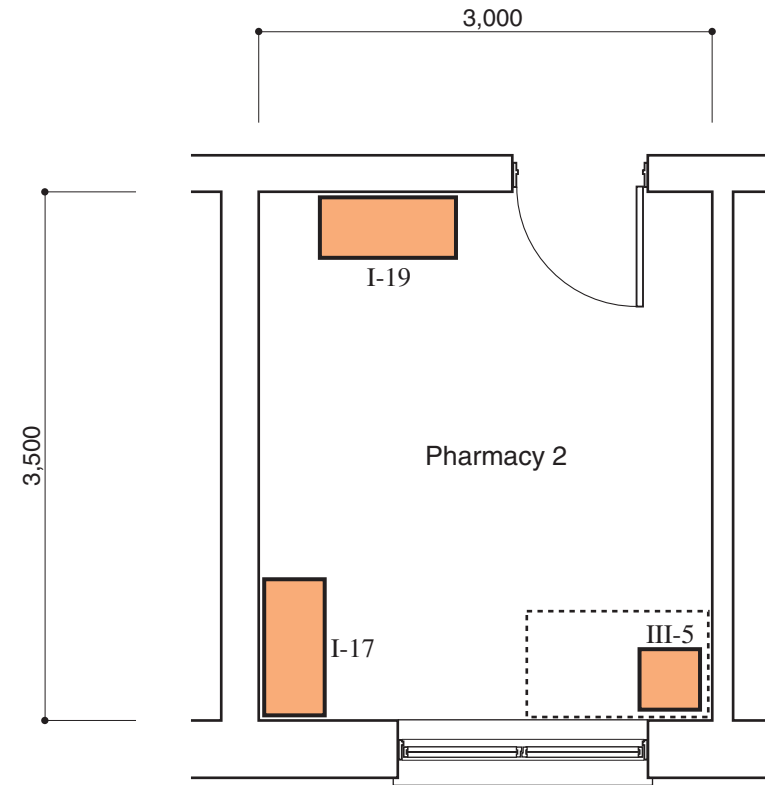
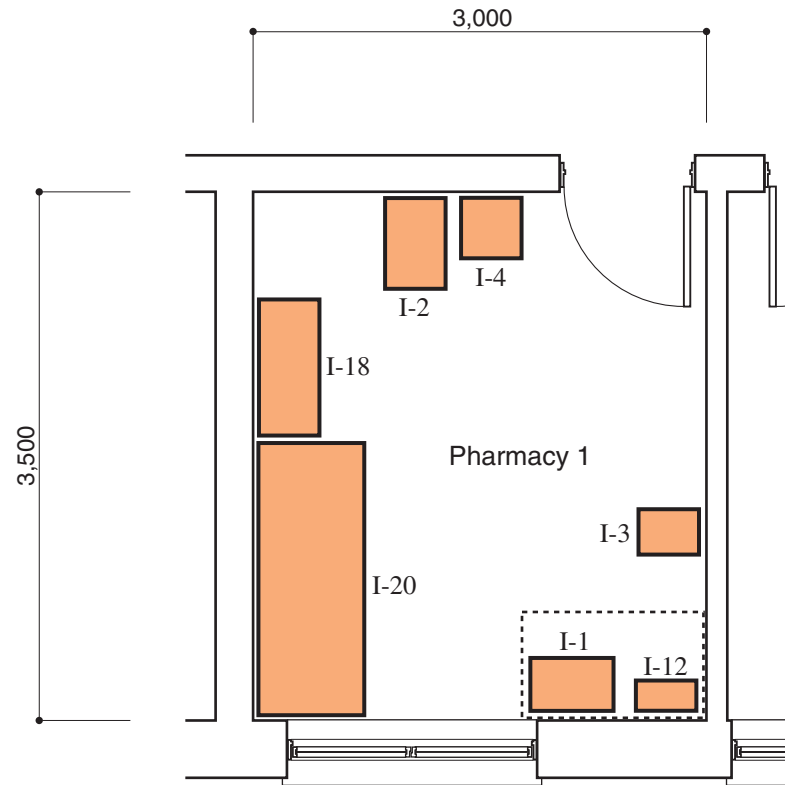
I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-18	Instrument cabinet
	Pediatric examining table



[Internal ICU]

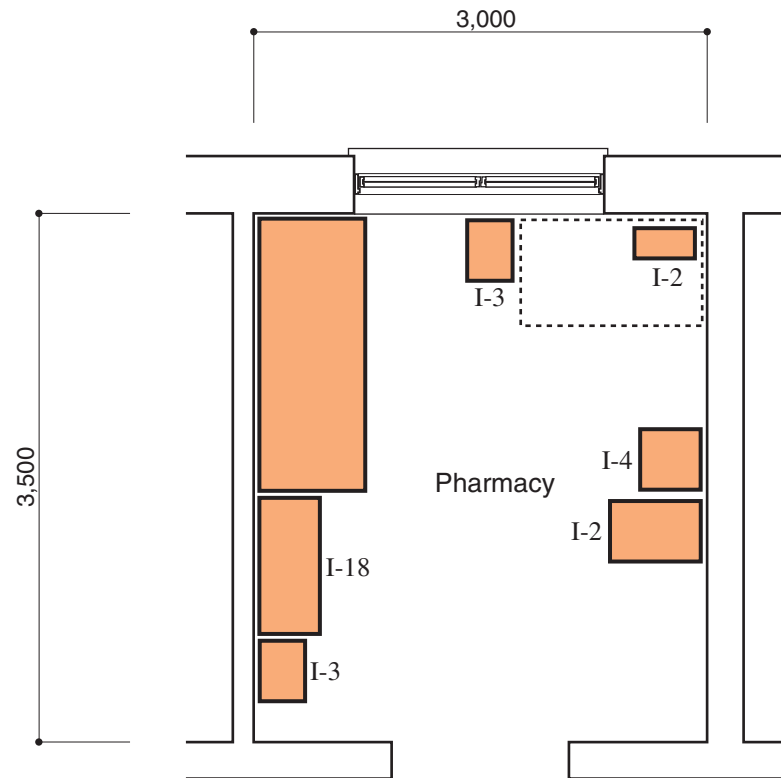


I-24 ICU bed



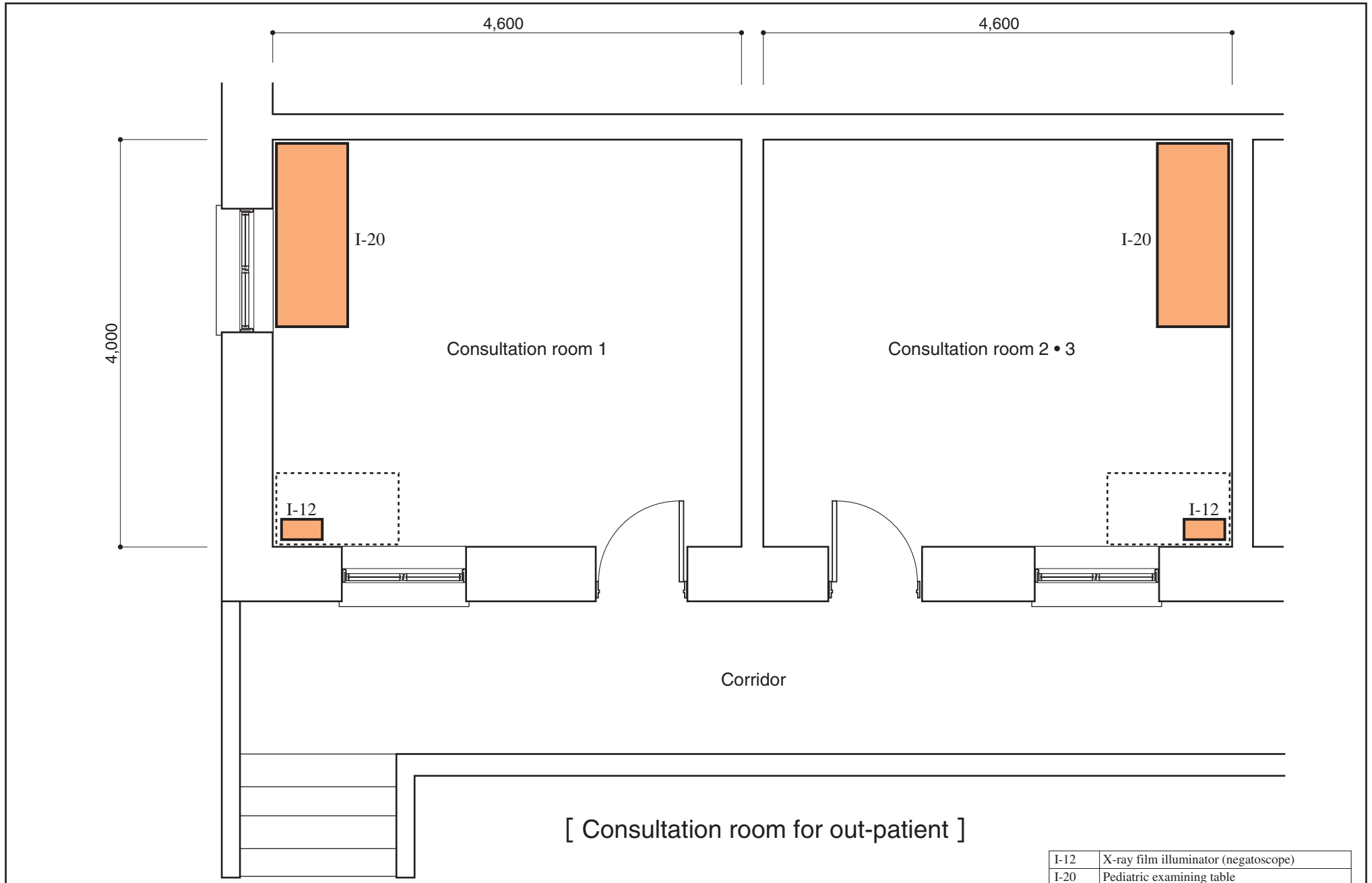
[Neurology and Endocrinology ward]

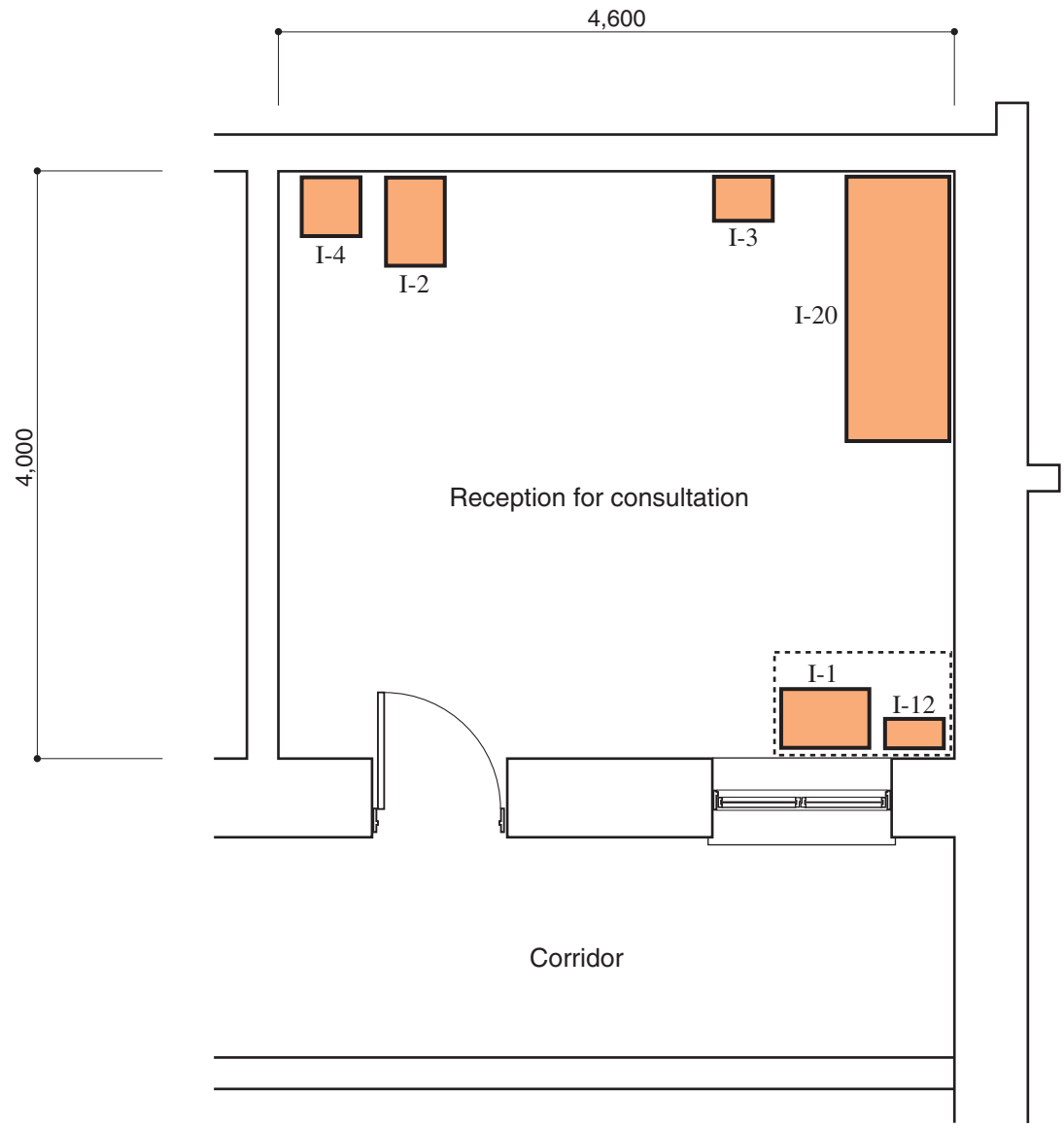
I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-17	Medicine cabinet
I-18	Instrument cabinet
I-19	Instrument carriage
I-20	Pediatric examining table
III-5	Blood transfusion warmer (B)



[Chronic gastro-enterology and Nephrology ward]

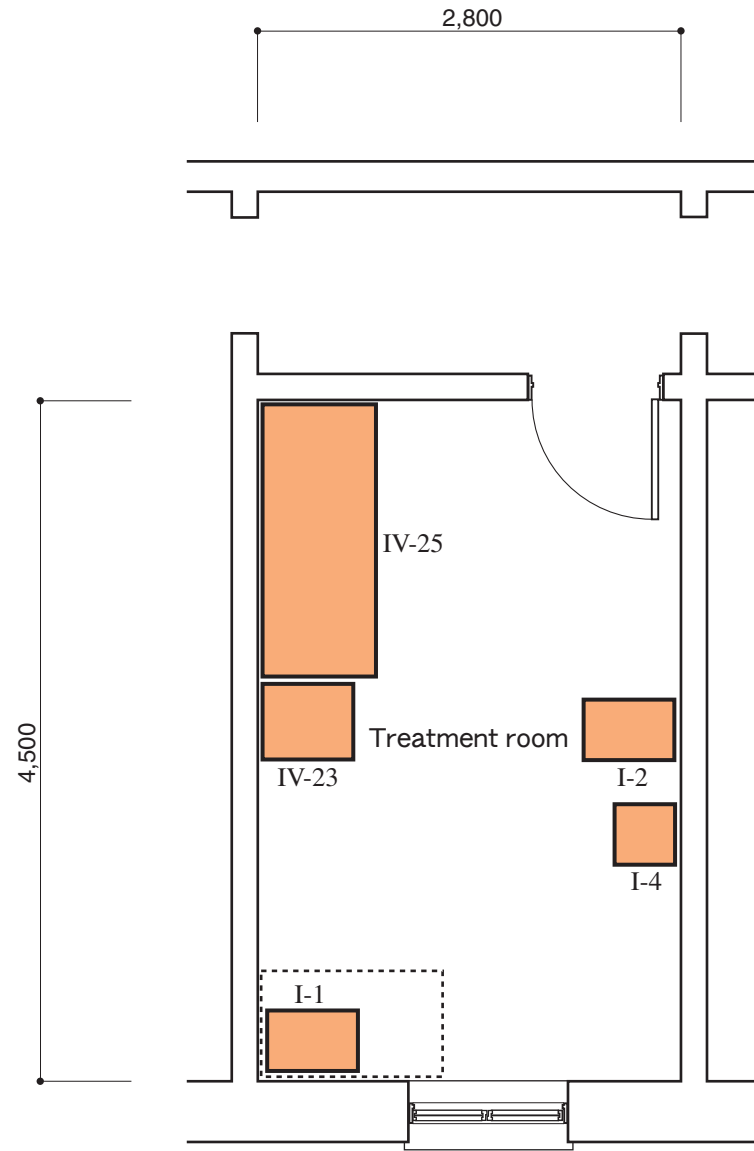
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-18	Instrument cabinet
I-20	Pediatric examining table





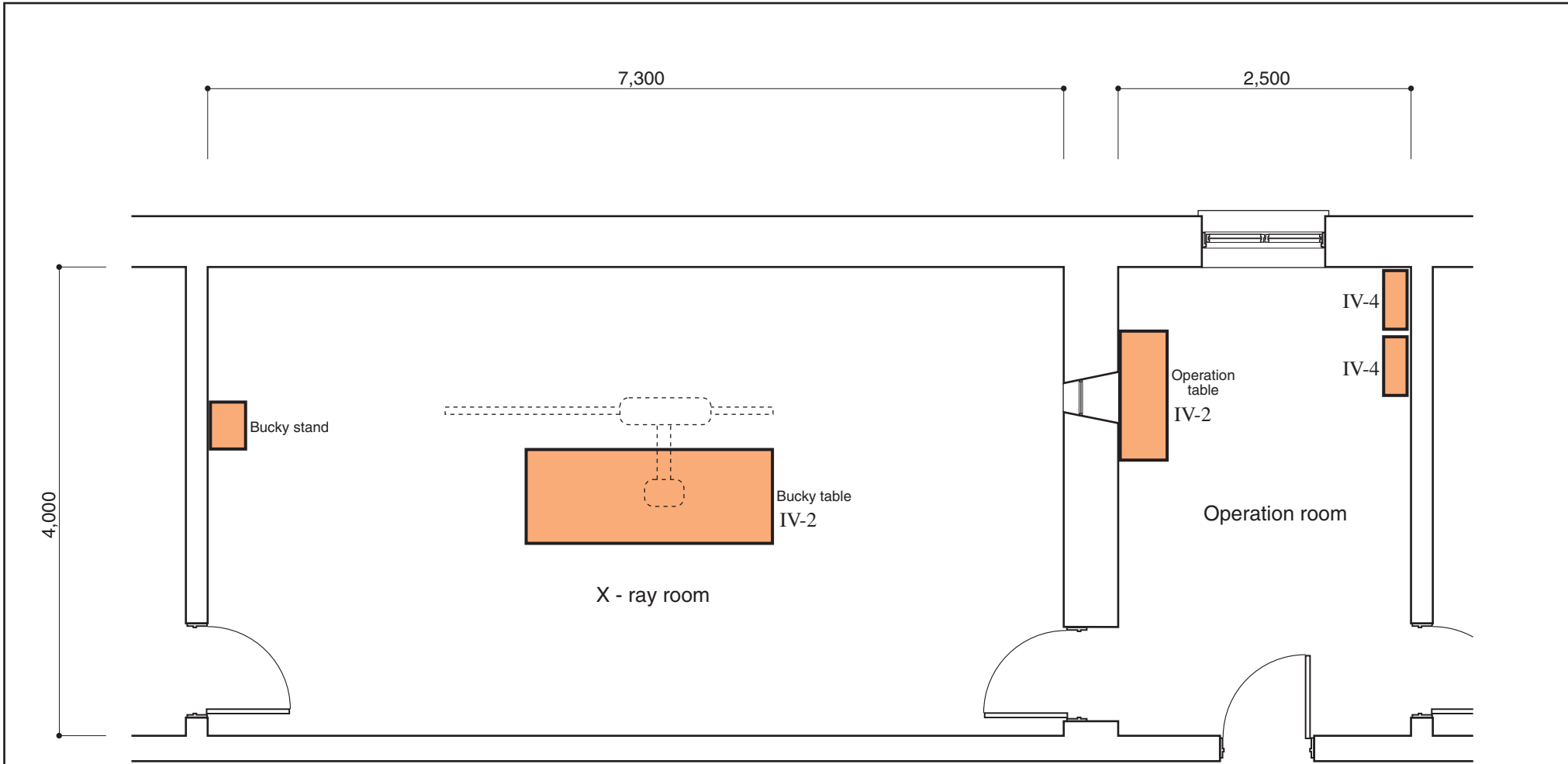
[Consultation room for out-patient]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-20	Pediatric examining table



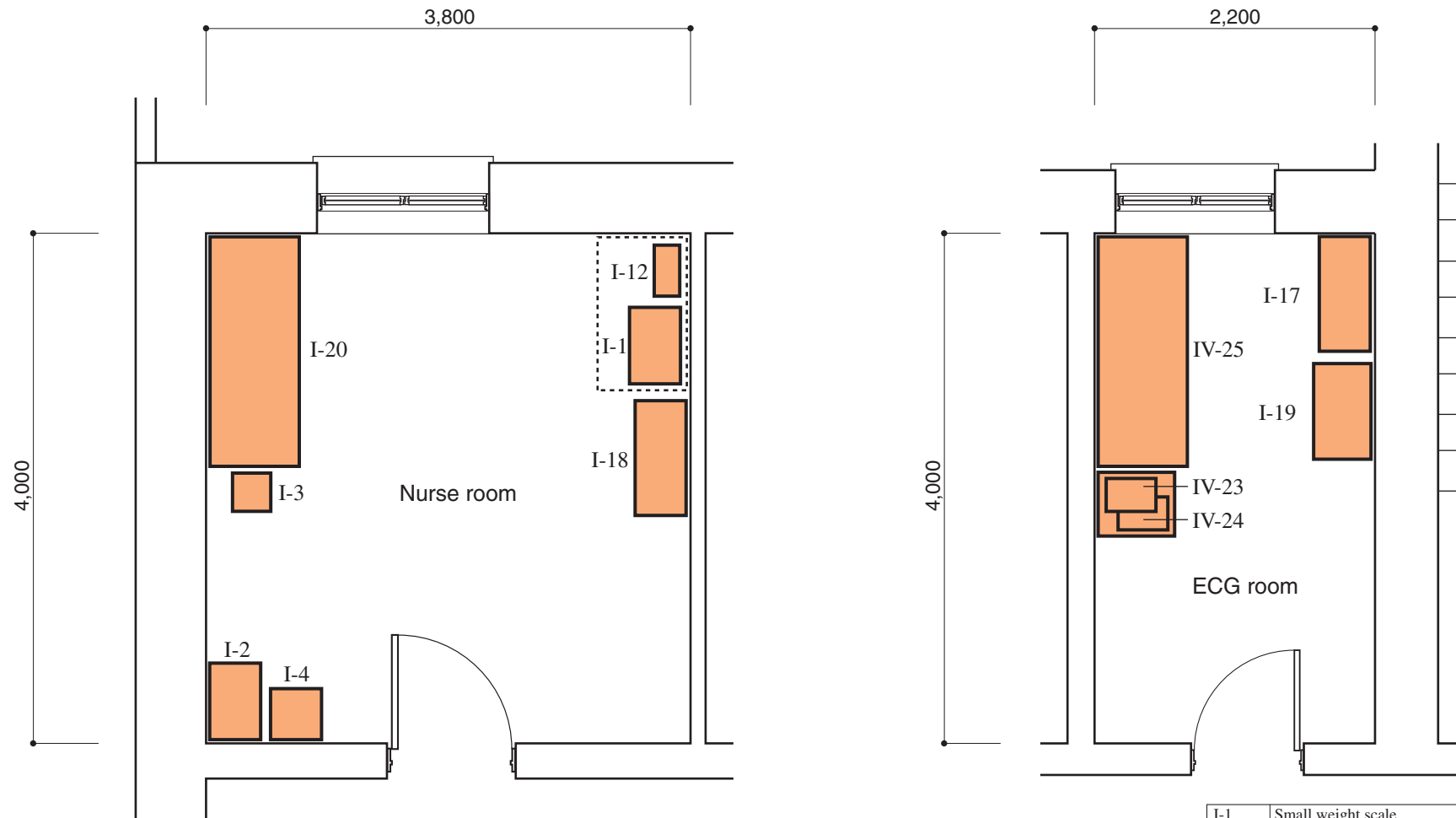
[Day Hospital]

I-1	Small weight scale
I-2	Large weight scale
I-4	Height measure
IV-20	Eletrocardiography (ECG)
IV-22	Examination table



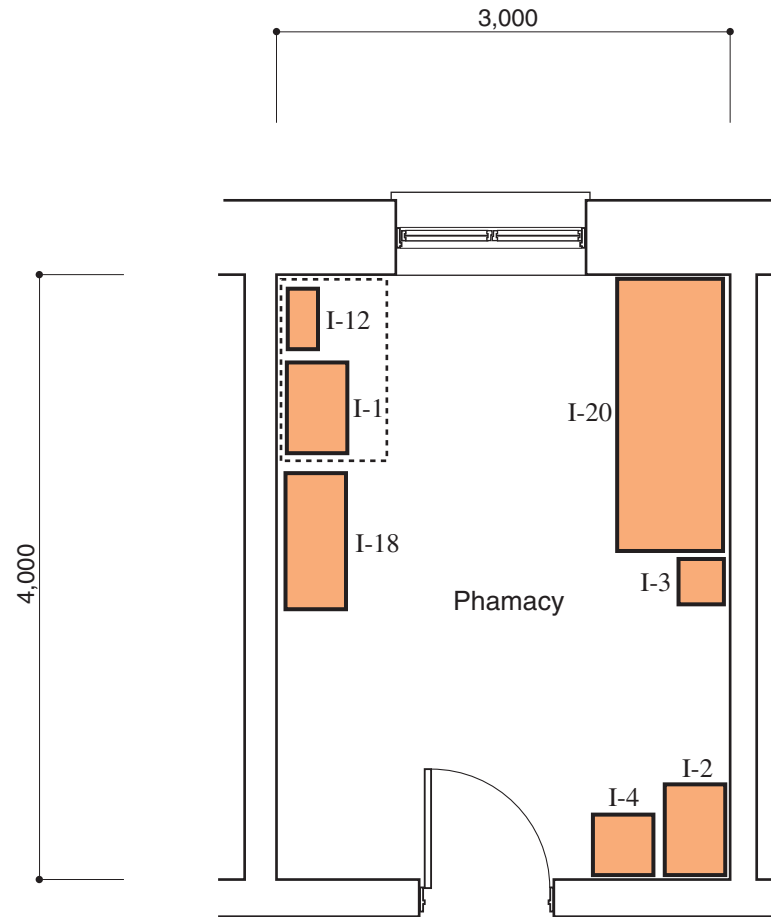
[X Ray Area]

IV-2	Tomography X-ray unit
IV-4	X-ray film illuminator (negatoscope)



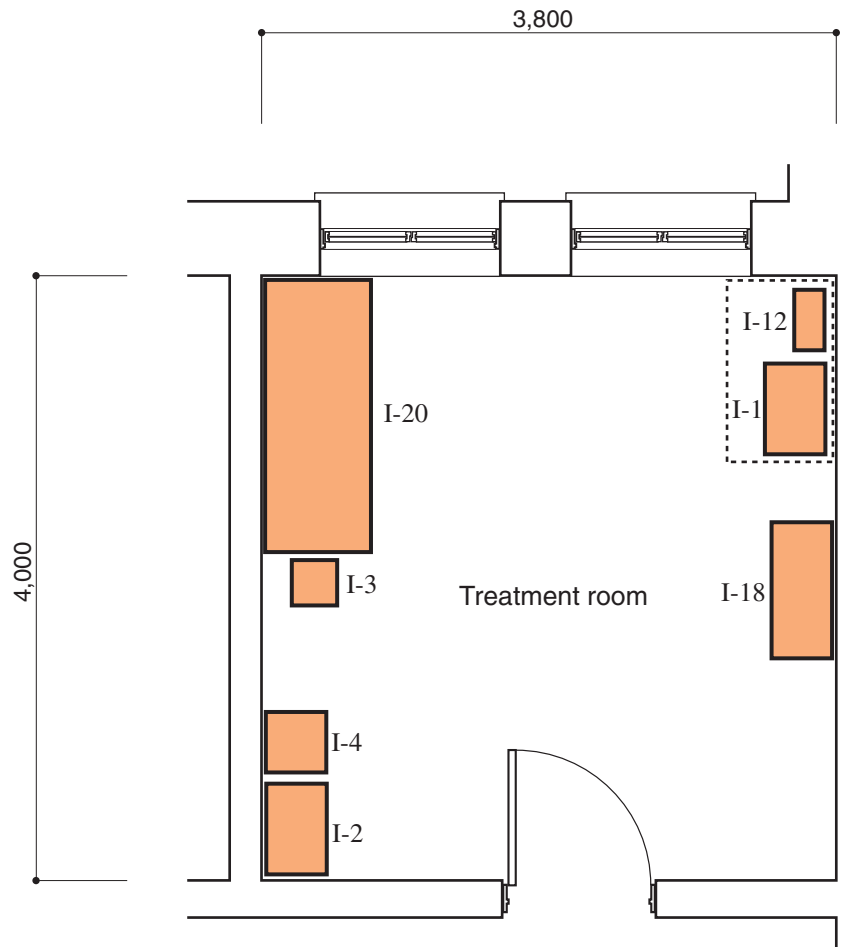
[General pediatrics ward]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-17	Medicine cabinet
I-18	Instrument cabinet
I-19	Instrument carriage
I-20	Pediatric examining table
IV-20	Eletrocardiography (ECG)
IV-21	Portable ECG
IV-22	Examination table



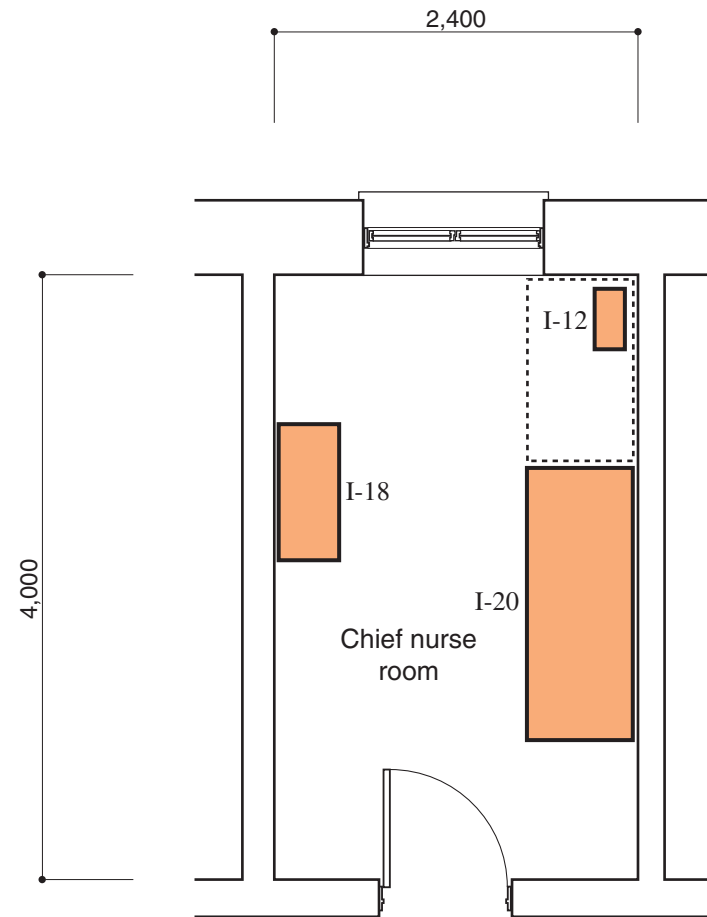
[Acute gastro-enterology (non-infectious) ward]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-18	Instrument cabinet
I-20	Pediatric examining table



[Acute aerogen & infection ward]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-18	Instrument cabinet
I-20	Pediatric examining table



[Acute gastro-enterology (infectious) ward]

I-1	Small weight scale
I-2	Large weight scale
I-3	Infant ruler
I-4	Height measure
I-12	X-ray film illuminator (negatoscope)
I-13	Monitor
I-18	Instrument cabinet
I-20	Pediatric examining table