Kingdom of Cambodia

Nation-Religion-King

Ministry of Health

National Guidelines on Complementary Package of Activities for Referral Hospital Development from 2006 to 2010

Second version was written on 15 December 2006

National Guidelines on Complementary Package of Activities for Referral Hospital is a standard for a referral district hospital, referring to facility, equipment, supplies, human resources, medical and paramedical services, and the management.

The Task Force for review and revision of the CPA Guidelines

Forward

"The Guidelines on Complementary Package of Activities for referral hospital development" is a tremendous result of the Task Force that has reviewed and revised the CPA manual of the Ministry of Health. Key health partners were also actively involved in the development of this document.

The main purpose of this document is to provide a comprehensive guideline on a package of key treatment and care services that need to be provided by each different type of referral hospitals. Furthermore, this document also stipulates the support services and various aspects of management at referral hospitals. It also provides some guidance for referral hospital development step by step.

These Guidelines, which have been revised from the first version, is to provide guidance to referral hospital managers and staff to perform their tasks in accordance with the improvements of Health Sector Reform. It will be also a basic reference for departments and institutions at central level to develop their plans for training and supply provision to referral hospitals.

The guidelines are also useful for all stakeholders including health officials and health partners for their understanding so that they can contribute to and support the activities of referral hospitals throughout the country, aiming at achieving the goals of the National Health Strategic Plan 2006-2010 as well as the years ahead.

Phnom Penh, 15 December, 2006

Signed and Stamped

Dr. Nuth Sokhom
Minister of Health

Contents

1. Introduction

In 1996, the Ministry of Health of the Kingdom of Cambodia started a reform program in order to strengthen the health sector. One important aspect of the reform of health care support system was to develop a new structure at the district level. Originally, 71 operational districts (OD) were established. After review and revision, there are currently 77 ODs. Each OD is responsible for a network that has some health centers (HC) and one referral hospital (RH). Until 2005, 439 of 966 HCs have provided full minimum package activity (MPA), accounting for 50.34% of all existing HCs. And among the existing 69 RHs, 28 have been providing CPA 2 services, and 16 have been providing CPA 3. The 69 RHs (including provincial referral hospitals) are in different stages of development.

The roles of OD officers are as follows:

- interpret, communicate, and implement national health policies and provincial health strategies,
- maintain effective and comprehensive services (curative, prevention, health promotion, and rehabilitation) according to the community's needs,
- ensure the equity of distribution and the efficient use of the available resources,
- and mobilize additional resources, for example, seeking support from NGOs.

OD has two levels—level one is a health center which provides a package of level-one services called Minimum Package Activity (MPA), and level two is a referral hospital which provides complementary services called Complementary Package of Activity (CPA). To develop a health system that all levels can run smoothly, it requires accurate identification of specific capacity and activities for each level, and it also needs proper procedures including referral system. Some guidelines and policies have already been disseminated for guiding in the implementation of health sector reform.

2. Purposes of the Guidelines

The main purpose of this document is to provide a comprehensive guidance on a package of clinical services provided by each different types of referral hospitals through support services and management aspects in that RH.

This guideline is to develop a standard for RHs including provincial referral hospitals. The standard includes clinical services, facilities, maintenance equipments, human resources, paramedical services including lab, diagnostic imaging, pharmacy, and sterilisation. This document also includes some guidance on the roles of a RH, how to develop a RH, how to manage and provide the services, payment of user fees, and hospital management.

When necessary, the guideline will be separate, subject to various conditions of RHs. For detailed information pertinent to each topic, this guideline will refer to existing official documents already published by the Ministry of Health/different national programs (such as protocol of treatment guidelines, therapeutic manual…) and selected bibliographies.

Each referral hospital should improve their services so that they can provide the Complementary Package of Activity. A referral hospital should provide at least one of the three CPAs—CPA 1, CPA 2, and CPA 3.

The general aspects of the guideline are as follows:

- The main sections are broad groupings such as clinical services, non-clinical services, infra- structure, hospital management, etc.

- Within these broad categories, there should be specific units or wards such as laboratory, pharmacy, pediatrics, laundry, etc.
- Within each specific unit or ward, there should be an opening standard, which is the principle purpose of the ward. Then, there should be objectives, policies and procedures, equipment, supplies, facilities, and other specific accessories such as communication and registration, and other lab examinations. Not all of the categories are included for every ward or unit as some are not relevant.

3. Roles of Referral Hospital

A referral hospital has the following roles:

- To support primary health care as a problem-solving and posses resources available all the times for the district health system. Since the referral hospital has expertise better than that of health centres it is required to provide medical support, namely diagnostic services, in- patients services, specialized consultation, emergency care and rehabilitation services.
- To provide education to patients and their attendants, and to provide orientation and continuing education to health staff.
- To provide technical support and supervision if requested by the technical bureau of the Operational District.
- To conduct clinical audit of death

The referral system is a two-way direction system—the one way which refers patients from a health center to a referral hospital up to a national hospital, and the other way is vise versa. Patients and information move in both directions when the referral system operates correctly. To develop and maintain a functioning referral system in the context of OD, the OD office, the referral hospital and health centers need to cooperate to ensure that:

- the referral hospital and health centers know their respective roles and avoid duplication of their activities;
- The referral hospital should have a policy in favor of the patients referred by health center rather than drop-in patients in term of consultation as well as hospitalization services;
- Standard procedures are put in place and implemented routinely: referral and feedback forms, record-keeping, clinical protocols;
- Emergency referral system must be effectively arranged at any time. The radio communication must operate 24 hours, covering all HCs in the operational district, and offering the health centers the possibility to call to the hospital staff on duty for advice;
- The referral hospital should have an ambulance equipped with emergency care equipment in order to serve its surrounding health centers as far as road conditions allow.

The community should be made aware of how the referral system works, how much it costs, if any, and why it is necessary. Whenever possible, community structures and local authorities should playan active role in facilitating local transport mechanism.

4. How to Develop a Referral Hospital

There are 45 district referral hospitals and 24 provincial referral hospitals in the Health Coverage Plan. Due to limited resources, to bring them all up to CPA level

capability will probably take some time. So, a systematic approach is required. It is suggested that a development plan be prepared with the first priority given to ensuring that all provincial hospitals are capable of CPA provision, and then raising the standards of district hospitals so that they will be able to provide CPA services.

In order to properly deliver CPA, a number of preconditions need to be fulfilled by the hospital are as follows:

- Appropriately trained staff: this is the most critical factor. This will require the development of a workforce plan, focusing on deploying the right people, assigning them to the right place and at the right time. The following activities should be undertaken: clear job descriptions must be developed for every position and title; staff needs in each section or ward should be assessed; and existing staff training needs must also be assessed, and then organize the training programs based on the special needs ; a plan for deployment of staff needs to be developed in accordance with a hospital development plan.
- **Infrastructure:** most existing hospital facilities require considerable upgrading. Each facility should be assessed to fit with its scope of work. Fund should be mobilized from all sources and used within the MoH's plan for the development and maintenance of the facilities.
- **Essential basic equipment** needs to be in place
- **Essential drugs and consumables:** the CPA drugs list requires regular review to ensure that it is consistent with clinical requirement, that it contains the most appropriate drugs, and that the quotas are reasonable. The prescribing patterns are developed in the ***Therapeutic Guideline for referral hospital***.

In addition to the above-mentioned conditions, the functioning of a hospital will require necessary adequate financial resource.

5. Complementary Package of Activities

In the new health system, the Operational District (OD) is the basic functional unit. As mentioned earlier OD has two levels of health services. The first contact level for the public is a health center, which provides minimum package of activities (MPA). The second level is a referral hospital, providing complementary package of activities (CPA). A provincial hospital has a special status as it plays both a role for a referral hospital in an OD in which it is located and also for other ODs within the province.

Referral hospitals are classified into 3 categories based on number of staff and physicians, number of beds, medicines and medical equipment, and clinical activities as described initem 14 of the contents in various tables of this guideline.

- **CPA 1:** a referral hospital that has no grand surgery (without general anesthesia) but at least it should have obstetric service;
- **CPA 2:** a referral hospital which has more activities than the first category's but less than the third one's, namely it has emergency care services and grand surgery (with general anesthesia);
- **CPA 3:** a referral hospital which has the most activities, namely it has grand surgery (with general anesthesia) with mo re activities (both number of patients and activities) than the second category's, an d in addition , it also has various specialized services (please refer to the table below).

Clinical Services	CPA1	CPA2	CPA3	Observations
Emergency care	X	X	X	Different package
General medicine for adults	X	X	X	
Surgery		X	X	
Gynaeco-obstetrics	X	X	X	
Pediatrics	X	X	X	
Tuberculosis	X	X	X	
Referral consultation and Kinetic therapy	X	X	X	
Operation theatre and ICU		X	X	
Oral and Dentist	X	X	X	
Infectious diseases: TB, HIV/AIDS, Malaria	X	X	X	
Medical audit death	X	X	X	
Specialized services			X	eg. ENT, Ophialmology
Clinical support services				
Laboratory	X	X	X	
Blood bank			X	
Blood depot		X		
Pharmacy	X	X	X	
Imagery	X	X	X	

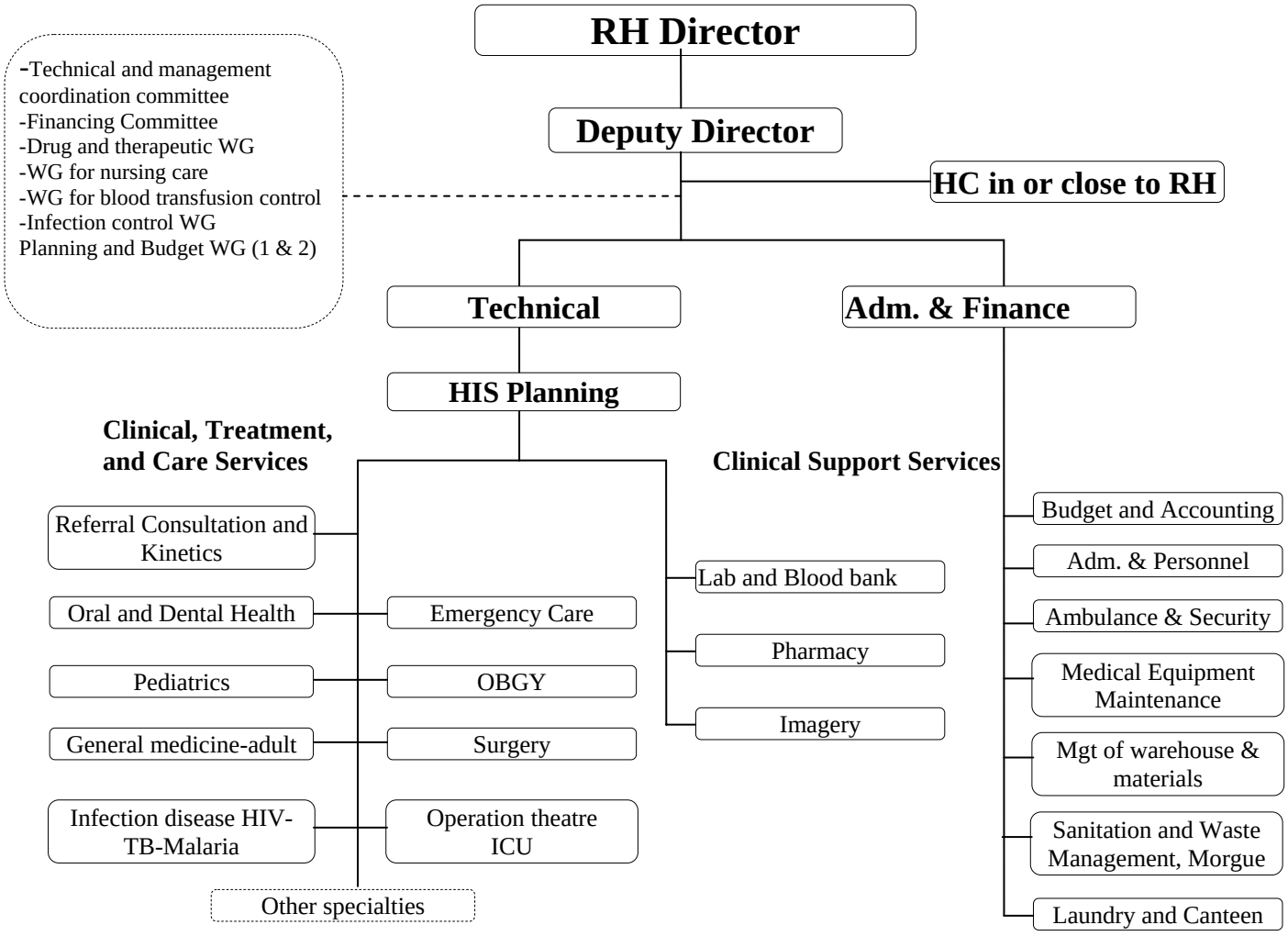
Administration and Finance				
Finance and accounting section	X	X	X	
Administration and Personnel	X	X	X	
Transportation, Ambulance, and security	X	X	X	
Maintenance of medical equipment	X	X	X	
Warehouse for equipment and materials	X	X	X	
Sanitation, waste management, and morgue	X	X	X	
Laundry and canteen	X	X	X	

6. Organizational Structure

Each referral hospital should have a clear organizational structure for its management and functioning.

Organizational chart:
An organizational chart or "organogram" should shows lines of relationship between services, sections or individuals. Each ward or section should have its own organizational chart and the hospital should have one for all. The chart should show clearly which services and wards that join together to make up the organization, indicating how they are connected to each other and who is responsible for each service or group of wards. The organizational chart should be displayed where it can be seen by all staff.

The chart below shows a way of organizing a structure in a referral hospital. The template should be used to adapt to a specific organizational structure in a particular hospital. Changes can be made if necessary, for example, your hospital may have a specialty ophthalmology unit but it has no surgery therapy (by trauma). Organizational chart may change over time and need to be reviewed after significant structural changes or hospital development.



Example of a Referral Hospital Organizational Chart-CPA 3

Each ward or section should have their detailed organizational charts in order to give further information. For example, there should be one specific organizational chart for Out-patient & supporting services, and another organizational chart for In-patient services, etc., in which names of managers, assistants or advisors should be included. The detailed organizational chart should indicate clearly for example that a chief of ward and a chief of unit manage the ward.

Quality Assurance Summary - Organizational Structure

- Each referral hospital should have one overall organizational chart (organizational structure) and one for each ward according to the MoH guidelines
- An organizational chart should be updated when staff positions change, new services develop or lines of responsibility change

7. Clinical Services

The success of health coverage plan depends on the rational allocation and standardization of activities to achieve the best intervention at the best possible cost. The choice of complementary package of activities to be implemented at a referral hospital should be decided by taking into account experience, local disease priorities, therapeutic means available, and the competency level of health care providers.

Patient Care

1. Appropriate provision of services should be implemented for both health providers' comfort and the patients' safety.
2. The patients' privacy and dignity are assured and protected.
3. Health providers should have clear responsibility for their communication with patients and relatives regarding medical conditions.

Facilities, Equipment, and Supplies

1. Facilities, equipment and supplies should be adequately responded according to the needs of the services, and all are maintained in a safe condition.
2. Facilities, equipment, and supplies are appropriately located in relation to patient areas.
3. There are appropriate storages areas.

Communication & Records

1. Admission criteria document should be developed.
2. Adequate information should be given to the patients prior to their consent to any treatment, particularly operation.
3. Medical records must be accurate and clear according to the patients' past medical histories, get updated every time after e ach assessment, and can be easily and quickly found.
4. There should be effective communication between facilities, wards, and services.
5. The Ministry's guidelines on investigative procedures and treatment protocols are properly kept and are easily accessible by staff whenever they need them.
6. Results or finding of any survey should be made available in a timely manner.
7. There should be a formal procedure for patient education, particularly for the use of medicines.
8. The discharge or referral procedures should be appropriately developed, and these should include the complete summary of discharged patients and communication with a responsible health provider. This should be applied for all medical services.

More specific additional guidance should be given to other services which are in further subsequent sections. The clinical section provides clinical care to the patients according to the Ministry of Health protocols. For each clinical service on the following pages, there is a list of some diseases that can be treated in each category of a referral hospital, and there should be a clear distinction when needed—CPA 1, CPA 2, and CPA 3.

Quality Assurance Summary – General Clinical Services

- There should be a defined mechanism for service utilization of the patients
- Registration lists and the use of facilities, equipment, and physical supplies should be assessed and reviewed by a systemic approach.
- Statistics of basic functions an d services are kept and be part of an overall management of information system.
- Review should be conducted to assess the efficiency and effectiveness of the interrelated services. Deaths should be investigated, and the findings must be used for improving the quality of care and treatment services.

7.1. Out-patient Consultation and Kinetic Therapy

7.1.1. Out-patient Consultation

Standard

The out-patient consultation receives patients who are referred by a health center for further diagnosis or for health problems that cannot be managed by the health center. The out-patient consultation should be an autonomous service with its own staff, and it should also include consultation for non-communicable diseases according to the national strategy on the prevention and control of non-communicable diseases.

Policies & Procedures

1. There should be at least 2 medical doctors, 2 nurses and trained staff for out-patient consultation so that they can educate patients and properly register them.
2. This referral consultation services should be equipped with basic equipment such as a sphygmomanometer, a thermometer, a scale, a meter, an apparatus for urine analysis and a gluco-meter.
3. For an obstetric patient, she should be consulted by a medical doctor or a secondary midwife who has the competent skill in this section.
4. This section should provide all the services that cannot be managed by a health center or referred from a health center.
5. A health center should send a referral paper with all patients they refer. The paper should contain basic information such as clinical signs, suspected diagnosis, and any kind of treatment already provided.
6. After consultation the patient should be admitted or sent back home with treatment or referred to other referral hospitals or national hospitals.
7. Any intervention on the referred patient as a result from the consultation must be sent back in written to the health center.
8. To ease the referral process, a standard referral format should be developed, and health center staff should be trained and encouraged to use that standard format.
9. To ensure that the health center receive the feedback information, messenger system should be established through an OD such as monthly reporting when the health center chief he/she attends a monthly meeting at the OD level.
10. This referral consultation should also record its own separate past medical histories of a patient, especially, for a physician who assesses a chronic disease such as diabetes, kidney or lung diseases that will require for next follow-up visits. Hospital provided some essential medicines to outpatients non communicable disease until the follow up visit. Consultation fees to be decided by the Hospital Finance Commintee
11. A referral hospital should have an ambulance on 24-hour service for referring patients and radio communication system with health centers, and this system should be maintained in good condition all the time.

7.1.2. Kinetic Therapy

Standard

Kinetic therapy service is part of the medical rehabilitation services, and it is an important part of health service provision system. A kinetic therapist focuses on enhancing Maximum potential movement aiming at preventing, curing, and rehabilitating a patient or victim so that his/her health and ability can be improved. A referral hospital of all CPA levels should arrange to have this kinetic therapy service in order to contribute to reduction of disability.

Policies and Procedures

1. A referral hospital of all CPA levels should arrange to have this kinetic therapy service (table 5).
2. 2. Kinetic therapy must be provided to a patient, a victim and a disable person with good standard quality and effectiveness.
3. The human resources responsible for this kinetic therapy must have at least a kinetic therapy qualification from a technical and medical school or a qualification that is recognized by the Ministry of Health.
4. All necessary equipment to make this service function should be appropriately provided to the level of service standard and should be maintained in good and safe condition before and after use.
5. Kinetic therapy service should have relationship with medical services, surgery, and other relevant services so that it can provide effective diagnosis and treatment.
6. Kinetic therapists must continue to learn in order to ensure the quality and effectiveness of their services to the patients.
7. Standard should be properly developed for assessment of symptoms, diagnosis, treatment plan, implementation and appropriate follow-up of the treatment.

Quality of Service

1. Respect to patients is the basic foundation.
2. Information on how a patient will be treated must be given to him/her prior to the treatment. And all information of the patient must be kept confidential.
3. Assessment, analysis, and follow-up must be done prior to developing a treatment plan.
4. All steps of interventions should be documented from the beginning of the treatment until the completion of the treatment.
5. The treatment should be undertaken within the safe environment and counseling should also be provided.
6. Kinetic therapists require having basic knowledge for assessing diagnosis of kinetic treatment.

7.2. Oral and Dental Service

Standard

A referral hospital should be equipped to provide basic dental care including emergency dental extraction, normal extraction, basic fillings and various preventive services.

Policies and Procedures

1. Dental service is, in principle, a part of out-patient consultation service.
2. Dental treatment must be provided by health staff specifically trained in dentistry. The minimum staff requirement is one dentist or dentist assistant and one dental nurse.
3. Both patients and providers for dental service are at risk of transmission. Therefore, strict measure for disinfection must be undertaken.
4. Basic dental service requires appropriate equipment to operate. It includes dental chair with spittoon, operating light, portable dental equipment (for drilling and suction), examination set, emergency extraction set, normal extraction set, dental filling kits, amalgam, box for sterilizing instruments and sterilizer, and boiling type.

Service package

	Dental Problems/activities	CPA1	CPA2	CPA3
1	Minor package of activities	X	X	X
2	Root Canal Treatment	X	X	X
3	Prosthrodonctics		X	X
4	Restoration	X	X	X
5	Orthodontics			X
6	Minor oral surgery	X	X	X
7	Preventive and promotion activities	X	X	X

Please refer to Table of Oral Health and Dentistry

7.3. Emergency Medicine-Intensive Care Unit

Standard

The emergency medical service provides a high standard of emergency care to patients coming from the community who need emergency care. The intensive care unit will provide constant medical attention (with specialized equipment) to critically ill patient such as stop bleeding, breathing assistance, neutralizing toxic from the blood, and the prevention of shock or surviving patients from shock.

Policies & Procedures

1. Emergency care services depend on the situation at the ward.
2. Physicians responsible for emergency medical care services should have been trained and have experienced in emergency services.
3. There should be qualified and experienced nurses responsible for caring the patients.
4. It must be a 24-hour service. However, if this can not be done, alternative arrangement can be made available, but the service should be at an acceptable quality. If this is the case, this alternative should be advetised to the public and it should also be acceptable and understood by health providers.
5. The main role of this emergency medical care ward is to provide the assessment, treatment, and care to a patient who urgently needs this service; whereas, the other accessory roles of this ward must also be clearly defined.
6. Written statements of administrative policies, which are kept regularly updated and made available to all staff, are as follows:
   a) Strategy and overall organization as deemed appropriate by the management team;
   b) Fetching an ambulance by radio communication or telephone for referring a patient to a hospital.
7. Admission and discharge procedures.
8. Written statements of clinical policies, which are kept updated and made available to all relevant staff, include: triage system, infectious disease management, food poisoning, procedures in cardiac arrest, management of fracture/trauma, etc.
9. Written statements of legal and social policies which are kept updated and made available to all relevant staff.
10. Arrangement for ambulance staff so that they can immediately record essential information necessary for management of acute cases on the ambulance.
11. A hospital capable of provision of a limited range of services should arrange for transferring patients to other hospitals with the patients' medical documents and past medical histories.
12. Seriously ill patients are regularly monitored, even during the transfer to a hospital, by

someone capable of managing any perceived complications.

13. It requires close working relationships with:
    a) other hospital wards; ambulance service;
    b) local general practitioners (private and public);
    c) other hospitals and health centers
14. Staffs employed are appropriate in number, properly trained, and with adequate experience
15. Nurses and physicians should be skillful and continue to learn both basic and advanced life saving skills.
16. The service supports and assumes responsibility for cardio-pulmonary resuscitation in the hospital.
17. Appropriate orientation programs available for new staff to ensure that all staffs know the purposes, policies and procedures of the emergency service.
18. Medical records should all be kept for every assessment and patient visits must also be recorded. All these documents should be kept in an easily retrievable manner so that they can be sent to put into the MoH statistics.
19. Patients leaving the Emergency ward should receive clear verbal and written information regarding the status of their illness, treatment and follow-up if arranged, and these should be also recorded in the patients' medical records.
20. Incident reports are properly compiled, recorded, investigated and discussed in a hospital and appropriate actions must be taken.
21. The facility should be built according to a designed plan, ensuring safety and security for the protection of staffs against outside attacks or stealing of property.

Facility & Equipment

1. The 24- hour service arrangements should include:
    a) A roster of health staff working in an appropriate shift and be on duty for managing all kinds of diseases.
    b) Imagery and pathology services (see also section 8.3)
    c) Supply and cross-matching of blood and blood (see also section 8.1)
    d) Provision of adequate supplies of pharmaceuticals, IV fluids, sterile items, disposables and sheets and pillows (see also section 8.2 and 14, appendix 12).
2. For effective emergency care and comfort, the environment should include:
    a) The location is clearly indicative by a sign as an emergency care service. The sign must be readable by all and should be put at the beginning of entry road, end road, and within a hospital.
    b) ambulance access and turn-around are adequate, well lit and undercover
    c) triage space is well placed to allow surveillance of ambulant and stretcher arrivals with consideration for patient privacy
    d) the resuscitation area is easily reached from the ambulance bay
    e) an adequate number of cubicles, beds or trolleys is available for the workload and there is provision in the layout for adequate space and privacy (cubicles or dividing screens) for re- suscitation, suturing, plastering and other forms of emergency treatment and observation
    f) suitable and private areas are available for patients and friends/relatives
    g) secured space for storage of sterile items, pharmaceuticals, IV fluids, medical equipment and miscellaneous stores
    h) offices for senior medical and nursing staff
    i) work room and sluice room
    j) bathroom facilities for patients and staff with washing areas and soap
    k) adequate internal electronic communication system or staff messenger/porter
3. Materials and equipment for adult and children must be of good quality and be available all the time.

Facilities and Equipment for ICU unit used only

1. ICU ward requires many engineering services to ensure good environment, medical gas, wind, and source of energy. Given the fact that ICU ward and operation theatre needs similar requirement, it is recommended that they should be built close to each other.
2. Number of beds in this ward should be accounted for about 2-5% of a total number of beds in the hospital.
3. According to this formula, it means that a district referral hospital which usually has 50 to 100 beds should have only 2 beds for ICU care unit. However, given appropriate equipment, materials, and skillful staff, the ward should have at least 6 beds. This will be consistent with the reality at a provincial referral hospital.
4. Other options for an ICU ward at district referral hospital include:
    a) a patient who require longer time of treatment should be referred to a higher level hopital.
    b) ICU beds can be placed in a post-operation ward.
    c) a patient who requires absolute care should be put on a bed or room close to the nursing room, ensuring permanent oxygen tank and mobile assessment equipment.

Summary of Quality Assurance: Emergency Medicine/ICU unit
the same as page 6

7.4. Pediatrics

Standard

This ward will provide health care services to infants and children, and also provide health education to their parents.

Policies and Procedures

1. Pediatric care services depend on the status of that ward.
2. Reduction of morbidity and mortality of infants and children in the community mainly depend on health education to their parents. This pediatric service includes the care and treatment for children with HIV/AIDS (OI/ART). There should be clear and active health education programs on prevention and basic home based care for simple diseases on children, which include:
    a) what to do when a child gets sick? (How to resolve when a child gets sick).
    b) how to manage simple care? (Simple ways in caring a child when he/she gets sick).
    c) how to prevent the family from having future diseases? (means to prevent the family from having future diseases).
    d) encourage parents to apply new skills after the training when they go back to their community.

Parents should always accompany a child, particularly when a child is under 5 years of age. This will help him to participate in any education program.

Facility, Equipment and Materials

In addition to standard equipment, the Pediatrics ward should have:

1. Neonatal Resuscitation Equipment

2. Weighing and Height measurement equipment
3. Isolation ward in case of infectious diseases
4. Playground for children, taking into account of their safety.

Levels of Services

Please refer to table 1 in appendix.

Summary of Quality Assurance: Pediatrics Service
the same as page 6

7.5. General Medical Ward for Adults

Standard

General Medicine ward will provide medical care for adults.

Policies and Procedures

1. General medical services depend on the situation of the ward.
2. At least one physician who has been trained and experienced in general medical service is responsible for the ward.
3. There should be nurses with appropriate capacity and experienced responsible for nursing patients.
4. It must be a 24-hour service operation. If this can not be done, there should be other possible and acceptable arrangement.

Levels of Services

Please refer to table 2 in the appendix.

Summary of Quality Assurance- General Medical Ward-adults
the same as page 6

7.6. Surgery Service

Standard:

Minor surgery can be done in all RHs. CPA 2& 3 RHs must be capable of operating grand surgery.

Policies and Procedures:

1. Surgery services depend on the situation of the ward.
2. A group of surgeons who have been trained on basic surgery skills for CPA2 &3.
3. There should be strict regulations related to the process of a permitted task.
4. Regular review and investigation must be undertaken for any mistake or failure.
5. Emergency and daily operation cases can possibly be referred to the next level, for instance, provincial referral hospital.
6. There should be a table indicating schedule for surgeons' visits to provincial referral hospital in order to gain advice or experience in assessing an operation case, result of operation, assessing new cases, and follow-up with patients after surgery.

Facility and source of resources

1. Surgery service includes the facility, rooms for patients in different units such as thorax and abdomen unit, trauma unit, kidney unit, pediatric surgery unit, and burning unit.

2. Room for consultation and wound disinfection and nursing, which is equipped with disinfection materials.
3. Beds for separate surgery cases vary according to the scope of a referral hospital.
4. Staff at the surgery ward can vary.
5. Surgeons should receive continuous technical training.

Levels of Service

Please refer to table 3 in the appendix.

Summary of Quality Assurance-Medical Ward-adults
the same as page 6

7.7. Operation Theatre and Anesthesia

Standard

Operation theatre and anesthesia ward at a referral hospital of CPA 2 & 3 is responsible for arranging the operation program and surgery equipment and tools—disinfecting, keep the room sanitary, ensuring adequate surgery equipment and anesthesia medicines for operation. Yet, the ward is also responsible for following up the status of a patient after surgery, the consciousness, and post-surgery pain.

Policies and Procedures

1. Operation theatre and anesthesia ward should have doctors who have anesthesia expertise and trained nurses.
2. Regular daily meeting should be held and be strict with mistakes and failures.
3. Continuous update training on new techniques.
4. Consultations and regular monitoring of anesthesia, operations, and post operations.

Facility and Equipment

1. Two to three operation theatres equipped with operational tables, medical equipment for anesthesia, disinfection materials, and other necessary materials and supplies.
2. Care ward with some beds for post operation patients should be equipped with emergency equipment, oxygen tank, and other necessary equipment for emergency.

7.8. Gynecological and Obstetric Ward

Standard

A gynecological and obstetric ward at a referral hospital is responsible for provision of care, treatment, and delivery for women including prevention from mother to child transmition of HIV/AIDS (PMTCT) (please read the PMTCT Guideline), provision of health education to women on breastfeeding management (breast feed a baby with maternal breast milk), family planning, nutrition (raising a child), and the care for newly born baby.
-National Strategy on Reproductive and Sexual Health 2006-2010

Policies and Procedures

1. Gynecological and obstetric services depend on the situation of the ward.
2. At least one medical doctor who has been trained and experienced is responsible for this ward.
3. Nurses and midwives with proper capacity and experience.
4. The obstetric service must be operated 24 hours.
5. Written statements on administrative management policy should be regularly updated and made available to all relevant staff.

Facility and resources

1. Gynecological and obstetric service includes: obstetric ward, gynecological ward, and newly-born care ward.
2. Gynecological and obstetric section should have consultation or gynecological room.
3. Obstetric ward should have one delivery room with broad size and privacy for frequent deliveries at a hospital.
4. A referral hospital with broader CPA should have one ultrasound machine with one health provider who has been trained on this ultrasonic skill.
5. Number of beds for each ward depending on the scope of work of the RH should range from 20 to 50
6. Number of staff at gynecological and obstetrical ward can vary.

Levels of services

Please read table 4 in the appendix

The Summary of Quality Assurance- Gynecological and Obstetric Ward
Same as page 15

Maintaining the quality of services based on the following indicators:

- **Maternal Mortality Ratio**
- **Bleeding during pregnancy, delivery, and post-delivery**
- **Danger of eclampsia**
- **Rate of Caesarian and episiotomy**
- **Rates of late referral for complicated cases and the extent of danger having been seen and tackled properly**

7.9. Infectious Diseases Section—HIV/AIDS, TB, and Malaria

Standard

This section in a referral hospital is responsible for care and treatment of infectious diseases—TB, HIV/AIDS, and Malaria, health promotion of the infectious diseases and laboratory activities. At CPA 3 RH, this section will provide care and treatment for various communicable diseases including pulmonary diseases, TB, HIV/AIDS, and Malaria, etc.

Goals/objectives

1. The services depend on the situation of the section.
2. The section is responsible for diagnosing, care and treatment of infectious patients by hospitalizing them in isolation, and for TB patients, they should get medicines from a hospital and rest at home.
3. The section also plays a role of health education.
4. The lab service of this section is responsible for examining sputum of a patient coming for consultation at the hospital or the sputum sent by health centers in the jurisdiction of the OD.

Facility and resource

1. TB treatment service includes a facility section and a lab.
2. Number of beds in each TB facility varies according to the scope of a provincial RH or district RH.
3. The number of beds range from 20 to 50.

4. Average staff for TB service at CPA 1 and 2 RH is 5including one medical doctor and one lab technician. For CPA 3 RH, the number of staff for this section is higher.
5. HIV/AIDS treatment service includes rooms and proper number of beds.
6. Other infectious services should also have isolation rooms for patients.

Summary of Quality Assurance-Tuberculosis Service
the same as page 6

7.10. Various Specialty Services

7.10.1. Ophthalmologic Service

Standard

A RH is a place for provision of assessment, diagnosis, care, treatment, and ophthalmologic surgery made by an ophthalmologist.

Policies and Procedures

1. Provision of ophthalmologic service is made according to appropriate standard.
2. The service must be provided by an ophthalmologist who has been trained on ophthalmology.
3. There should be at least one ophthalmologist and two ophthalmologic nurses.
4. The ward should be well equipped so that it can assess, diagnose, treat, and operate according to the standard.
5. Ophthalmologic facility should have out-patient consultation room of 16 square meters, admission room with at least 10 beds, operation theatre with good standard, and picture and letter vision service.

7.10.2. Ear, Noses, Throat (ENT) Treatment and Care Services

Standard

A referral hospital is a place for provision of assessment, diagnosis, care and treatment of the diseases of ears, noses, and throats. This is undertaken by an ENT doctor.

Policies and Procedures

1. Provision of services for ears, noses, and throats shall be made according to the standard.
2. The services must be provided by an ENT doctor who has been appropriately trained.
3. It requires at least one ENT doctor and 2 nurses to run the services.
4. The ward should be well equipped so that it can assess, diagnose, treat, and operate an ENT disease according to the standard.
5. The ENT facility should have OPD service and in-patient room with at least 10 beds, and operation theatre with disinfection standard.

7.10.3 Dermatological Care and Treatment

Standard

A referral hospital is a place for provision of assessment, diagnosis, care, treatment, and surgery of dermatological diseases. These services are provided by a dermatologist.

Policies and Procedures

1. Provision of dermatological services should be made technically appropriate according to a suitable standard.
2. Care and treatment of dermatological diseases should be provided by a dermatologist who has been appropriately trained.

3. The provision of the services requires one doctor and one nurse who have been trained on dermatology.
4. The service provision requires proper equipment for assessment, diagnosis, treatment and surgery according to a standard, especially at a national RH.
5. The dermatological facility should have 16 square meters (4 meters by 4 meters) with a pair of sinks. There should be a room for consultation with some equipment for diagnosis and treatment at a referral hospital.

7.10.4. Mental Health Service

Standard

Mental health service at a referral hospital is responsible for care and treatment of psychiatric patients, including mental health education and continuing education at the community.

Goals and Objectives

1. Mental Health Facility is responsible for diagnosis, care and treatment of psychiatric patients referred from a health center. The patients can be hospitalized for a short time or sent home with treatment and regular follow-up for a period of time, and they will then be sent back for continuing treatment at the health center.
2. For treatment and referral, mental Health Section should have close cooperation with other sections of the RH and HCs.
3. Mental Health Section should also play a role in health education and continuing community-based care.

Facility and Resource

1. Mental Health Facility should have two units—mental health assessment and intervention unit and hospitalization unit.
2. Number of beds should range from 5 to 10 depending on the resource of a referral hospital.
3. Staffs for provision of mental health services are the existing staffs at a referral hospital, who have been trained on basic psychiatrics (from at least 3 months). Number of staff varies with the proportion of at least one doctor and 2 nurses. At the CPA3 level, the number of staff is more than this including those who have been trained on mental health specialty. (Further information, please refer to item 14 of the content at table 11).

8. Clinical Support Services

8.1. Laboratory and Blood Facility

8.1.1. Lab

Standard

Lab service is organized and managed to high quality service in medical analysis responsive to the needs for diagnosis such as: microbiological, hematological, and biochemical analysis which are all necessarily pertinent to general medical and surgery services in a referral hospital.

Goals and objectives

1. It provides 24-hour basic services or at a time according to the needs of a hospital.
2. Maintains good relationship between physicians, nurses, and all relevant staff in service provision.
3. Contributes to provision of high quality care and treatment services through monitoring and evaluation of medical practices in a referral hospital.

4. Introduce new methods of tests or analysis, enhance technical expertise, and conduct researches if time available.

Policies and Procedures

Written policy and procedure should be easily accessible by all relevant staff all the time. Regularly applying the rules will reduce mistakes in daily routine work.

1. Analysis request forms include: consent form from a patient, written notes of a patient's identity such as name, serial number in medical record, dates of birth, sex, a requested doctor, type of lab request, the patient's past histories, medicines used, identity of specimen written on the analysis request form, and clearly written sign on the specimen to be taken safely for the analysis.
2. Accuracy of the analytical result will depend not only on the appropriate analysis, but also other pre, post, and during analysis factors. These factors include patient arrangement, taking, bringing, keeping and transporting of specimen, and compiling data.
3. Lab safety principles include: safety at work to prevent infection, prevention of danger caused by misuse, misplacing of chemical substance or misuse of the equipment or materials, regular schedule for equipment maintenance, an effective disinfection system, and lab waste management system.
4. Proper implementation according to professional ethics principles and standard (for instance, confidentiality).
5. Filing all documents of specimens received by the lab, and all files should have proper identity and can be easily found in the lab.
6. Reporting format should be developed according to the patient's record and make it easily comparable with further analysis. The reporting format should include: a) name of reporter, b) name and serial number of a patient, c) result, and d) date and time of reporting.
7. A comprehensive analysis manual describing all different methods used in the lab with references and dates is developed according to the Ministry of Health's recommendations.
8. Those responsible for the lab should have been trained on lab management including management of quality assurance, budget, and statistics, purchase order of materials & agents, and equipment maintenance.

Facility and equipment

1. The lab should have adequate space, safety, and equipment for conducting microbiological, hematological, and biochemical analysis responsive to the needs of medical and surgery ward.
2. To effectively and timely meet the demanded needs according to the MoH's protocol, space, facility, tools, materials, and equipment of the lab should all be in good condition.
3. Poor quality of water with high or low acidity such as river water could be detrimental to the condition of equipment, tools, or materials that are used with that current of water. Therefore, the lab can use different source of water.
4. Filthy water could effect on the result of analysis. In this case, the lab must obligatorily get different source of water.

Analysis

Please refer to table 6 of the appendix.

Summary of Quality Assurance- lab section

- Adequacy of services must be monitored and evaluated regularly.
- The lab should participate in internal and external quality control programmes.
- **Monitoring and Evaluation:** using the lab, it requires monitoring and evaluation to enhance the quality of service.
- **Assessment:** regular assessment should be conducted to identify key problems in service provision, and identify ways for improvements.

- **Measurement:** after having identified key problems and ways for improvements, actions need to be taken.
- **Evaluation:** For effective implementation and sustainable progress, it requires evaluation.
- **Feedback:** activity outcomes must be regularly communicated with staff.
- Proper documentation of quality control activities should be implemented to keep confidentiality of information of patients and staff.

8.1.2. Blood Transfusion

Standard

Every RH must have adequate blood transfusion service. Blood transfusion service must be consistent with CPA level of a hospital. A referral hospital with minor surgery activities (for example, at most 10 blood transfusion cases per month) and with favorable geography (taking least than an hour to get to the provincial blood bank) should have only a blood depot. In principle, this service must be 24-hour operation.

Goals and Objectives

In any circumstance, the goal of blood transfusion is to provide safest blood in order to save the patient's life and not to do any harm to him/her.

Policies and Procedures

Staff at the blood bank service is responsible for collecting blood, arranging types of blood, keeping and distributing blood according to the recommendations and the national regulations developed by a national blood bank center.

1. ***Blood collecting procedures include:***

    a) a doctor or a physician will assess the condition of a blood donating person by consulting and asking the past histories and behavior which could potentially face with risk of spreading HIV/AIDS and STIs. The selection for interview and all this assessment is done with respect to criteria of a blood donor.
    b) Testing of donated blood
        - Blood Serology grouping:

The testing to identify the type of blood in ABO system and Rhesus system must be done according to appropriate formula. Any sack of blood whose group or type of blood has not yet been identified must not be allowed to be used.

Information regarding this group of blood or Rhesus type obtained from a previous blood donor cannot be used to identify this type or group of blood on the blood sack even though he/she used to donate blood in the past.

- Compatibility testing:

Cross-match testing must be done appropriately according to the guideline of the National Blood Bank Center for every blood sample of a patient requesting for blood transfusion in order to identify antibodies which can eventually cause significant clinical symptoms.

- Laboratory test for infectious diseases

The blood sample in a trial tube from a blood donor should require the following tests which will be conducted according to the effective guideline of the national blood bank center in order to identify infectious agents:

- HIV1/2. Minimum antibodies to HIV
- HBV. Minimum-HBsAg
- HCV. Minimum-antibodies to HCV

- Minimum-Nonspecific tests (RPR, VDRL) or Specific tests: (TPHA, TPPA)
- Other tests for other infectious diseases may be necessary according to geographical conditions, for example, malaria testing.

Any blood sack without comprehensive tests done according to an effective guideline will not be allowed to use unless the result of the tests indicates negative. To strictly comply with this guideline, blood sack without comprehensive tests should be kept separately. A blood sack that is tested positive with an infectious agent should be kept separately until the re-test is done with negative result. For positive blood sacks, they should all be destroyed safely and appropriately.

a) Information from a blood donor and his/her blood analysis results must be kept confidential. It is not recommended to write the name of a blood donor on a blood sack or specimen (trial tube) or on the reporting result document of the lab. In contrast, it is recommended to use coding in number or letter.
b) Blood donation should be on a voluntary basis and non-profit in order to get blood to meet the needs. Blood collection is done only with adults.
c) Three types of voluntary-basis blood donation in Cambodia:
    - **Voluntary blood donors to the center at their own will:** Those who go to give blood at the center with their own will. Awareness and educational campaigns gradually increase the number of this type of donors.
    - **Blood donors in type of replacement at the Center:** Those are the patient's relatives who have been requested to donate blood (This is usually done on voluntary basis).
    - **Blood donors outside the blood center:** Mobile teams of the national blood bank center often go to collect blood among low-risk group of population such as students, monks, and general people in various public institutions. Mobile blood collection is one of the best methods because it provides good quality of blood and also opportunity to educate the people on blood donation.
d) Professional blood donors should be avoided because their blood seems to have high risk of various infections such as HIV/AIDS, Hepatitis B, Hepatitis C, and syphilis which threaten the safety of blood.
e) The biggest danger facing with professional blood donors is to receive blood from a newly infected person that cannot be known by the lab analysis. This type is called "incubation period of infection".

2. Maintenance of blood

a) Blood must be kept in cold chain system from the time it was collected until the time to use it Staff responsible for keeping the blood must ensure that the cold chain system function well.

3. Blood distribution and transportation should be done under the following conditions:

a) Blood should be transported between temperature of +10C and $+10^0$C because as liquid of the blood can be deteriorated. Some parts of the blood can be kept in temperature of $+22^0$C and $\pm 2^0$C and can be transported in normal temperature because they will be okay with normal maintenance.
b) Materials used for transport of blood sacks should be cold prior to putting them in.
c) It always requires checking to see if there are any signs of ruins such as haemolysis or contamination prior to transporting blood or plasma from the National Blood Bank Center to other referral hospitals.
d) When using each sack of blood, it requires clearly labeled (blood group, cross-match, blood requested form, name of a patient, and serial number of blood sack) and verifying to avoid mistakes and danger in blood transfusion.
e) If there will be any sign of deterioration, the blood must be discarded.
f) Any sack of blood that is kept for 30 minutes outside the refrigerator must be discarded.

4. ***Safe disposal of blood and blood products***
    a) Safety guideline for waste management at a lab should be applied here for safety to lab or hospital staff or the public. The disposal can be dangerous by contamination.
    b) Autoclaving or incineration is the best method for waste management.

5. ***The National Blood Bank Center is not a center for voluntary HIV/AIDS patient consultation. The analysis is undertaken not for any specific individual donors but blood sack.***

6. ***Documents should always be kept or filed properly.***

7. ***Use of blood***

Blood bank at a referral hospital should have relationship with blood users and blood donors in order to ensure adequate supply of blood, proper use of blood, and report of reactions during blood transfusion. Establishment of a committee for controlling blood safety in a referral hospital is very essential for monitoring blood transfusion activities ranging from blood collection, utilization, various methods of blood transfusion, to enhancement of the continuing education for the practices of blood transfusion in accordance with blood utilization protocol.

Facility and equipment

1. The facility should be broad enough for blood donation activities.
2. The facility must be sanitary, clean and lighted. This is stipulated in the norms of sanitation and safety.
3. The facility includes a consultation room, a medical check-up room with privacy, a blood-taking room, and a relaxation room for blood donors.
4. The medical check-up and blood-taking rooms should be equipped with furniture and necessary materials.
5. A refrigerator for blood storing should have constant temperature. It, therefore, requires readable thermometer and a bell.
    a) The refrigerator alarm should be set alarm for the temperature prior to the temperature at which the blood or blood product can deteriorate.
    b) The alarm should be placed close to the staff so that they can easily hear when it rings.
6. If there is only one refrigerator, it should have different draws marked with tested and untested blood, compatible and incompatible blood.

Blood can be stored with reagents and samples. Therefore, the fridge should have different draws marked with each different product. Check and record the temperature in the fridge at least twice a day.

Summary of Quality Assurance-Blood Facility

- Blood service should be done on voluntary basis without paying any fee to a blood donor.
- Due to lack of blood, family or relatives of a patient can be requested to donate blood. By doing so, it helps to reduce the dependency on the donated blood. However, the selection of a donating person from the patients' family or relative should be done in technically appropriate manner.
- Professional blood donors must be avoided, for knowing that most of this group is at high risk of infectious diseases through blood.
- One of the best indicators for quality control of blood donation is the proportion of blood sacks collected from voluntary blood donors and from low risk-of-HIV population such as youth group.
- Community should participate in education and blood donation program.

- Quality control and Standard Operation Procedures should be applied in order to meet the technical goal of this service.
- Adequate and recorded documents should be well kept and confidential.
- Blood and its products should be safely collected. The products should be kept in a standard of safe and quality cold chain system.
- The request and the use of blood and its products should be done appropriately by a doctor in accordance with a protocol of blood utilization.

8.2. Pharmacy

Standard

Every RH has its own pharmacy which should be managed by a competent pharmacist. To enhance effective care and treatment for the people and to make them trust in the hospital services, the pharmacy is set up for storage and dispenses of medicines, projection of the needs of drugs for adequate use and ensuring regular supplies of drugs.

Goals /Objectives

1. Apply an effective inventory control system and request the need for drugs.
2. Technically appropriate and safe storage of drugs and medical equipment.
3. Effectively dispend drugs and medical equipment to various wards for both in-patient and out-patient services.
4. Contribute to correct use of drugs in accordance with the Ministry of Health's guideline.
5. Provide up-to-date information and instructions on drug use.
6. Educate the patients on appropriate drug use.

Policies and Procedures

Written policy and procedure on the process and operation of the pharmacy must be easily accessible and applicable by all relevant staff all the time.

1. Drug request systems include:

    a) an OD medical store provides several different types of drugs and medical equipment as listed in the basic guideline for provision of essential drugs to a referral hospital with or without surgery. The quantity of medicines depends on the extent of hospital activities (according to the level of CPA).
    b) a hospital pharmacist makes a request to an OD medical store once a month and makes monthly income & expense report of drugs and medical equipment.
    c) in the context of cost recovery scheme, the hospital can use the user fees to purchase drugs.
2. Procedures for receiving drugs and medical equipment include:
    a) a pharmacist or an assigned staff member should officially receive the drugs and medical equipment, record all the packages, and sign as a receiver and a provider (a pharmacist is in charge whether he/she performs this task or not).
    b) They both should unfasten the packages to check if the drugs/medical equipment have deteriorated or broken or they are not the same types/quantity as requested (or if they are not the same as listed in the goods list).

c) They verify the goods individually by comparing with the supply lists and record the receipt (a table of goods item or a returned request form)
d) They all need to record the abnormal points such as opened boxes, loss of goods, actual quantity is different from a table of described items of goods, not-requested or deteriorated goods. The goods with close expiration dates should not be received unless they can be finished in a short period of time.
e) Finally, they all should sign on a providing-receiving document which can be kept at least for five years.

3. Medicines and medical supplies should be organized in a way that is easily accessible and monitored.
   a) Medicines should be classified by types of disease treatment or administration format. Then organize them by alphabet order in each category.
   b) Organize medicines on the shelf according to the order of their chronological expiration dates. Long expiration date drugs should be put behind close expiration date ones (First expires, first out) (FEFO). Those medicines with unknown expiration dates should be organized on “First in, First out” basis (FIFO).
   c) In case of stock review or re-ordering drugs, use stock cards containing description of items, unit measurement (for example, a tablet of 500 mg or ml), expiration dates, and record each item into stock registration book.
4. Dispensing drugs to patients should be done effectively and easily. Depending on the scope of a referral hospital, lower dispensary system can be used separately or together.
   a) Stocks at different sections/wards or Bulk distribution: (distribution of drugs in bulk) the pharmacy distributes medicines in bulk according to the request without requiring for verifying a request of drugs per patient. The advantage of this method is to use for a short period of time and to dispense drugs according to the prescription (this method should be undertaken only at an emergency care ward or operation theatre).
   b) Individual drug request system (distribution of drugs per patient): similar to the distribution of drugs at out patient department (OPD), drugs are dispensed based on the prescription. The advantage of this method is a pharmacist can verify the appropriateness of a prescription and clear control of stocks.
   c) Dispense of drugs for use at a time: drugs are dispended by a package for use at a time by putting in different draws for each patient. Generally, this dispense is for 24-hour use (from the patient care point of view, this is a preferable method because it minimizes the mistakes but it has a lot of work and requires to have a room for re-packaging drugs and other health commodities).
5. Almost all RHs can not assure 24-hour operation of the pharmacy. When the pharmacy closes, chief of nurses be responsible to dispense drugs in order to reduce danger caused by inappropriate drug dispense.
   a) Drug dispensing procedure outside working hours of the pharmacy should be developed.
   b) It is forbidden to use the pharmacy service outside working hours of the pharmacy.
   c) Limited amount of drugs should be kept in a reserved cabinet for use.
   d) Nurses should record all the dispensed drugs which will be verified by the pharmacist.
6. There should be a fire protection policy in which smoking is strictly prohibited. Fire extinguishing exercises must be regularly undertaken and the fire extinguishers should be maintained in good condition.

7. The pharmacy should keep accurate records of all prescriptions for both in-patients and out-patients.
8. Every prescription should be recorded into medical records of in-patients and out-patient consultations.
9. When giving drugs to a patient, the pharmacist should provide clear explanation of the use of drugs.
10. Discard of expired or without-proper-label drugs should be undertaken under the Ministry of Health's guideline.
11. Staffs who dispense drugs should have been trained on good storage practices, use of stock control forms, use of cold chain, and distribution procedures.
12. There should be a specific process for registering requests, receipts, distribution, management and control of addicted drugs (morphine, etc.).

Facility and equipment

1. There should be a suitable facility and equipment for technical and administrative work in the pharmacy to ensure the safety of a patient through appropriate storage, management, and distribution of drugs and medical materials.
    a) A facility should be at a size of 50 square meters for 50 beds and monthly drug supply. For 50 beds and bi-monthly drug supply, a facility should be at a size of 75 square meters. For 100 beds and monthly drug supply, a facility should be at a size of 100 square meters.
    b) Drug should be kept in good and safe conditions such as light (no sun light should go into), temperature (not exceed 30 degree C), humidity resistance (dry room without condensation), and all these conditions can be monitored.
    c) Drug store should have some necessary conditions. For example, X-ray film must be kept in high temperature at 21 degree C, and open packages should be protected from humidity.
    d) There should be adequate shelves for storing drugs, and they should all be easily reachable.
    e) The system should be properly arranged to ensure the security for drug services and drug storage all the time (for example, the windows with iron frames and the doors should be locked but be able to open when there is a fire.
    f) Separate receipt storage should be arranged and all packages of goods should be verified when they arrive.
    g) Hazardous and inflammable materials should be stored separately, preventing from fire.
    h) Fire extinguishers should be regularly controlled and kept in good condition, and all staff should be drilled on fire extinguishing.
    i) Addicted drugs should be kept in safety cabinet.
2. There should be a facility and necessary materials for administrative, technical, and secretariat work in the pharmacy section.
3. A refrigerator is used to store vaccines, reagents, and other drugs (Ergometrine, Ocytocine):
    a) There should be a thermometer and a book recording the temperature of the refrigerator (freezing will spoil some materials and high temperature will spoil the others).
4. Apply safety standard for every material with the care or advice from the material maintenance experts.
5. There should be an appropriate and adequate place for drug storage at the nurses' facilities.

Summary of Quality Assurance—Pharmacy Section

The pharmacy provides high quality of services by participating in quality improvement program of the hospital.

- Checking stocks when receiving is not only number counting but it is also part of the quality assurance system.
- The audit of drug items is to ensure that the drugs were appropriately distributed according to the need.
- **Staff training needs include:** a) proper drug storage, b) use of stock review formats including request form, stock card, and prescription, c) use of cold chain system and refrigerator maintenance, d) Drug distribution.
- **Review of drug use:** the analysis and evaluation of drug use is to find mistakes in drug management and essential drug reactions.
- **Monitoring and evaluation:** Regular updates on the situation of service provision.
- **Assessment:** Timely assessment should be conducted to identify key issues in service provision and opportunities for improvements.
- **Measures/activities:** When problems and ways for improvements are identified, measures and actions have to be taken and documented.
- **Evaluation:** Effectiveness of measures must be evaluated for sustainable improvement.
- **Feedback:** All results of actions should be regularly communicated back to staff.
- Documents of quality control must be kept appropriately and information of patients and staff should be kept confidentially.

8.3 Radiography and Medical Imagery (Ultrasound)

Standard

All RHs should have medical imagery and radiography services with X-ray imagery and if capable, with ultrasound. Appropriate choice of medical imagery and accurate interpretation should be done in consultation with relevant medical technical advisors. This service should be provided within the principle of safety of X-ray for the safety of patients and staff.

X-ray Machine: *is the first choice of medical imagery. Medical imagery should be taken on X-ray film which is kept in good condition. X-ray can provide images of lung, bones, kidney, gall bladder, stomach and intestines. X-ray emits radio active ions that can be detrimental to patients and staff.*

Ultrasound: *is an additional medical imagery. Ultrasound can not provide images of lung or bones but it is most important in obstetric ward and imaging liver, lung, kidney, pancreas, gall bladder, and various pelvic organs. As currently known, ultrasound is not detrimental to patients and staff.*

Goals/ Objectives

Medical imagery section provides a hospital with high quality for diagnosing by radiography and ultrasound, which assists staff in their routine daily work and emergency in care and treatment at both medical ward and operation theatre.

Policies and Procedures

1. Medical imagery observation can be done with a request from a doctor or physician. The request should have adequate medical information justifying good reason for examination.
2. Images are usually taken for every assessment of diagnosis. Detailed notes of Ultrasound examination must be filed.
3. Competent staff should be responsible for every process. X-ray images should be taken by a capable X-ray technician. And ultrasound should be done by a physician or a doctor who has been trained on this particular expertise. It requires at least 6 months for ultrasound training.
4. Staffs who are competent should be on duty or are available when needed.
5. A copy of the report should be attached with a patient's medical record, and another copy should be kept in a filing system that can be easily retrieved. After interpretation, the result of the assessment should be given in 24 hours. When seeing something unusual on any patient, a medical imagery expert should immediately discuss with a responsible doctor or physician.
6. Safety principle of X-ray should be developed and the chief of medical imagery section must monitor the practice of this principle.
7. Instructions on safety precaution methods should be given to staffs who work at the medical imagery section.
8. Staff who work with substance or materials which emit radioactive ions should monitor and record the X-ray effect and report the result to the chief of section. The record should be filed subsequently.
9. **Pregnancy related dangers**: X-ray can endanger foetus. Every reproductive age woman should be asked about pregnancy prior to X-ray. **Warning sign should be put in an easily visible place by saying that if a woman suspects herself of being pregnant, she must inform to a radiography staff.**
10. To enhance the highest quality of medical imagery service and to reduce the minimum danger caused by X-ray effect, the X-ray room and equipment should be regularly and timely checked by a capable staff member in accordance with the Ministry of Health's policy. This report should be filed:

    a) Equipment, materials and safety of X-ray room is checked when new equipment is newly installed.
    b) Frequently assess the function of machines and equipment for ensuring their regular function.
    c) This checking of each equipment and material, and actions or measures taken to respond to any eventual gap must be accurately recorded with dates.
11. There should be a manual on medical imagery practices.
12. There should be a manual on the appropriate technical use of equipment and materials.

Facility and equipment

A facility for medical imagery service, which must be on the ground floor of a hospital, should have easy entry and a roof for a wheel-chair patient. It would be better if it is close to the emergency care ward. It also requires adequate electricity. Both radiography and ultrasound can be together in one facility.

X-ray Unit

1. X-ray section should have three rooms—X-ray room galvanized with lead, dark room, office or material store. Dark room should be separate but next to X-ray room and is used when washing negative and putting film in a box.
2. No other work is allowed in the dark room except washing negative.
3. X-ray equipment is fixed, the first choice, and is very important.
4. If sufficient budget, it would be good to have another mobile X-ray machine, which is used, for example, in orthopedic.

Ultrasound

5. There is no need for a special facility for ultrasound and it can be located together with X-ray facility.
6. Ultrasound room should have one bed, one chair, and a room of at least 2 square meters for putting ultrasound machine.
7. Ultrasound has different capacities. A hospital should target for a machine with high capacity of imaging because bad images make diagnosis unclear, and it is a waste of resource on bad quality equipment.
8. A room should have slightly dark light but not completely dark. Too bright makes it difficult to assess a patient properly.
9. A sink and materials for hand washing should be in the room or located close by.
10. A bath room should be close to the ultrasound room.

Summary of Quality Assurance—Medical Imagery Service

Medical Imagery Section ensures to provide high quality of services by participating in quality improvement program in a hospital.

- The audit of service implementation to ensure that the images for diagnosing are taken with technical and safe manner.
- Assess the patient consultation process to understand the patients' comfort and their waiting time outside the consultation room.
- Review the use of hospital resources such as X-ray machine, ultrasound, lab, and other resources pertinent to medical imagery services.
- **Monitoring and evaluation:** Regular updates on the situation of service provision.
- **Assessment:** Timely assessment should be conducted to identify key issues in service provision and opportunities for improvements.
- **Measures/activities:** When problems and ways for improvements are identified, measures and actions have to be taken and documented.
- **Evaluation:** Effectiveness of measures must be evaluated for sustainable improvement.
- **Feedback:** All results of actions should be regularly communicated back to staff.
- Documents of quality control must be kept appropriately and information of patients and staff should be kept confidentially.

9. Infrastructure

9.1. Building

Standard

Hospital construction, installation of equipment and materials, their function and maintenance, should all be done with the goal of patient care, safety and physical and mental comfort of patients, staffs, and guests. A hospital should has its strategic plan for its infrastructure development.

Policies and Procedures

1. In a place where electricity exists, safety and well-being of patients and staffs should be considered.
2. New electronic devices are checked and installed and proper instructions for use should be taught according to the standard.
3. Keep records of the facility plan, machines, and equipment.
4. There should be a comprehensive maintenance plan which includes:
   a) Inventory list of equipment and materials.
   b) Work schedule system
   c) Chronological record of maintenance
   d) Record of inspection of pressure-used equipment (autoclave, oxygen tanks, fire extinguishers)
   e) Supervision of maintenance contract.
5. Re-inspect the life cycle, value, and the use of the building, machines, equipment, materials, then recommend for repairs or changes with approval from local authority and the Ministry of Health.
6. The compound of a hospital must legally belong to the hospital with land entitlement recognized by local authorities prior to any construction.
7. Renovation of the building should take into account of sanitation, water fountain, water supply for toilets, etc., and should all be accessible by staffs and patients.
8. The facility plan should be conducive to movement and transportation of patients by using stretchers, wheelchairs, by foot (grounds, corridor, door size, stairs or ramps should all take into account of this issue).
9. The facility plan should take into consideration of natural hazards such as raining, sun light, and wind. It should therefore avoid building a flat roof or constructing in a place where it could expose the patients to these hazards.
10. Location of a facility should take into consideration of utilization. For example, the location of the facility for infectious diseases should be away from the others.
11. The facility standards designs for a referral hospital such as surgery or X-ray facilities already exist in the Ministry of Health.
12. Permanently maintain good function of the communication system such as telephone, fax, email, radio communication for the management of daily routine work and emergency services.
13. Signs with international symbols indicate where each section is and its function. For example, the pharmacy and emergency sections should be located at the converging point of a hospital and also close to the road.
14. Doors should be labeled with unit or section names indicating the purpose of that section. A hospital should have a desk with a staff for 24-hour reception and information.

9.2. Electricity

Standard

Electricity system should be well organized, ensuring safety for both patients and staffs. This system must be an integral part of a hospital plan.

Policies and Procedures

1. New electricity equipment must be inspected to make sure that they are consistent with the standard before using them.

2. The installation of electricity energy system will enhance safety and function of a hospital. Therefore, when designing the plan, it should take into account of water use, danger when cleaning, inflammable equipment; and in case of pediatric facility, electricity plugs should be closed by safety cover in order to prevent electricity shock danger.
3. It should think of lamps and/or other energy generating equipment for replacement during electricity blackout. A generator must be regularly inspected and maintained and there should be one staff responsible for turning the generator on or off.
4. Emergency sign system should be put in bath rooms and patient wards and be regularly inspected and maintained.

Facility and Equipment

1. The standard level for electricity supply in Cambodia is 220 voltages and 50 Hertz for a single-phase current or 380 voltages and 50 Hertz for three-phase current (most of equipment can be used at 10% more or less than this standard).
2. Instable electricity supply (the current goes up and down) is the factor that can make equipment easily broke.
3. A hospital can use electricity energy supplied by the state or private companies or its own generator.
4. A hospital should have other sources of electricity beside routine supply for emergency and for the function of key equipment as well as the safety of all in the hospital.
5. A hospital should have one generator in case of electricity blackout if it uses electricity from the central current. Or the hospital should have a complete set of generator system or the electricity network from the central level if it uses electricity from the neighboring area. This complete set of generator system should have the capacity to provide at least 50 to 60% of the overall hospital needs of energy so that it can operate the minimum services.
    a) The capacity of the generator must be adequate to respond to the hospital needs if it totally depends on the electricity energy from the generator for a long run or in case of the closure of the main electricity power supply.
    b) The engine of a too small generator will stop when using the equipment that requires strong energy.
    c) A bigger capacity generator will consume more fuel, making higher expenses too.
6. The energy from the sun sometimes can be used for a refrigerator, water pumping machine, and light when emergency, but the equipment and its maintenance cost highly.

9.3. Water Supply

Standard

Water is the important need for running a hospital. Supply of clean, drinking, and safe water will contribute to enhancing the patients' well-being, reducing risks of infections and the spread of other diseases such as dysentery, ulcer of intestines and other waterborne diseases.

Policies and Procedures

1. Sanitation, running water, water sources, toilets, etc., must all be taken into consideration to ensure patients' easy access when designing a hospital.

2. Water supply should be specially taken into account for communicable disease and lab sections due to potential contacts with feces, blood, reagents, etc., and water running taps in all facilities should not be manual.
3. If there is no running water, there should be a clean equipment for hand washing such as a hand-washing pan.
4. Water must be filtered to eliminate unnecessary elements and chlorines should be put into the water holder to kill germs.
5. One person needs minimum 60 liters of water per day. A hospital with 100 beds (which has total of 200 patients and attendants) and 50 staffs will need minimum 15,000 liters per day and should always maintain 8,000 liters for permanent reserved water for watering lawns and extinguishing fire.
6. Poor quality water containing low or high pH and other chemical substances could effect medical equipment used with that water or crossed by the water current. In this case, it is very necessary to seek other sources of water.
7. Filthy water (infectious) could make the result of lab analysis abnormal. Therefore, it is very necessary to seek other sources of water.

Types of Water Systems: There are three water systems:
Collection System: Some places can have running water, but, in general, district hospitals use water from wells. Underground water from the depth of 25 meters is usually clean and safe to drink. But the wells should be deeper than this in some places. The deeper wells provide more and cleaner water but it requires more pipes and stronger energy to pump it. The high reservoir is for holding the water that has been collected. A hospital should not depend on only one source of water supply. It is not sufficient to depend on only the wells except for a small hospital. To suffice the need of water supply, it is advisable to seek other sources of water.

On land water: Ponds or lakes can be good sources of water reserved for use during the dry season but it should be prevented from pollution caused by submergence of people or animals.

Raining water: This water which is collected from a roof can be available by seasons. It is often one of the good potential sources of water.

Disinfection system: This system which contains disinfection basin can filter solid substances to the bottom and kill germs by putting chlorines.
Distribution system: This system contains a basin holding post-disinfected water and water pipe network taking water to users. As usual, a basin should have a capacity to hold adequate water supply for a hospital for 36 hours. Regardless of sources of water whether it is from a spring, a river, or a well, the distribution pipes require strong water pump machine; otherwise the distribution of water can not be done due to the gravity of the earth. It is recommended that a basin on the top of the building should be made of metal or plastic. If it is made of cement or concrete, the water will usually leak or condense. When choosing materials or equipment used in the water distribution system, it should take into account of water quality because some materials or equipment can become rusty.

9.4. Sanitation

Standard

A hospital sanitation system should be appropriate and satisfactory and all wastes and sewage must be best managed. This system should have been included when designing the hospital.

Toilets, bathrooms and equipment

1. Water-used toilets are preferable because it can prevent from infectious insects and smell (water use is 40 liters a day). There should be three types of toilets—men, ladies, and handicaps.
2. If toilets cannot be used because of lack of water, deep latrines should be used.
3. It is recommended to build a squatting toilet because it is steady and easy to clean.
4. Water running tap and soap should be close to the toilet/bathroom with a hand-washing sign for both patients and staff.
5. It is useful to use toilet paper, avoiding using other materials that can obstruct the toilet or sewage system and it will cost more to repair it.

Policies and Procedures

1. Cleaners should be told not to put antiseptic solution in the toilet pan because it will stop the degradation process leading to getting stuck.
2. Staff should advice patients and new staff on the use of the toilet/bathroom and personal hygiene.

Summary of Quality Assurance—Infrastructure

Electricity system, water, and toilets/bathrooms are the important parts of safe and effective hospital operation. These systems should be included in all sections/units. Therefore, these systems should all be thought first for safety and comfort when developing or renovating a facility or building.

10. Technical Support and Logistics

10.1. Laundry-Canteen

10.1.1. Canteen and Nutrition

Standard

A referral hospital provides food to patients. A canteen should make clean and nutritious food for patients and staff. There should be a safe and comfortable canteen for patients (away from toilets and dustbins).

Policies and Procedures

1. Quality and quantity of food should be appropriate for patients and staff, meaning adequate nutrition according to the need.
2. Implement safety measures including precaution of fire and disaster preparedness plan. The location of canteen should be far away from the patient wards so that the fire can not reach.
3. There should be improvement and prevention plans of all canteen materials and keep good inventory.

4. Rubbish should be thrown in a dustbin with a close cover in order to cut down infectious insects and the dustbin should be emptied at least once a day.
5. Measures should be regularly taken to control perilous animals such as cockroaches and rats.
6. Canteen workers should be educated on personal hygiene, cleanliness of equipment/materials, temperature, and proper storage of food.

Facility and equipment/materials

1. If a hospital does not provide food to patients, it has to make sure that each patient has a relative who live in or outside the facility provides him/her with food. In this case, proper places should be arranged for dining or cooking.
2. When selecting a stove, expense and easy use should be taken into account.
   a) Woods-used stoves are the most preferable ones. But the chimney should be well arranged because woods firing in an open stove make a lot of smoke.
   b) Another option is a kerosene-used stove but it will be easily broken.
3. A canteen facility should have a hand-washing pan with soap and a cleaning towel.

Summary of quality assurance—canteen and food

There are various operation procedures for evaluation of the quality of canteen services for improvements.

- **Checking:** Regular collection of information related to key aspects of service provision.
- **Assessment:** This is conducted to identify problems for improvements.
- **Measures/Actions:** After having identified problems, measures need to be taken and keep records of all actions taken for improvements.
- **Evaluation:** Evaluation of the actions is needed for long-term improvements.
- **Feedback:** Regularly inform the staff of the results of the activities

10.1.2. Laundry

Standard:

In reality, many hospitals do not have sheets or pillowcases. But physicians' blouses and surgery blouses are used frequently. Therefore, the laundry service is one of the priority needs.

Policies and Procedures

1. To prevent the spread of infection, dirty or used closes should be collected and put them into a plastic sac or a basket.
2. To prevent the spread of infection, it is recommended that clean clothes and sheets and pillowcases are put or transported separately.
3. A basket used for dirty clothes should not be used to transport sheets/ pillowcases. Regular cleaning of the basket is needed.
4. It should be clearly identified which clothes taken from infectious ward (infectious patients), high precaution in washing those clothes is required.
5. Laundry should be done along with sanitation and disinfection in order to tackle equipment with germs and for future use.
6. If laundry is located in a building, there should be fans or cross-ventilation windows.
7. The floor and other equipment need to be cleaned.
8. There should be a sink with soap in place.
9. No smoking at the laundry.
10. If contracting laundry, the contractor needs to apply all these procedures.

Facility and equipment

1. In principal, a washing machine is the best choice. However, not all hospitals can afford the machine and its operation cost. Manual laundry which can be performed with a requirement of more workers but it can be done in many circumstances.
2. It should ensure adequate supply of soap or detergent.
3. There should be a place for drying clothes.
4. There should be one basket for dirty clothes and the other one for clean clothes (after washing) with noticeable signs.
5. There should be an autoclave for sterilization of surgery clothes.

Summary of quality assurance—laundry

There are various operation procedures for evaluation of the quality of laundry services for improvements.

- **Checking:** Regular collection of information related to key aspects of service provision.
- **Assessment:** This is conducted to identify problems for improvements.
- **Measures/Actions:** After having identified problems, measures need to be taken and keep records of all actions taken for improvements.
- **Evaluation:** Evaluation of the actions is needed for long-term improvements.
- **Feedback:** Regularly inform the staff of the results of the activities

10.2. Management of Warehouse and Equipment

Standard:

A hospital should have a warehouse for storing equipment and materials for technical and administrative operation.

Policies and Procedures

1. One person should be assigned to manage the warehouse and equipment & materials. There should be a register book for accurate recording of outgoing and incoming equipment/materials according to the inventory list.
2. The warehouse should have enough cross-ventilation, light, good sanitation without dirt or spider webs, and fire extinguishers.
3. There should be also insecticide for killing perilous insects such as rats, cockroaches, crickets, etc.

Facility and equipment

1. Use a piece of wooden log to upgrade all equipment and materials, avoiding putting directly on the ground which could make them wet and spoil the stored equipment/materials in the warehouse.
2. Adequate electricity light is very necessary.
3. There should be more or less, big or small fire extinguishers depending on the scope of work of the warehouse.
4. There should be guards who are on regular duty.

Summary of quality assurance—Management of warehouse and equipment

- Identify issues/problems that spoil the equipment and make improvement.
- Keep good hygiene in the storage permanently.
- Manage properly materials in the storage ensuring no item lost.

10.3 Management of Equipments and Materials

Standard:

The Complementary Package of Activities (CPA) requires a set of essential medical and non-medical equipment and materials for a hospital is fully functional. The Ministry of Health has produced a Medical Equipment Standard List for a CPA1, CPA2, and CPA3 hospital. Because CPA guidelines have been changed therefore the need of materials, equipment and supplies should be reviewed.

Policies and Procedures: I. Safety

1. It is the responsibilities of those involved in the management of materials, equipment and supplies to ensure that both staff and patients are safe from major risks which might happen in the hospital such as radioactive reaction, dangers from electricity shock or biological supplies and other incidents.
2. Though the electricity current is usefully low, but danger may occur. Therefore precaution should be taken to ensure that the lay out of underground electricity wire for electric power supply to all wards is properly made.
3. Plugs with three poles should be used in the hospital. The plugs which are suit to the socks that electrical equipments can be connected to soil mass.
4. Adaptor, distributor and extension wire should not be used as they may damage underground wire which may effect heavily the safety of electric power
5. Train staff so that they understand the safety of electric power and other problems which may happen to them. Therefore they have an important role in reducing to minimum level of major dangers, and in reporting things which have happened.

Policies and Procedures: II. Repair and Maintenance

Repair and maintenance affect importantly on the lives of medical and non-medical equipment. Some equipment is not working (out of order) because of improper uses and inappropriate maintenance or no maintenance. Repair requires hospital high expenses and may impact the quality of medical care.

6. The hospital needs to implement a policy for maintenance of medical equipment and materials which is divided into five groups (refer to MoH policy for Maintenance of Medical Equipment and Repair), and the contents of the policy should depend on several factors such spare parts, capacity of the technical staff, budget and operational conditions.
7. Capacity of the staff for using and maintenance of some medical equipments should be as appropriate (i.e. ultrasound machine) as the distribution of those equipment. For most

of received equipment, the suppliers do not provide enough information about equipment maintenance, therefore staff in charge of maintenance and technical staff (if possible, skills staff) should:

a) Understand basic principle of accessories, operation of the equipment, and their specification.
b) Be accustomed to daily maintenance.
c) Be self adjusted to appropriate administration avoiding major mistake.
d) Conduct routine maintenance as needed.
e) Learn how to identify early signs of damaging or states of damages.

8. Multiple skills should be encouraged for a referral hospital at Operational District level. For example skills staff in charge of maintenance of medical equipment should be trained on electricity and water supply as well.
9. A workshop in each referral or provincial hospital is important for the maintenance of medical and engineering equipments, and it should have:
    a) Stable electric power supply with a standby generator (generator used jointly with the hospital)
    b) Clean water supply with hot and cold water
    c) Drainage and sewage for waste water
    d) Gas compressor for cleansing equipment
    e) A very clean room with air conditioner(s) to ensure no dust and warm wet climate which may effect equipment
10. Users of the equipment should be trained on simple measures of daily maintenance of the equipments which they currently used. This is to ensure appropriate maintenance by both users and skills maintenance staff to reduce damages.

10.3.1 Planning and Procurement

1. Planning and receiving medical equipment is the first step of equipment management. This step needs careful consideration as it will effect heavily to the uses and maintenance of those equipment afterward.
2. Planning and procurement is under the responsibility of the Ministry of Health. The Ministry of Health supplies directly most of equipment to the hospitals (under the Health Sector Support Project receives funds from ADB, DFID, and WB for the construction and renovation of the hospitals, provision of basic medical equipment, furniture and other supplies such a generator for each is also included in the package).

3. If a hospital receives gifts of equipment from a bilateral agency or an NGO, the manager should think carefully about the advantages and disadvantages of the equipment which it may be consistent with the MoH standard (not appropriate to the needs or technical level of the hospital or double with existing equipment). Please refer to "Medical Equipment Standard List for CPA1, CPA 2 and CPA3)
4. First a copy of the Medical Equipment Standard List for CPA of the MoH should be provided to the donating agency. They should be well informed that the MoH needs to approve first so that the donation of the equipment is in compliance with the National Standard Operation Procedure. This is to ensure that the donation of the equipment is appropriate.
5. The procurement of spare-parts is a major issue for both new and used equipment which need to be thought through in the process of procurement.
6. For donated equipment, the hospital should request for additional important spare parts.
7. Any equipment will not be useful, if there is no appropriate instruction to users and/or no training for appropriate medical ability to gain maximum benefits.
8. When the procurement of the equipment is made by the MoH, there should be an instruction for the uses of the equipment and information about the product(s) in Khmer from the manufacturer(s)

10.3.2 Required Documents

Some documents about maintenance of equipment and materials are available in Cambodia (Basic maintenance and repair of medical equipment-published by the PCU/MoH in June 2000, Guideline for maintenance and management of hospital building equipment and materials-published in November 2000 by NMCH funded by JICA). Advices on equipment maintenance focus on causes which frequently occur and can be solved without engineering expertise knowledge (Checklist which advises about regular checking and cleansing, good administering and important measures to be done or not done in regard of daily uses and maintenance). There is also description about basic safety procedures for the protection of staff as well as of patients.

10.3.3 Maintenance System

1. A schedule of maintenance should be made for each hospital.
2. Important steps for maintenance activities are as the following:
   a) Regular checks

b) Verifying of checking schedule
c) Verifying of checking records
d) Checking spare parts
e) Checking safety and reliability

3. Making list of the properties for equipment: All equipment of the hospitals which is under the maintenance services of the workshop should be written down on card which includes:
   a) Location
   b) Record of repair and maintenance
   c) Name of factory and address
   d) Individual ID number (attached to the equipment for permanent identity)
   e) Detailed description of the equipment including their specifications
4. Defining of maintenance works: Determine works to be done in order to maintain every item of the equipment whatever possible in safety manner. Read documents and information about the products provided by the factories in elation to maintenance, these should include[1]:
   a) Step 1: Use and keep the equipment in right condition.
   b) Step 2: Use general concept for operating the equipment and knowing the level of operating by regular direct physical observation.
   c) Step 3: Regular check by capable person or technical person including inside observation with precaution in safe manner.
   d) Step 4: Replacement of worn out parts and refilling or changing engine oil and other materials.
   e) Step 5: Testing and adjusting the equipment regularly.
   f) The final step is repairing any equipment which is out of order or not working.
5. Scheduling stages for maintenance: After determining works to be done, decision should be made for number of stages of maintenance works including:
   a) Cleansing more often the used equipment and checking less used equipment frequently.
   b) Setting minimum standard for: how often the maintenance is following instructions for maintenance provided by the factories. But determination of the procedures for maintenance should be self established according actual utilization in the hospitals.
   c) Schedule of maintenance, protection and repair of medical equipment should be used

[1] Refer to document on how to maintain medical equipment published by the PCU/MoH

as guidance and followed (refer to hospital documents).

6. Reminding system: Staff in charge should be informed on when they need to perform works through:
    a) Serial activities which are written on cards, calendar or in computer calendar.
    b) There should be date fixed for next maintenance needed for each item of individual equipment.
    c) Manager should decide in advance for works to be done and determine schedule for monthly and weekly maintenance.
7. Tools for special testing: person in charge of management and maintenance of equipment should have testing tools to check proper functioning of the medical equipment and whether they are consistent with the standard, basic electric safety which have:
    a) Analyzing tools should be available are at least manometer and some testing tools to test whether any medical equipment operating effectively.
    b) Because not all hospitals have been fully equipped with all varieties of equipment, some equipment only found workshops at provincial or national level.
8. Technical library: a comprehensive library should have:
    a) Instructions on assembling and replacing spare-parts with record of code number of related equipment.
    b) Electronic data books and equipment accessories.
    c) Appropriate technological books
9. Monitoring: Following the establishment of schedule, regular periodic monitoring is needed to ensure registering clear and complete.

10.3.4 Financing for Maintenance:

Finance Departments at central or provincial level is responsible for financing of the maintenance costs. They are responsible for paying external teams or contracted persons at field level. Contracting out may be important for a rapid and continuous operation of medical equipments.

Summary of Quality Assurance-Acquiring, Maintenance and Repair of Medical Materials/Equipments

The goal of the Maintenance section is to provide services and maintenance for medical equipment. It also provides instructions for staff about the uses and simple maintenance methods, of the medical equipments, which they can do.

- Having plan for acquiring the medical equipments and the spare-parts with right

conditions and good prices, according to the hospital needs.

- Having plan for regular maintenance of the medical equipment.
- Provision of trainings on safety and appropriate uses of the medical equipment and the hospital should have system to ensure safe implementation and installation.
- Registering the details of the medical equipments with maintenance schedule.

10.4 Transportation-Ambulance, Security and Communication:

10.4.1 Transportation-Ambulance:

Standard:

The hospital should have duty services for emergency care, and should have an ambulance(s) in good condition and communication means for these works.

Policies and Procedures:

1. Each referral hospital should have at least two working vehicles:
   a) One normal working vehicle for general uses.
   b) One working ambulance for patient transportation.
2. The ambulance should be equipped with:
   a) A communication radio
   b) A stretcher
   c) Stabilizing equipments (registered equipments)
3. The ambulance should bear official number plate with name of the hospital in red color in Khmer and written letter "AMBULANCE" in English or French.
4. Type of vehicle should be according to the road condition, in some regions, the vehicle should be 4 wheel drives (4-WD).
5. The ambulance should be available for 24 hours, except when it is already used.
6. The ambulance should have 2/3 of fuel reservoir with working fuel indicator.
7. Regularly check of engine oil, wheels, lights, and important parts of the engine.
8. Keep maintenance logbook updated.
9. There must be a permanent driver at least one for an ambulance and a reserved driver.
10. The driver(s) should have proper driving skills, good knowledge of traffic rules (knowledge of maintaining the ambulance as well). They should be reliable (have good health and not alcoholic). The drivers should be approved by the hospital administration.
11. Monitor the performance of the drivers.
12. The Ambulance should not be used for staff personal interest or any purposes which not

related to health issues in the OD and the province or it should not used for transportation of materials or oxygen which the other vehicle can be used.

13. Both the driver and the ambulance should be available for 24 hours and they should have direct communication with emergency ward which has regular radio contact from the district(s).

10.4.2 Communication:

Standards:

The hospital should have permanent duty services for emergency care and they can be contacted any time by ambulance(s), health centers and the general population.

Policies and Procedures:

1. There should be at least one VHF radio which is permanently on. The radio should have shared frequency with other health facilities (health centers and other hospitals). And the hospital should have telephone(s) and vehicle logbook(s) for record of movement of the vehicle(s).
2. The VHF radio should be well installed with thunder protection.
3. It should have maintenance and repairing system. In case something wrong, it should fix immediately.
4. There should be skills staff at health centers which can benefit instructions and advices from the hospital and hospital should responsible for these works. The driver(s) should not have alcohol or drugs.
5. Telephone should be controlled and used appropriately, because it is costly.
6. For any hospital that has email, there should be a separate line available for emergency contact, so that email will not interrupt communication with outsiders.
7. Communication means for emergency should be not used for personal works, except with prior approval from the hospital management committee (but only very short call).

Facility and Equipment:

1. VHF radio(s) should be used for communication between the hospital and health centers to facilitate health activities (voice transmission of the VHF radio should be from high place up to 50 meter high or from the top story of the building and directly from one place to another without crossing stratosphere at 10 to 50 km from the earth, the voice should be clear). But this kind of radio can be used for a distance of less then 100 km.
2. Radio should be located in or closed to the emergency room.
3. If there is enough budget, reserved spare-parts should be available for fixing, when

communication equipment has problems.

4. If possible, there should be a telephone line for administrative communication with the OD Office, the Provincial Health Department and NGOs etc.

11. Hygiene, Waste Management and Mortuary

11.1 Hygiene and Waste Management

In most health care places, transmitting agents can be health staff, patients or surrounding environment. Various microorganism can be transmitted from one person to another directly (by hands) or indirectly (such as by things, used equipments or the floor) through air (coughing or sneezing) or through transmitting agents (flies parasites). Indirect contamination happens more frequently then others.

Standard:

There must be a working system organized to reduce the risks of infection to both patients and staff. This working system becomes a part of infection control program in the hospital.

Policies and Procedures:

1. The responsibility for enforcement of hygiene or another word the system to ensure the implementation of hygiene should be routinely carried out by the medical and other staff.
2. The responsible staff and involved staff should understand clearly the principle of hygiene and properly carried out according to methods of cleansing, sterilizing and defecting of used materials as well as burning of wastes in incinerators.
3. The safety policy includes:
   a) Ensure safety for utilizing, throwing out after use or cleansing, sterilizing, and defecting for sharp pointed materials (needles and other operating materials).
   b) Ensure safety for utilizing, throwing out of used materials of biological, chemical and other unclean materials.
4. Have an education program on important topics related to hygiene as described in following:

<u>Principles of hygiene</u>:

An important principle which determines several measures in regard of hygiene should contain implementation measures for the purpose of preventing from infection of opportunistic diseases at health facilities: all things which are touched directly by patients (even known and unknown infectious) should be considered that they may cause infection.

<u>Important measures:</u>

Separation of transmitting sources from other wards of the hospital including isolation of

patients and those who contacted with patients should be done in case of serious contamination. Stopping of transmitting ways by destroying used things and materials which are not reusable, or cleansing or disinfecting or sterilizing things which are reusable before using them again (refer to guideline for infection control in a hospital).

Principle of cleaning:

Cleaning is a basic important means in keeping good hygiene especially in the hospital compound.

The major purpose of cleansing is to destroy mechanical power of visible dirtiness by pouring water over dirty places and diluting them until dirty spots cannot be seen and then pouring away the cleansing water.

Soap and soap powder can help the delusion of bacteria and other microorganism. This help refrain their activities and they need to be cleaned from the floor/flat surface. Therefore the cleansing has strong effect on microorganism.

Delusion and getting rid of dirtiness can destroy sources for breeding bacteria and fungus as well.

Soap and detergent has low chemical activities against microorganism, so cleansing cannot get rid of microorganism more than 90%.

Negligent cleansing or rough cleansing not only have no effectiveness, but also has negative impact because it makes microorganism spread over things and create more opportunities for infecting other things as well. Therefore the cleansing should be properly done according to the standard.

The effectiveness of sterilization and disinfection depends on preceding cleansing.

Principle of disinfection:

Disinfection is an important part of hygiene practices in the hospital. There are a lot of chemical substances with different effectiveness. The more powerful antiseptic chemical substances the more poisonous they are. Using solution for disinfection is reasonable if there is a balance between its action and poison.

Principle of sterilization:

In combination with good cleansing, sterilization is more effective in destroying microorganism.

Sterilization is completely secured. It can kill 99% of microorganism. To reduce the level of contamination by used materials, sterilization should be made for used materials which have been already cleansed (dirtiness is not visible).

Sterilization can be done by physical and chemical means: by physical mean is based on burning activities (using humid or dry autoclave) or laying out things in the sun light or filtration etc. By

chemical mean includes sterilization using oxidized ethylene or other gas, dipping materials into antiseptic solution in sterilizing equipment (for example glutaraldehyde solution).

Safety of hygiene practices in medical process:

The hospital should have open policies and information about safety in carrying out the works which include at least:

- Using gloves, masks and uniform appropriately to procedures relating to liquid substances for cleansing hands and infecting things.
- Throwing away in safe manner of pointed things and infecting equipments (including the warning on the dangers of needles) *refer to guideline on safety injection for the hospital*.

Burning wastes:

Health care services inevitably produce a lot of wastes and those wastes can create risks to the health. All wastes resulted from activities of health facilities contain more potential infection and injuries (risks) than other wastes. Therefore safety and reliable means for waste management is very important. Incomplete and inappropriate waste management can cause serious consequences to public health and impact badly to surrounding environment.

Burning of wastes in an incinerator is the best option for destroying the wastes. A hospital should have an operational incinerator which locates in a bit far from the patient wards and the kitchen. An incinerator should be included in the caring program.

11.2 Mortuary

Policies and Procedure:

1. Inform immediately the responsible medical doctor(s) about any death and confirm them that the patients actually died.
2. After the body has been examined and documented, the body should be covered and taken immediately to the mortuary where the body is kept in proper manner to avoid other patients have anxiety and depress.
3. There should be workers available for carrying, moving and transport patients and bodies.
4. If autopsy is needed, there should be consent from the closest relative(s) of the body, it is better in writing, and it should be done by the examining committee of the hospital with laboratory team.
5. In case that infectious is suspected, then measures to prevent the spreading of microorganism should be taken by washing hands, isolating contacted persons if

necessary, disinfecting mat, pillow cover and clothes and other things which touched with the body (refer to guideline of the MoH).

6. Removed organ(s) of the body should be taken immediately to mortuary to burn out later.

Facility, equipment and materials:

1. A mortuary should be located in a corner of the hospital compound.
2. It should have way for vehicle and workers to come in and out, and have enough light both for day and night time.
3. If the mortuary is far from the patient wards, the way should be paved with concrete to ensure safe transport in rainy season.
4. If possible, the mortuary should be equipped with an air-conditioner, materials and equipment for operating autopsy and keeping removed organ(s).
5. There should be a hand washing place with soap.
6. There should be an incinerator to burn out removed organ(s) and used materials which are kept in the mortuary.

Summary of Quality Assurance- Mortuary

The mortuary should be at standard acceptable to both hygiene principle and dignity of the body and generally out of attention of other patients.

* Issues relating to mortuary should be identified and improvement should be made at the end of receiving or delivering services.

12. Hospital Management

Standard:

A hospital should organize and manage distributed resources to obtain as much as possible the quality of patient care.

12.1. Management Structure

A director and one or more vice director(s) are managers of the hospital. The number of vice director(s) depends on the hospital workloads and available candidate(s). However a big hospital should at least has a vice director in charge of administration and finance and another vice director in charge of technical works. Chiefs of departments and wards help the hospital director in the hospital management. Some committees should be established for providing advices on specific issues.

12.1.1. Roles and Responsibilities of the Hospital Director

The hospital director is responsible for management of all resources in transparent and effective manner as well as the quality of services provided to the patients. S/he is responsible directly to the director of the OD for administration, finance and technical works.

The hospital director is responsible for:

- Planning, implementing and monitoring and evaluation of the Complementary Package of Activities of the hospital.
- Overall management of activities and resources such human resources, equipments and budget.
- Providing technical supports to health centers and supports for the development and operation of the health centers through supervisions and trainings.
- Management of the health information system.
- Providing supports for medical and pharmaceutical researches.
- Providing cooperation to prevent immediately any epidemics.
- Facilitating the implementation of the national programs through integration of services provision at the hospital and health centers.

If the hospital is a provincial hospital, then the hospital director is also responsible for:

- Medical services and para-clinic services and specialized services
- Supports for continuous trainings for medical and para medical staff.

The hospital director should have a copy of job description. The leadership of the director is an important part for the successes of the hospital. A successful manager should:

- Be serious and be a model for other staff.
- Help her/him self by getting external people to help her/him.
- Have confidence in negotiation.
- Be flexible in interpreting policies that policies are responsive to the needs of the hospital.
- Be aware that health financing scheme is difficult, but if the scheme is implemented in transparent manner it can help the works.
- Take care for all staff equally with an expectation for work accomplishment with quality.
- Provide technical support to the nurses.
- Have good relation with (staff, leaders of the PHD, OD, other organizations and communities etc.)

12.1.2 Roles and Responsibilities of the Vice Director(s)

Roles and responsibilities of the vice directors vary according to their own responsibilities which have been assigned by the hospital director. Most hospitals have one vice director in charge of technical. All hospital vice directors should have a copy of job description.

The hospital vice director in charge of administration and finance generally help the director in:

- Controlling all decisions related to administration and internal regulation.
- Solving management issues which raised in the morning meetings.
- Supervising staff in performing their tasks.
- Controlling security rule, list of vehicles, and list of technical staff.
- Observing status of facilities and submitting requests for renovation.
- Facilitating requests for non-medical equipments and supplies, and distributing according to existing stocks.
- Monitoring guidance of hygiene.
- Participating in the management committee.

The vice director in charge of health services generally help the hospital director in:

- Smooth operations of medical and para medical services on behalf of the director.
- Making good relation with staff, leaders of the PHD, OD, other organizations and communities etc.

12.1.3 Roles and Responsibilities of the Chiefs of Departments

Chiefs of departments are responsible to the hospital director for delivering quality services of their departments. They are responsible for both technical and management works. Each of them should have a copy of her/his job description.

The technical responsibilities of the chiefs of departments are:

- Developing, improving, and monitoring of the protocols of health care.
- Monitoring of activities performed by the doctors and other staff in their departments.
- Guiding on diagnosing and treating for severe cases.
- Referral of a patient to a higher level of care if deemed necessary.
- Communicating with patients and their relatives about their disease condition.

The managerial responsibilities of the chiefs of departments are:

- Managing human and other resources at their departments. These include the monitoring of staff presence, and uses of drugs and other medical equipment and supplies, convening staff meetings and monthly reporting.
- Participating in the development of the hospital and the minimum package of activities at the health centers.
- Cooperating with other departments to increase the outputs.

12.1.4 Roles and Responsibilities of Chiefs of Wards.

The chiefs of wards are responsible for day to day management of the wards. They are responsible for both technical and managerial works. Each chief should have a copy of her/his job description.

The primary technical responsibilities of the chiefs of wards are:

- Participating in providing patient care,
- Assessing the quality of care provided to the patients,
- Educating patients,
- Providing training for staff,
- Coordinating and facilitating all national program activities

The primary managerial responsibilities of the chiefs of wards are:

- Assisting in making job description,
- Developing action plan,
- Assisting in performing tasks on behalf of staff when s/he is absent,
- Monitoring professionalism such as wearing uniforms etc.
- Cooperating and communicating with other ward chiefs, committees of other departments of the hospital and other staff,
- Ensuring good drug management and rational drug uses,
- Managing patient records, correspondents, and completing other documents,
- Preparing and submitting monthly, quarterly, semi-annual, and annual reports.

Please refer to annex of job description of nurses and chiefs of nursing care.

12.1.5 Important Committees and Key Working Groups:

The two essential committees are **the health financing committee and the management and technical committee**. The health financing committee provides relationship between community leaders and the hospital. **The management and technical committee** convene senior staff members of the hospital to analyze strength and weaknesses of the hospital services and to identify solutions to overcome the weaknesses. Every referral hospital should create similar committees to these. Each committee should have clear roles and authority. Their roles should not contrast with the roles of the ward chiefs and department chiefs. The following paragraphs are roles and responsibilities of committees, working groups, and sub-committees:

12.1.5.1. Management and Technical Committee[2]

a) **Roles and Responsibilities**

[2] The management and technical committee can be created for only the hospital which has cooperation with health partners. Sometimes it is called "Steering Committee".

- Identifying strength and weaknesses of the services.
- Identifying alternatives to solve problems happened in the hospital to overcome weaknesses.
- Taking measures to overcome weaknesses based on the guidelines and strategic plans of the MoH.
- Monitoring and evaluating the hospital activities and motivating departments and staff who actually carry out activities.
- Setting targets and developing plans in collaboration with other organizations and communities.

b) Membership

The membership of the management and technical committee depending on the management structure of the hospital. However the committee should compose of:

- The hospital director / vice director.
- Chiefs of other organizations who are health development partners for the hospital.
- Chief of a health center located nearby or in the hospital compound.
- Chairperson of the health financing committee.
- Chiefs of different working groups such as clinical, drugs and treatment, safe blood, infection control etc.
- Chief of technical office served as note-taker and making report submitted to the PHD.
- Chief of Administration and accounting office, recording new activities to be integrated into Annual Operational Plan.
- Chief of pharmacy of the OD
- Chiefs of departments/wards

c) Appointment of members

- The hospital director has rights to appoint members of the committee.
- Any member who is absent without excuse, the hospital director should appoint a replacement.

d) Number of Meetings

- The management, coordination, and technical committees should regularly convene monthly.

12.1.5.2. Health Financing Committee

Referring to the guideline of health financing scheme which described the health financing committee, its roles and responsibilities and detailed activities relating to user-fee scheme, the

followings are elements for the Committee being functional.

a) The purposes

- To improve quality health care
- To increase equitable access to quality health services by the poor
- To ensure responsiveness and quality of services (for long term sustainability)

b) Primary roles of the Health Financing Committee

The committee is responsible for make request for the implementation of the health financing scheme of the hospital on instructions specified in **the Health Financing Charter**. This includes determining services and setting prices which are affordable to the majority of the population, and making principle of system to exempt the poor.

- Creating quality standard with the reduction in public expenditure,
- Providing staff incentives through additional incomes,
- Ensuring accountability and transparency in financial management,
- Ensuring the protection of the poor and people at risks that they can access to the hospital services without paying,
- Studying about prices with participation of communities and in compliance with the MoH guideline.

c) The following are important tasks of the committee:

- a- Monitoring of activities of services delivery based on monthly indicators.
- b- Providing comments and recommendation for health financing management to improve quality of services and sustainable services.
- c- Monitoring and following up the income and expenditure of user-fee revenues by verifying against the health financing activities. In case that irregularity has been noticed, request should be made to the hospital/facilty director for post audit.
- d- Reviewing and making decision on exemption of the poor by analyzing and considering appropriately and providing real justice for the poor and the destitute by assessing proportion of exemption against total admissions and proportion of exempted value against total user-fee revenue. Recommendation for exemption of the individual poor patients should be forwarded to the hospital director for financial decision.
- e- Reviewing and analyzing feedbacks of patients from letter boxes (anonymous letters) through patient satisfaction survey and complaints of patients or suggestions for improvement of the health financing operation from the communities. These should be done by the sub-monitoring committee who then makes recommendation

to the hospital director or director of facility to establish measures against inactive incidents or problems which have happened in the hospital.

- f- Discussing different methods in relation to improving the health status of the population, disseminating information to the public including government officials about the important principles and procedures of the Health Financing Scheme of the government (the MoH) so that they are willing to participate actively in the implementation.
- g- Studying and identifying good alternatives for the hospital director or facility director to ensure sustainable operation of the hospital or facility so that misconducts can be avoided such as demanding unofficial payment, convincing and directing patients to go to private clinics, bad behavior, exploiting public properties by developing internal rules and regulations (assistance to the hospital director or facility).
- h- Ensuring pure transparency and efficiency in the management of user-fee income and expenditure by sharing monthly report with all staff through the chiefs of offices and departments (financial report).
- i- Any documents related to income/expenditure should be discussed in a meeting under the leadership of the hospital or facility vice director in charge of accounting with participation of members from the Health Financing Committee and the accountant, or they should reviewed by the vice director in charge following procedures of basic financial management principle, before submitting them to the hospital or facility director for final decision.
- j- Discussing and sharing comments with the chiefs of offices and departments to solve issues and identify key alternatives for setting measures so that decision finally sought from the director.

d) Membership:

The committee should have 8 to 13 members. The head of the committee should be selected by democratic majority voting. The candidates should be:

- Vice director of the hospital,
- Managers of other organizations who are development partners working with the hospital (if there are development partners)
- The chief of health center located in or nearby the hospital,
- Chiefs of other working groups such as clinical, drug and treatment, blood safety, infection control etc.

- Chief of technical office,
- Chief of administration-accounting to be secretary and submitting report to the PHD,
- The chief of OD pharmacy,
- Chiefs of wards / departments

e) Appointment of members:

- Members of the committee should elect a member to be the head
- The head of the committee should appoint new member as the replacement of any member absent for 3 month without excuse, who had next lower votes.

f) Number of meeting:

- The committee should regular convene one a month.
- In necessary case, an extraordinary meeting should be called by an invitation of the hospital or facility director.

12.1.5.3. Drug and Therapeutics WG:

a) Roles and Positions

The roles and functions of this working group are responsible for drug and therapeutic application by referring to the guideline of WHO.

- The chairperson of this working group will be an assistant to the hospital director,
- Cooperate closely with the Technical and Management Committee.
- Cooperate closely with supervision teams of rational drug use and national programs.
- Follow guidelines and protocols of essential drug uses and other national programs.
- Monitor referral cases and feedbacks from the health centers.
- Monitor treatment and care especially for severe cases.
- Supervise and train medical staff of the hospital.
- Use health information and data to develop annual plan.
- Supervise and review all requests and deficiencies of drugs, equipment, and plans
- Improve technical quality and operation of the hospital.
- Train medical staff of the hospital and other referral hospitals and health centers on new technical skills.
- Provide advices to medial staff, administration and pharmacy staff.
- Create policy for drug management and submit it to the National Committee at the MoH.

- Evaluate some drug items and recommend to the National Committee to include in the list of essential drugs.
- Create standard guideline for treatment for the MoH.
- Evaluation the uses of drugs to identify some issues.
- Provide effective inventions to improve drug uses for the MoH.
- Manage drug reaction, suffering and death, and unnecessary economic costs.
- Manage misuses of drugs.
- Disseminate information and transparency.

b) Goals and objective of Working Group for Drugs and Therapy):

- To develop and implement an efficient and cost-effective formulary system which includes consistent standard treatment protocol, a formulary list and manual.
- To ensure that only efficacious, safe, cost-effective, and good quality medicines are used.
- To ensure the best possible drug safety through monitoring, evaluating and thereby preventing, as far as possible, adverse drug reactions (ADRs) and medication errors.
- To develop and implement interventions to improve medicine use by prescribers, dispensers and patients. This will require the investigation and monitoring of medicine use.

c) Membership:

- The chief of the technical office as the chairperson of the Working Group for Drugs and Therapy.
- The chief of OD pharmacy as vice chairperson who reports the chairperson every month.
- The chief of detail pharmacy of the hospital as the secretary who makes daily report on drug uses.
- Specialist doctors and representatives of medical NGOs as members who assist the chairperson in technical issues.
- Chief of each department, and representative of health center nearby or in the hospital.

d) Appointment of members:

- The hospital director has rights to appoint the chairperson and members of the working group.
- The chairperson reports any member who is absent longer than 15 days without reason to the hospital director for consultation and appointment of the replacement.

- Any member can recommend new members to the hospital director.

e) Number of meetings:

- The group meets every morning for 30-60 minutes to report clinical drug and therapeutic applications.
- The group meets for 90-120 minutes to discuss technical, clinical issues 1-2 times.

12.1.5.4 Working Group for Hospital Transfusion Control:

Each hospital should create a working group for hospital transfusion to implement the national policy and the guideline on the clinical use of blood and monitor the use of blood and production of blood at local level. The working group should have authority within the hospital structure to determine policy of the hospital in relation to transfusion and solve any problems that have been identified.

a) Roles and Positions

The major functions of the working group for the hospital transfusion are to:

- Monitor the safety, adequacy and reliability of blood supplies and blood product and alternatives to transfusion.
- Set a system and procedures for implementation of the national guideline for the clinical use of blood within the hospitals including the development of a hospital blood ordering schedule.
- Promote the effective implementation of the national guideline for blood uses through education and training of all clinical and blood bank staff involved in the process of blood transfusion.
- Monitor blood uses and blood product in a hospital.
- Monitor the implementation of the National Guidelines in the hospital and take appropriate measures to overcome any factors hindering their effective implementation of the guidelines.
- Review incidents of severe adverse effects or errors associated with transfusion, identify any corrective action required and refer them to the National Committee on the Clinical Use of Blood.

b) Membership:

A Working Group for the hospital transfusion must be multidisciplinary and involve all departments in the hospital which are involved in providing and prescribing blood and blood products. These are may include:

- Senior representative of clinical specialities that prescribe blood in the hospital.
- The reasonable officer from the hospital blood bank and, where applicable, a

representative of the blood transfusion service that supplies blood and blood product to the hospital.

- Hospital staff that are responsible for supplying serum, pharmaceuticals, medical devices, and sterilized disposable equipment.
- Representative of the nurses as member of the Working Group. S/he must be clinical person, but sometimes it needs to include other staff as well, such as administrator/finance officer of the hospital and staff in charge of patient records.

c) Appointment of members:

- The hospital director has rights to appoint the head and members of the Working Group for Controlling Blood Safety.
- The group head should report any member who is absent for three months without reason to the hospital director to consider and appoint the replacement.
- All members have the rights to propose their new replacement members to the hospital director.

d) Number of Meeting:

- Meet monthly for 60-120 minutes to report on clinical blood uses and blood products.

12.1.5.5. Working Group for Infection Control:

The Working Group for Infectious Control provides a forum for multidisciplinary input and cooperation as well as sharing different information. The group should include wide representatives from involved departments for example management, physicians, other health care worker, micro-biology, pharmacy, sterilizing service, clinical maintenance, housekeeping and training service. The group should communicate with and report directly to management committee or medical staff to increase transparency and effectiveness of the program. In an emergency case (for example break-out of a new disease) the group must be able to meet promptly.

a) Roles and Positions:

- To review and approve an annual program activities for disease surveillance and prevention.
- To review epidemiological surveillance data and determine areas of interventions.
- To evaluate and improve performance of the health facilities at all level.
- To ensure appropriate staff training in infectious control and safety management provision of safety materials such as personal protection equipment and product.
- Monitor and evaluate the implementation of infection control program.
- The infection control program will be effective so ling as it is comprehensive and

integrated with surveillance and prevention activities, as well as staff training. There must also be effective supported at national and regional levels.

- The Working Group for Infection Control is responsible to the implementation of policies for the prevention and control of infection diseases and monitoring of the program implementation of infectious diseases,

b) Membership:

- Appoint a member to be the leader of the group, who communicates directly with the hospital director.
- Appoint a person who fights against infectious diseases to be the secretary (health care worker who has received training on principle and process of infectious disease control for example medical doctor, bacteriologist or skilled nurse).

c) Appointment of members:

- The group leader and other members should be appointed by the hospital director and members have rights to request the hospital director for new member(s) to replace any absent member(s).
- The group leader should report to the hospital director to replace any member(s) who have been absent for three months.

d) Number of meetings:

- The group meets monthly for 60-120 minutes to monitor and evaluate the implementation of infectious disease control program.

12.1.5.6. Working Group for Nursing Care:

The Working Group for Nursing Care: Chiefs of wards, chiefs of departments and the chief of nursing of the hospital.

a) Roles and Positions:

The main technical responsibilities include:

- Participation in patient care
- Evaluation of quality of patient care
- Patient education
- Training for staff, students, nurses, and midwife
- Coordination and assistance to national program

Managerial responsibilities include:

- Assistance for preparing job description.
- Development of action plan.
- Assistance to staff when they are absent.

- Monitoring of professional activities such wearing uniforms etc.
- Cooperation and communication with other ward chiefs, other committees of the hospital and other staff.
- Assurance of management of medical supplies and equipments in good condition and hygiene.
- Management of patient records, correspondents, and other documents.
- Arrangement and submitting monthly, quarterly, semi-annual and annual report.

b) Membership:

- The leader of the Working Group for Nursing Care is a nurse or trained midwife
- Chiefs of wards, departments etc.

c) Appointment of members:

- The head of the working group for management and care of patients is a nurse or midwife who has been trained.
- The leader and members should be appointed by the hospital director
- Any member has rights to request the hospital director to appoint any necessary member(s)

d) Number of meetings:

- The group convenes monthly for 60-120 minutes to monitor and evaluate the nursing care program.

12.1.5.7. Sub-Committees

1. Sub-Committee for Discipline and Regulation

a) Roles and functions:

The roles and functions of the sub-committee are:

- To inform staff about internal regulation.
- To supervise and monitor staff attendance.
- To monitor and seek for misconduct and take timely corrective actions.
- To receive and respond to staff requests and complaints.
- To be responsible for security, discipline in the hospital.
- To discuss and decide on majority votes over difficult cases.
- To review and improve internal regulation.
- To evaluate and encourage staff to well perform their tasks.

b) Membership: Professional staff are members of the sub-committee.

c) Appointment of members:

The hospital director has rights to appoint the members of the sub-committee for

discipline and regulation.

d) Number of meetings:

The sub-committee for discipline and regulation should invite staff for a monthly meeting before the meeting of the Health Financing Committee.

2. Sub-committee for Monitoring and Evaluation of User-fee Scheme

Please refer to the guideline for the management of health financing, and for user-fee scheme for a reference of membership and roles of the sub-committee.

3. Sub-Committee for Procurement and Supply

Please refer to the guideline for the management of health financing, and for user-fee scheme for a reference of membership and roles of the sub-committee.

12.1.5.8. Other Meetings:

Beside meetings of the committees and sub-committees of the hospital, some other meetings should be held by inviting staff to participate in solving problems.

Daily meeting among key staff including the hospital director, vice directors, chiefs of wards, chiefs of departments, medical doctors, and other medical assistants, should be held in every morning, or possibly in the after to discuss patient problems, to disseminate information and to collect comments of the Technical and Management Committee.

In addition to the regular meetings, there should be information boards posted with policies and new rules related to daily activities of the hospital staff. For results of the hospital services such as number of patients, number of staff, health outputs and health financing information etc. should be posted for sharing information as well. Meeting with local communities should be held for at least once or twice.

Summary of Quality Assurance- Management Structure

- Each senior staff should have a copy of job description for clear understanding of their responsibility.
- Clear roles and responsibilities of the committees should be described clearly. Also the rights of the committees should be clearly described. They should not be in contrast with responsibilities of the chiefs of departments or wards.

12.2 Planning Process

12.2.1 Planning, Implementation, Monitoring and Evaluation

For most of the hospitals in Cambodia, the process of planning, implementation,

monitoring and evaluation is a new thing. However with an increase in resources and major changes, it is necessary to have a better planning process than before. The management committee of the hospital should initiate the process of planning, implementation, monitoring and evaluation.

Planning:

Think in detailed about problems which may happen, discuss predicted events in order to organize necessary measures, and to improve management behavior as a whole or partly to work with limited estimated resources either financial resources, material resources or human resources.

Implementation:

Implement or carry out activities according to the plan.

Monitoring:

Oversee and check periodically. For health services, such monitoring needs to be continuous without interruption or regularly conducted for a period of time by using measurable indicators.

Evaluation:

Final evaluation of user-fee, quality of a service, appropriateness of the process and how the service responds to objective determined during the planning process. Evaluation may be based on monitoring or an independent study.

The municipality-provincial health departments and the operational health districts should the annual plan as a tool for facilitating management of the hospital.

Planning is necessary for good management. It allows the managers to organize current resources and future resources to achieve needs of the population who are services users.

All staff at every level should be consulted and invited to participate in the planning process. Their participation would provide them incentive and motivation. A system should be created for staff participation for example allowing staff to participate monthly departmental meeting.

The annual hospital plan should be made every year at a certain point of time which determined by the MoH. The hospital plan will be parts of the OD plan. Senior managers should ensure clear relationship between the annul plan, annual activities and annual budget allocation.

Major questions raised in the plan are:

1) What level of the hospital is now?
2) What level which the hospital wants to be?
3) How can the hospital team achieve this work?

Those are primary steps toward the development of plan and policy. The management team

considers which areas to focus for example hygiene or quality of care and asks the three questions to prescribing doctors in the departments.

To answer question 1 " What level of the hospital is now?" the hospital reports already provides some answer. Moreover a simple analysis of strength and weaknesses of the hospital can show that things can be achieved internally and outside influence which can be constraint to achieving results.

For question 2 " What level which the hospital wants to be" according to targeting three standards of the MoH are:

- Strengthening of management
- Improvement of health services delivery
- Construction, renovation and supply of equipment

By using information such as objectives and policies of the MoH and the PHD, national protocols, and patient feedbacks etc., decide how to achieve the objectives. That is to finding elements for action planning.

Below is the standard format for planning:

Objective/ Activity	**Responsible Person**	**Quarter**				**Budget**	**Result**
		1	2	3	4		
Objective A: -Activity 1 -Activity 2	-The hospital director -Chief of nurses-midwives		x	 x		-$100 (national budget) -$600 (user-fee revenue)	-Result 1 -Result 2
Objective B: Activity 1 Activity 2 Activity 3	-Hygiene Committee -Technical Committee -Chief of midwives	 x x		x		-$1,000 (NGO) - $2,500 (national budget) - $50 (NGO)	-Result 1 -Result 2 -Result 3

Table 1- Example of annual plan

For effective monitoring, it should be made regularly conducted with feedbacks provision to monitored implementing persons. Regular and continuous monitoring provides managers with insight of trends, for example the Technical and Management Committee should include agenda of monitoring in their monthly meeting.

Final evaluation can be a summary of monitoring, or spot checks to specific services and processes with cooperation of involved persons. Final evaluation in latest year should be integrated and used as means to help staff improve quality of services and effectiveness of the

working system and structures, but not as means for criticizing staff who have mistakes at all. As a target of The Ministry of Health, the annual planning process will be revised. The process starts from evaluation of activities and policy during the last year before making plan for following year. What have been achieved and have been threats? Is a question which helps us to avoid repeated mistakes again and again, and provides opportunities for successes. Try to involve important staff in the evaluation and development of new annual plans (or quarterly plans). Providing opportunity for chiefs of wards to brainstorm ideas for next year and make suggestion for planning their activities for following year is a simple mean for increasing staff participation in the development of policy and action plan.

Summary of Quality Assurance- Process of Planning

- The hospital director and vice director(s) ensure the existence of planning system
- Monitoring and evaluation should be included in the process of planning so the hospital learns about their activities.

12.3 Health Information System

12.3.1 Patient Record System

Patient records play a role as quality monitoring tools. All patients admitted in the hospital should be registered and a dossier should be made for each. Written on the patient dossiers are illness history of the patient, prescription, prescribed medication, evolution of the illness and drugs which the patient actually received as well as recording of vital signs such as temperature and blood pressure. Table of medication and monitoring of vital sign should be placed by the patient bed to make ease for visual sight of the nurses with prescription avoiding repeated error, and to make ease in monitoring any irregularity.

Prescribed drugs and care should be clearly written. Record monitoring with prescription and signature in a patient dossier. The chiefs of wards ensure proper patient filing and completeness of patient files.

The patient dossiers should be kept in alphabetical order during their stay in the hospital and kept as archived documents after discharges in alphabetical order. At any point of time, patient records might be reviewed when any patients are readmitted. This might help medical doctors in writing proper illness history.

Keep patient dossiers safely out of public views or non-medial persons and protect them from natural risks (flood, fire, and insects).

Reused and reviewed patient records should be noted clearly with reviewing date, reviewing

doctor, and kept in separate shelf "reused/reviewed records" which will make ease for reuse when patients come again.

12.3.2 Referral System and Patient Discharges

If patients who need high level of treatment then where they are staying, they need to be referred out. Those patients are provided with referral slips and copies of monitoring charts or other files which need to be handed over to receiving facilities. Make notes of reasons for referring, places referring to, and dates of referring out as well as transportation means in the patient records of the hospital.

Wherever possible inform the receiving hospital about the referral case. A discharge should be noted in the patient dossier, if the patient needs not to be referred out with brief summary of the discharge (refer to guideline for referral system).

12.3.3 Health Information System

Good quality health information is important for proper planning, implementation and evaluation of the health services.

Referral hospitals should use HO2 monthly form and standard registers instructed by the MoH for collecting health information. **Frequency of reporting:** Every end of the month staff in charge of health information, gathers information about health activities and health issues in the hospital, and fill HO2 form properly. The HO2 monthly report which is reviewed and signed by the director or vice director should be submitted to the OD by 5th of the following month.

Uses of health information: It is necessary that hospital staff especially the director understand clearly the health information system and how to use it. The data should be accurate and reliable.

Staff should:

- Clearly understand reporting system and identify mistakes in the report.
- Use HIS for the monthly meeting to identify problems and make action plans. Therefore the HIS not only measures daily activities, but provides information for making policies and improving staff performance.
- Use information board "Tableau de Bord" as a tool to monitor health activities.
- Create monthly activities for staff by comparing activities, time needed and staff number.
- Review services delivery activities of staff every six month and every year based on data of HIS. The review is a part of activities in the annual plan.
- Use the HIS for evaluating results compared with objectives written in the annual plan of the hospital.

The Technical and Management Committee is responsible for reviewing accuracy of HIS data, identifying mistakes, and submitting timely the report to the OD.
The director and vice director(s) are responsible for receiving report and giving feedbacks to staff on results of data analysis and acquired experiences, and together with staff responsible for using the information to improve quality of services. Health Information should be reviewed every year (refer to the Guideline of Operational Health District, page 71-74). Refer to Annex 14: Report Format on Health Information System.

12.3.4 Patient Feedback

Establish a system for reviewing comments and suggestions from patients and their relatives for some improvement, for example the hospital users can write critical comments about hospital services and drop them in letter box(es) at the hospital gate even before admission. Comments should be confidential. On the other hand , the hospital staff can simple use questionnaires to interview hospital users for comments on care which they have received so that alternatives for quality services improvement can be identified. Information about patient satisfaction is used to improve quality of services, and to monitor user-fee payment. Staff should receive regularly information from the results of patient satisfaction survey.

Summary of Quality Assurance- Health Information System

- Patient records should be keep in alphabetical order to make ease in finding them for reviews.
- Prescription and treatment should be clearly written in the dossiers.
- Monitoring of vital signs should be noted with doctor's prescription and signature.
- Fee for referral should be transparent.
- Summary of discharges should be made available in the dossiers.
- Accurate and on time information should be collected for all departments to monitor the national indicators.
- Patient satisfaction survey should conduct appropriately as recommended by the MoH guideline.

12.4 Human Resource Management

Staffs are valuable assets of the hospital. Caring for staff at every level should be emphasized on fairness and transparency. They need clear instructions from the director of what

they are expected from and what are unacceptable behaviors.

The hospital should have staff internal regulations. Those internal regulations should be objective including working hours, registering discipline, clothing discipline, patient right discipline, vision of the hospital toward patients, discipline in regards of getting unofficial payment from patients and using hospital equipments for other purposes rather than hospital patient care.

The hospital director should clearly confirm staff about consequences of incompliance to internal regulations, and monitor closely the measures set forth for breaking the internal regulations. It is important that they accept the internal regulations which the director already prepared and ready to apply.

There should be medical guidance for staff to deal with most common diseases. Number of staff and skills should be enough to provide 24 hour services at all departments and to provide safety to patients. Staff should be allocated according to the needs.

Staff presence should be documented. Staff should wear uniforms with staff name on them. Staff complaints should be raised through line of authority.

12.4.1 Job Description

Job description is another management tool to manage the hospital better. Each position in the hospital should have clear description about tasks and major responsibilities. Job description should describe position requirement in relation to the hospital needs, but not personal needs of staff working in the positions. Job description written in consistent with the hospital needs is first demand for transparency. Another word staff can only work in the required positions this can avoid creation of ghost positions (positions no staff working).

Job description has a lot functions: to inform new staff about their working standard in order to monitor their performance and to assist in planning as it consists complete indicators of staff performance. Now there are lots of basic job descriptions at the MoH and the hospitals can choose to use any model of job description. It is important to discuss the draft of any job descriptions with relevant staff to ensure that they clearly understand their tasks and responsibilities, and accept what written on.

12.4.2 Human Resource Planning

Referral hospitals should have staff functional analysis to understand what activities they are performing. By understanding what tasks being performed, they can know about what number of staff needed to accomplish the tasks. They can think of what additional tasks to be performed to respond to hospital needs in the policy context and principles of the MoH. From the functional analysis the hospitals can determine what number of positions needed for making the hospital

functional, both in present and future time.

Number of staff actually needed for making the hospital functional is called staff planning. When making staff planning they should think about staff annual leaves, retirement, sick leaves, and senility. When any positions found vacant as a part of staff planning of the referral hospitals, they should make request to the OD and the PHD in order to assist the MoH to prepare recruitment of new staff according to civil servant law of Cambodia.

12.4.3 Orientation for New Staff

Any new staff has to undergo orientation stage. At the same time new staff are informed about working conditions, the vision and objectives of the referral hospital, how they can participate in decision making, whom they are responsible to, and how can they make complaints. They should be introduced to important managers and important departments of the hospital.

12.4.4 Staff Performance Appraisal

There should be an annual performance appraisal for each individual staff. Chiefs of wards conduct performance appraisals for caring staff. Chiefs of departments conduct performance appraisals for medical staff and para-medical staff. Staff performance appraisals provide opportunity for managers to provide feedbacks to the staff on general performance and determine needs of staff training and development.

12.4.5 Staff Training

The hospital should have training plan based on functional analysis of labors. Training plan includes long term training, in country training which is sponsored by NGOs and oversea training. The training plan of the hospital will contribute to the national training plan which is prepared by the Department of Human Resource Development of the MoH.

Request for scholarship and training provided by donors should be made according to the training plan.

Referral hospitals should provide students with opportunity for internship. The hospital staff should instruct and supervise them during internship. Allowances for hospital staff who instruct the students should be considered.

Summary of Services Quality Assurance- Human Resource Management

- Number of staff and multiple skills should be sufficient for the delivery of safe patient care, treatment for 24 hours.
- Staff should be allocated according to the need.
- Internal regulations should be established and implemented.
- Medical instructions should be provided to staff on patient care, disease conditions which are most frequently seen.

12.5 Quality Control

The director and vice director(s) of the hospital should be responsible for the quality of services provided by the hospital. They should create an official system for monitoring and improvement of the services quality. The following methods should be considered:

12.5.1 Quality Cycle

Quality cycle is a simple mean for effective quality monitoring. This method includes small group meeting of hospital staff to discuss encountered problems in hospital and to recommend possible solutions to the hospital director.

12.5.2 Peer Assessment (Peer Education)

Peer assessment is a place where a medical doctor, a medical assistant, or a nurse presents a case study about patient problems that s/he has experienced with, and receives comments on the services quality from other medical doctors, medical assistants and nurses. Peer assessment is a useful mean for reviewing death cases in the hospital and other risks which happened in the hospital. Peer assessment should be used not for blaming staff who have made mistakes, but for learning from the mistakes. Principle of changes is important to get rid of repeated mistakes in the future and to provide the director with recommendation.

12.5.3 Standard for Management

Creation of standard, monitoring of the standard, and giving feedbacks to staff on standard achievement provide incentives for managers and staff to improve quality of their works. The MoH provides basic supervision table for the hospital standard.

To establish standard for the hospital, they should extract questions in the supervision table and change the questions into positive sentences and assign number which they think that they can achieve. Then they have a standard to measure quality improvement.

Some questions in the supervision table of the MoH are:

- For staff organizing (above) does the hospital provide enough skills and number for all service departments?

Changing the question into positive sentence:

- The hospital provides enough number and skills of staff to all service departments.
- Assigning number to it, then you have a standard. A standard is established at a level which they can achieve at effort for example:
- The hospital provides enough number and skills of staff to all service departments=50%

Supervision team of the MoH measures results against the objectives defined by the hospital help them monitoring of progress. Staff should be informed about the objective achievements. If an objective achieved within a period of time, the objective should be revised to higher standard so that more effort needed to achieve the new higher standard.

13. User-Fee System

Based the health financing charter of the MoH, setting user-fee for the hospital has main purposes of increasing capacity of the hospital management focusing on three major aspects:

- Efficiency through resources allocation based on budget planning as well as appropriate management according to income and expenditure of user-fee scheme
- Sustainable delivery of quality services
- Equity through exemption of the poor which allows them to access to public services.

In general, a hospital with user-fee scheme should have management structure as follows:

- Health Financing Committee of the hospital manages operation of user-fee and is responsible to the hospital director.
- Sub-committee for monitoring and evaluation assist the Health Financing Committee in monitoring services delivery.
- Sub-committee of procurement and supply

For roles and membership of each individual committee, and detailed procedures in regard of price setting, please refer to the MoH guideline on user-fee scheme.

14. RH Clinical Package Comparison Table

Table 1: Pediatrics

	Conditions	CPA1	CPA2	CPA3	Remarks
1	Pediatric Emergency Care Table	✓	✓	✓	
2	Neonatal Resuscitation	✓	✓	✓	
3	Routine Neonatal Care	✓	✓	✓	
4	Severe Bacterial Infections on infants less than 2 months	✓	✓	✓	
5	Neonatal Tetanus	✓	✓	✓	✓ Refer……
6	Broncho-pneumopathy on infants from 2 months to 5 years	✓	✓	✓	
7	Dyspnia Case Management	✓	✓	✓	
8	Respiratory Infection Case Management for infants	✓	✓	✓	
9	Pleuro-pulmonary Staphylococcal Infections	✓	✓	✓	
10	Myositis	✓	✓	✓	
11	Sever Malnutrition		✓	✓	Some RHs only
12	Nephritis		✓	✓	
13	Nephritic Syndromes	✓	✓	✓	
14	Measles	✓	✓	✓	
15	Whooping Cough	✓	✓	✓	
16	Poliomyelitis	✓	✓	✓	
17	Hemorrhagic Dengue Fever	✓	✓	✓	
18	Malaria	✓	✓	✓	
19	Tuberculosis	✓	✓	✓	
20	Acute Diarrhea	✓	✓	✓	
21	Meningitis	✓	✓	✓	
22	Encephalitis		✓	✓	
23	Dermatitis	✓	✓	✓	
24	Mumps	✓	✓	✓	
25	Chicken Pox	✓	✓	✓	
26	Pleuresia	✓	✓	✓	
27	Septicemia	✓	✓	✓	
28	amebic Hepatitis	✓	✓	✓	
29	Valvular Rheumatism			✓	
30	Heart Failure			✓	
31	Congenital Cardiopathy			✓	
32	Heart Beriberi	✓	✓	✓	
33	Acute Glomerulonephritis	✓	✓	✓	
34	Intoxications	✓	✓	✓	
35	Rash Thrombopenic idiopathic			✓	
36	anemia	✓	✓	✓	
37	Opportunistic Infection/Antiretroviral therapy	✓	✓	✓	
38	Integrated Management Childhood Illness (IMCI)	✓	✓	✓	
39	Kinetic Therapy	✓	✓	✓	
40	Typhoid Fever	✓	✓	✓	

Table 2: General Medicine Ward

Conditions	CPA1	CPA2	CPA3	Remarks
1. Coma and convulsion	✓	✓	✓	refer depending on status
2. Shock	✓	✓	✓	
3. Pain	✓	✓	✓	
4. Fever	✓	✓	✓	
5. Septicemia	✓	✓	✓	If yes, bacteria culture for treatment
6. Anemia	✓	✓	✓	
7. Blood Transfusion		✓	✓	Usually related to general surgery
8. Tetanus	✓	✓	✓	need referral and ICU
9. Oral inflammation	✓	✓	✓	
10. Severe Sinusitis	✓	✓	✓	
11. Severe bronchitis	✓	✓	✓	
12. Upper Respiratory Tract Infections	✓	✓	✓	
13. Pneumonia	✓	✓	✓	
14. Emphyzene		✓	✓	
15. Asthma	✓	✓	✓	
16. Diarrhea	✓	✓	✓	
17. Typhoid Fever	✓	✓	✓	
18. Meningitis	✓	✓	✓	
19. Vitamin B1 Deficiency	✓	✓	✓	
20. Jaundice	✓	✓	✓	
21. Bacterial Hepatitis	✓	✓	✓	
22. Hepatic Abscess		✓	✓	Can keep at CPA 2 if diameter is small
23. Upper urinary track inflammation (Pyelonephritis)	✓	✓	✓	
24. Lower urinary track inflammation (cystitis)	✓	✓	✓	
25. Heart failure		✓	✓	
26. Rabies	✓	✓	✓	declared case
27. Infectious diseases	✓	✓	✓	
28. Rickettsial Diseases	✓	✓	✓	
29. Brucellosis	✓	✓	✓	
30. Leptospirosis	✓	✓	✓	
31. Hoemoptysis	✓	✓	✓	Refer to CPA 2 if there are complications
32. Goiter			✓	
33. Thyroidite		✓	✓	
34. Intoxications & poisoning	✓	✓	✓	Refer if complications
35. Malaria	✓	✓	✓	
36. Dengue	✓	✓	✓	
37. Leprosy	✓	✓	✓	
38. HIV/AIDS	✓	✓	✓	
39. Eye disease	✓	✓	✓	
40. Skin disease	✓	✓	✓	
41. Dentistry	✓	✓	✓	
42. Helminthes	✓	✓	✓	
43. Filariasis	✓	✓	✓	

44. Schistosomiasis	✓	✓	✓	
45. Hypertensions	✓	✓	✓	Any complications?
46. Stroke			✓	Should be referred, but difficult (referring according to the evolution)
47. Gastritis and ulcer	✓	✓	✓	Refer to CPA 3 if needed surgery
48. Cirrhosis and Acid		✓	✓	
49. Pelvic inflammatory disease	✓	✓	✓	Refer if complications
50. Inflammation of prostate	✓	✓	✓	
51. Kidney stone		✓	✓	
52. Sexually Transmitted Infections (STIs)	✓	✓	✓	
53. Heart Diseases : RM, IM, IA, RA		✓	✓	ECG
54. Chest pain			✓	
55. Infarct of myocardium		✓	✓	Refer with caution
56. Pericarditis		✓	✓	
57. Diabetes	✓	✓	✓	
58. Diabetic complications			✓	
59. Bleeding through digestive system		✓	✓	refer with strict care
60. Inflammation of Pancreas		✓	✓	if there is lab
61. Inflammation of gall bladder		✓	✓	
62. Leukemia			✓	Myelogram can possibly be done
63. Medullar failure			✓	
64. Acute Glomerulonephritis (AGN)		✓	✓	
65. Nephrotic Sysdromes		✓	✓	
66. Acute Arthritis Rheumatism	✓	✓	✓	
67. Polioarthritis	✓	✓	✓	
68. Pleurisia	✓	✓	✓	
69. Pneumothorax	✓	✓	✓	
70. Pulmonary Abscess	✓	✓	✓	
71. Diagnosis of coma	✓	✓	✓	then refer
72. Amoebic Dysentery	✓	✓	✓	

Table 3: Surgery Ward

Conditions	CPA1	CPA2	CPA3	Remarks
1.Incision and drainage of superficial abscess	✓	✓	✓	
2. Normal suture and small operation	✓	✓	✓	
3. Removal of lymphoma, under-skin tumor		✓	✓	
4. Paraphymosis	✓	✓	✓	
5. Circumcision for adults	✓	✓	✓	
6. Parage the wound of war	✓	✓	✓	
7. Graft en filet : 3 types 1. En filet 2.L. Total 3. Reverdain	✓	✓	✓	
8. Extraction or immobilization of upper limbs		✓	✓	
9. Extraction and immobilization of lower limbs		✓	✓	
10. Extraction and immobilization of open fracture		✓	✓	
11. Osseous curettage and Open fracture		✓	✓	
12. Extraction of Trans Tibia			✓	
13. Extraction of Trans Calcaneus's			✓	
14. Amputation of limbs (upper and lower parts)		✓	✓	
15. Small surgery (fingers, toes)		✓	✓	
16. Injection of non-microbe arthritis		✓	✓	
17. Incision of appendix		✓	✓	
18. Simple Inguinal Hernia		✓	✓	
19. Drainage of pleura		✓	✓	
20. cystotomy		✓	✓	
21. Vasectomy		✓	✓	
22. Manual reduction of Prolapsed Rectum		✓	✓	
23. Suture of tendon		✓	✓	
24. Treatment of severe infections on the arms (boils and pus)		✓	✓	
25. Removal of strange things from the inner ears		✓	✓	
26. Removal of strange things from the nostrils		✓	✓	
27. Curettage of strange things from the nostrils		✓	✓	
28. Peritonitis		✓	✓	CPA2 with surgeon
29. Abdominal contusion		✓	✓	CPA2 with surgeon
30. Intestinal occlusion		✓	✓	CPA2 with surgeon
31. Operation scheduled		✓	✓	CPA2 with surgeon

Table 4: Essential Obstetrics-Emergency Obstetrics and Gynecology

Process: Conditions	CPA1	CPA2	CPA3	**Remarks**
a) Antenatal Care: Routine Management				
1. Anemia	✓	✓	✓	
2. High Blood Pressure during pregnancy	✓	✓	✓	
a) Pre-eclampsia	✓	✓	✓	CPA1: Treat hypertension then refer
b)Eclampsia	✓	✓	✓	
3. Malaria during pregnancy	✓	✓	✓	
4. Vaginal Bleeding during pregnancy less than 24 weeks	✓	✓	✓	
a) menace of abortion	✓	✓	✓	
b) inevitable abortion	✓	✓	✓	
c) Infectious induced abortion	✓	✓	✓	
d) spontaneous abortion	✓	✓	✓	
e) Extra-Uterin foetus		✓	✓	
f) Molar Pregnancy				
5. Vaginal Bleeding during pregnancy more then 24 weeks				
a) Placenta Praevia (placenta blockage in the cervix)		✓	✓	
b) Pre-delivery dilatation of placenta		✓	✓	
c) Rupture of uterus		✓	✓	
6. Frequent vomiting during pregnancy (morning sick)	✓	✓	✓	
7. Urinary Tract Infections	✓	✓	✓	
8. Vaginal Discharge Syndromes	✓	✓	✓	
9. Genital ulcer signs	✓	✓	✓	
10. HIV/AIDS	✓	✓	✓	
11. Maternal Tuberculosis	✓	✓	✓	
12. Premature Rupture of Membrane	✓	✓	✓	
13. Multiple or twin pregnancy		✓	✓	
14. Stillbirth	✓	✓	✓	
b) Labor: Routine management: stage 1				
1. Prolonged latent phase	✓	✓	✓	
2. Prolonged active phase	✓	✓	✓	
3. Premature Rupture of membrane	✓	✓	✓	
4. Premature delivery	✓	✓	✓	✓ Should be ready to refer
5. Placenta comes prior to presentation of the birth		✓	✓	
Routine management: Stage 2, 3, & 4				
1. Prolonged second phase		✓	✓	
2. Abnormal presentation of birth				probably needs C-section
a) transverse		✓	✓	
b) breech presentation	✓	✓	✓	only for multiple delivery woman and small birth
c) Face		✓	✓	
d) Forehead		✓	✓	
3. Rupture of uterus	✓	✓	✓	
4. Post-delivery Hemorrhage	✓	✓	✓	Severe bleeding, refer
c) Post Delivery Consultation: Routine Management				

1. High Blood Pressure	✓	✓	✓	
2. Post-delivery infection	✓	✓	✓	
3. Problems on urinary system	✓	✓	✓	
4. Status of Breasts				
a) Cracked /sore nipples	✓	✓	✓	
b) Inverted nipples	✓	✓	✓	
c) Engorged nipples	✓	✓	✓	
d) Mastitis	✓	✓	✓	
e) Abscess of breasts	✓	✓	✓	
d) Neonatal Care: Routine Management				
1. Asphyxia after birth	✓	✓	✓	
2. Premature delivery/pregnancy		✓	✓	
3. Severe bacterial infections		✓	✓	
4. Hypothermia (Abnormally cold)		✓	✓	
5. Acute Respiratory Infections	✓	✓	✓	
6. Conjuctivitis	✓	✓	✓	
7. Umbilical cord infections	✓	✓	✓	
8. Neonatal infections	✓	✓	✓	
9. Jaundice (not recover after 10 days, refer)	✓	✓	✓	only for normal jaundice
10. Diarrhea	✓	✓	✓	
11. Oral Fungus	✓	✓	✓	
12. Anemia	✓	✓	✓	
Obstetric & Gynecological Interventions				
1. Normal delivery	✓	✓	✓	
2. Breech delivery	✓	✓	✓	✓ permitted only if a birth is small and with a multiple delivery mother
3. Vaginal incision and suture	✓	✓	✓	
4. Breaking of the membranes	✓	✓	✓	
5. Vacuum Extractor	✓	✓	✓	
6. Removal of Placenta	✓	✓	✓	
7. C-section		✓	✓	
8. Suture of ruptured uterus to stop bleeding		✓	✓	
9. Suture of vaginal rupture at level 1, level 2	✓	✓	✓	
10. Suture of anal rupture at level 3	✓	✓	✓	
11. Suture of ruptured cervix	✓	✓	✓	
12. Craniotomy		✓	✓	
13. Induced abortion by vacuum extractor or curettage	✓	✓	✓	
14. Complete removal of uterus		✓	✓	
15. Tubectomy (surgery removal of Fallopian Tube)		✓	✓	
16. Tubilization		✓	✓	
17. Mascupialisation d'une Bartholinite	✓	✓	✓	

Table 5: Kinetic Therapy

Process and Conditions		CPA1	CPA2	CPA3	Remarks
1. Post Surgery and Traumatology					
1	Complications of long time in bed	✓	✓	✓	
2	Sprain and dislocation	✓	✓	✓	
3	Tendon and muscular traumatism	✓	✓	✓	
4	Complication of burning	✓	✓	✓	
5	Amputation	✓	✓	✓	
6	Fracture of limbs	✓	✓	✓	
7	Cranial Traumatism	✓	✓	✓	
8	Surgery of thorax	✓	✓	✓	
9	Traumatism of vertebral columns	✓	✓	✓	
2. Medical Ward					
A. Neurology					
1	Neuralgia	✓	✓	✓	
2	Amyotrophic	✓	✓	✓	
3	Myopathy	✓	✓	✓	
4	Dystrophic	✓	✓	✓	
5	Sciatic inflammation	✓	✓	✓	
6	Hemiplegia	✓	✓	✓	
7	Paraplegia	✓	✓	✓	
8	Quadriplegia	✓	✓	✓	
9	Peripheral Paralysis	✓	✓	✓	
10	Poliomyelitis	✓	✓	✓	
11	Mal de Pott	✓	✓	✓	
12	Coma	✓	✓	✓	
13	Leprosies	✓	✓	✓	
14	Parkinson Disease	✓	✓	✓	
15	Walking trouble	✓	✓	✓	
16	Facial Paralysis	✓	✓	✓	
17	Spasmodic Sprained Neck	✓	✓	✓	
18	Muscular pain	✓	✓	✓	
19	Bladder Neurological	✓	✓	✓	
B. Orthopedics					
1	Articular immobilization	✓	✓	✓	
2	Scoliosis	✓	✓	✓	
3	Cyphsis, lordosis	✓	✓	✓	
4	Deformation of the limbs	✓	✓	✓	
5	Pieds bot varus equin	✓	✓	✓	
6	Boiterie	✓	✓	✓	
7	Scar	✓	✓	✓	
C. Lymphatic Vessels					
1	Trouble of returned veins	✓	✓	✓	
2	Lymphatic edema	✓	✓	✓	

3	Phlebitis	✓	✓	✓	
D. Pneumology					
1	Pleurisy	✓	✓	✓	
2	Chronic bronchitis	✓	✓	✓	
3	Pulmonary Tuberculosis	✓	✓	✓	
4	Asthma	✓	✓	✓	
5	Pneumonia	✓	✓	✓	
6	Bronchopneumonia	✓	✓	✓	
7	Bronchi-dilatation (bronchectasy)	✓	✓	✓	
8	Atalectasy	✓	✓	✓	
9	Pneumothorax	✓	✓	✓	
E. Rheumatology					
1	Hydarthrose	✓	✓	✓	
2	Infectious arthritis	✓	✓	✓	
3	Spondyloathrite ankylosante	✓	✓	✓	
4	Rheumatic Poly arthritis	✓	✓	✓	
5	Evolutionary Chronic arthritis	✓	✓	✓	
6	Periathritis Scapulo-humerale	✓	✓	✓	
7	Arthritis	✓	✓	✓	
8	Lumbago, Dorsal pain, cervical pain	✓	✓	✓	
9	Tendonitis	✓	✓	✓	
10	Algo neuro dystrophy (shoulder swelling and finger pain)	✓	✓	✓	
3. Pediatrics					
A-Traumatology (Post operation kinetic therapy)					
1.	Fracture	✓	✓	✓	
2.	Sprain	✓	✓	✓	
3.	Dislocation	✓	✓	✓	
4.	Muscular Traumatism	✓	✓	✓	
5.	Burning complications	✓	✓	✓	
6.	Cicatrices	✓	✓	✓	
B-Orthopedics					
1	Congenital Malformations of limbs	✓	✓	✓	
2	Scoliosis	✓	✓	✓	
3	Cyphose	✓	✓	✓	
4	Congenital Torticolis	✓	✓	✓	
5	Cerebral Syndrome	✓	✓	✓	
6	Paraplegia	✓	✓	✓	
7	Quadriplegia, Spinal bifida		✓	✓	
8	Hemiplegia	✓	✓	✓	
9	Coma		✓	✓	
10	Cranial Traumatism		✓	✓	
11	Affect on Brachial Plexus		✓	✓	
12	Peripheric Paralysis	✓	✓	✓	

C-Rhumatology					
1	Spondylo-arthritis ankylosante	✓	✓	✓	
2	Arthritis	✓	✓	✓	
3	Algo neuro dystrophy (shoulder swelling and finger pain)	✓	✓	✓	
4	Tendonitis	✓	✓	✓	
5	Dorsal pain	✓	✓	✓	
6	Lumbago	✓	✓	✓	
7	Cruralgie	✓	✓	✓	
D- Pneumology (sequels)					
1	Maladies of bronchi	✓	✓	✓	
2	Maladies of lung	✓	✓	✓	
E- Neonatology					
1	Encephalopathy		✓	✓	
2	Cerebral Paralysis	✓	✓	✓	
3	Coma		✓	✓	
4	Meningitis		✓	✓	
5	Cerebro-meninges hemorrhage			✓	
4. Obstetrics and Gynecology					
1	Pre and Post delivery	✓	✓	✓	
2	Post Operation	✓	✓	✓	

Table 6-A: Laboratory

Specimens	Specialty	Type of examinations	CPA1	CPA2	CPA3	Remarks
Urine	Cytobacteriology	Cytology (white blood cells/red blood cells, crystal gram stain)	✓	✓	✓	
	Biochemistry	Albumin, sugar and pH	✓	✓	✓	Subject to concrete actions
		Leucocytes, Nitrite, pH, Protein, Glucose, Ketone, Urobilinogene, Bilirubine, Blood, Vit C.	✓	✓	✓	
	Others	Pregnancy test	✓	✓	✓	
Feces Stool	Study of parasitology	Investigation of parasites in intestines	✓	✓	✓	
Blood	Study of parasitology	Investigation of parasites in malaria	✓	✓	✓	
	Hematology	Hemoglobin	✓	✓	✓	
		Hematocryte	✓	✓	✓	
		Counting white blood cells	✓	✓	✓	
		White cell formula	✓	✓	✓	
		Platelletes	✓	✓	✓	
		Counting of red cells and their shapes	✓	✓	✓	
		Reticulosite	✓	✓	✓	
		Period of coagulation and bleeding	✓	✓	✓	
		Esythrocyte sediment rate	✓	✓	✓	
		CD 4 count			✓	VCCT, CPA3
	Biochemistry	Urea, creatinine, bilirubine, sugar in blood, Transaminaze, Cholesterol, Triglyceride, Uric	✓	✓	✓	Subject to concrete actions

		acid, Calcium, GammaGT, PAL, Protein Total				
		T3, T4, TSH			✓	Some CPA 3
	Serology	Blood Group	✓	✓	✓	
		Cross-Match		✓	✓	
		Syphilis Test (RPR + TPHA)	✓	✓	✓	Subject to concrete actions
		Hepatitis B	✓	✓	✓	
		Hepatitis C	✓	✓	✓	
		HIV Ab	✓	✓	✓	Subject to pre and post advices
		ASLO	✓	✓	✓	
		Widal Test	✓	✓	✓	
Sputum	Bacteriology	Search for AFB	✓	✓	✓	
Discharge	cytobacteriology	Tricomonas Candida coloring gram	✓	✓	✓	
CSF	Cytobacteriology Biochemistry	White cell counting AFB Coloring gram Cryptococcus protein (PD test) sugar	✓	✓	✓	Blood Group Formula
Human fluids	Cytobacteriology	White cell formula	✓	✓	✓	
	Biochemistry	Estimation of protein (Rivalta Test)	✓	✓	✓	
Others	Bacteriology	Search for leprosy microbes	✓	✓	✓	
		Culture antimicrobial sensitivity			✓	
	Micro logy		✓	✓	✓	

Table 6-B: Blood Bank-RH Lab

Clinical Support Services	**CPA1**	**CPA2**	**CPA3**	**Observation**
Lab	✓	✓	✓	
Provincial Blood Bank			✓	
Blood depot		✓		
Types of Examination	**CPA1**	**CPA2**	**CPA3**	**Observation**
Blood group	✓	✓	✓	
Cross-match		✓	✓	
Syphilis Test	✓	✓	✓	
Hepatitis B	✓	✓	✓	For only blood transfusion
Hepatitis C	✓	✓	✓	For only blood transfusion
HIV Ab	✓	✓	✓	
Blood transfusion	✓	✓	✓	Usually related to surgery

Table 7: Ophthalmology

	Conditions	**CPA1**	**CPA2**	**CPA3**	**Remarks**
1	Red Eye	✓	✓	✓	
2	Active Trachoma	✓	✓	✓	
3	Disorders of conjunctiva	✓	✓	✓	
4	Inflammation of Eye Lid	✓	✓	✓	
5	Uveitis			✓	
6	Dry Eye			✓	
7	Refractive Errors			✓	
8	Corneal Diseases		✓	✓	Diagnose and refer
9	Cataract		✓	✓	
10	Eye Injuries		✓	✓	Diagnose and refer
11	Glaucoma		✓	✓	Diagnose and refer
12	Strabismus			✓	
13	Lid surgeries			✓	
14	Endophthalmitis			✓	
15	Pterygium			✓	
16	Retinal Surgery			✓	
17	Eviceration/Enucleation			✓	
18	Dacryocystitis			✓	
19	Kratoplasty			✓	
20	Diabetic Retinopathy			✓	
21	Community Ophthalmology	✓	✓	✓	

Table 8: Oral Health and Dentistry

	Conditions	CPA1	CPA2	CPA3	Remarks
1	Scaling	✓	✓	✓	
2	Temporary restoration	✓	✓	✓	
3	Permanent restorative	✓	✓	✓	
4	Root canal treatment	✓	✓	✓	
5	Fractured jaw	✓	✓	✓	
6	Dislocation	✓	✓	✓	
7	Simple extraction	✓	✓	✓	
8	Extraction: Impacted tooth		✓	✓	
9	Drainage Abscess	✓	✓	✓	
10	Hare clips and cleft palate			✓	
11	Facial esthetics			✓	
12	Fixed Prostodontics		✓	✓	
13	Partial Denture, sequels		✓	✓	
14	Complete Denture		✓	✓	
15	Pediatric dentistry	✓	✓	✓	
16	Orthodontics			✓	
17	Periodontics		✓	✓	
18	Oral X-ray	✓	✓	✓	
19	Implant			✓	
20	Oral pathology	✓	✓	✓	

Table 9: ENT (Ear, Nose, Throat)

	Conditions	CPA1	CPA2	CPA3	Remarks
1	Rhino pharynges		✓	✓	
2	Chronic Tonsil		✓	✓	
3	Allergic Rhinitis	✓	✓	✓	
4	Hypertrophy Rhinitis		✓	✓	
5	Galvanic cauterization		✓	✓	
6	Extraction of strange things from the ears		✓	✓	
7	Extraction of strange things from the nose	✓	✓	✓	
8	Extraction of strange things from the hypopharynx		✓	✓	
9	Maxillary Sinusitis		✓	✓	
10	Nasosinus Polypose			✓	
11	Atrophic Rhinitis			✓	
12	Inflammation of External Ear		✓	✓	
13	Chronic inflammation of inner ear		✓	✓	
14	Epitasis		✓	✓	
15	Fracture of nasal bone		✓	✓	
16	Pumping Maxillary Sinus			✓	
17	Tonsillectomy			✓	
18	Polypectomy			✓	

19	Operation of Maxillary Sinus			✓	
20	Operation of Killian			✓	
21	Scopy of Esophagus			✓	
22	Tracheotomy		✓	✓	

Table 10: Dermatology

	Conditions	**CPA1**	**CPA2**	**CPA3**	**Remarks**
1	Drug Eruption	✓	✓	✓	
2	Eczema	✓	✓	✓	
3	Superficial Fungal Infection	✓	✓	✓	
4	Bacterial Skin infection	✓	✓	✓	
5	Viral Skin Infection	✓	✓	✓	
6	Urticarial	✓	✓	✓	
7	Acne vulgarism	✓	✓	✓	
8	Vitiligo		✓	✓	
9	Lupus Erythemmatosus			✓	
10	Psoriasis	✓	✓	✓	
11	PPE in HIV		✓	✓	
12	Oral Candidiasis		✓	✓	
13	Scabies	✓	✓	✓	
14	Melasma-freckles-Neus			✓	
15	Syringoma			✓	
16	Skin Cancer			✓	
17	Xanthelasma			✓	
18	Hemangioma			✓	
19	Alopecia			✓	
20	Ithchyosis		✓	✓	
21	Pemphigus and Bullous Phamphigiod			✓	
22	STIs	✓	✓	✓	

Table 11: Mental Health (Diagnostic Criteria: Adapted to ICD-10 & DSM-IV TR)

	Conditions	CPA1	CPA2	CPA3	Remarks
1	Anxiety Disorders	✓	✓	✓	
2	Depression	✓	✓	✓	
3	Bipolar Affective Disorders/mania	✓	✓	✓	
4	Post Traumatic Stress Disorders (PTSD)		✓	✓	
5	Somatoform Disorders		✓	✓	
6	Acute Psychosis		✓	✓	
7	Schizophrenia		✓	✓	
8	Epilepsy	✓	✓	✓	
9	Organic Brain Disorder/Dementia	✓	✓	✓	
10	ATS induced Mental Disorders		✓	✓	
	ATS induced Depression		✓	✓	
	ATS induced Anxiety		✓	✓	
	ATS induced psychotic Disorders			✓	
	ATS induced withdrawal Disorders			✓	
	Others ATS induced mental disorders			✓	
11	Alcohol induced mental disorders		✓	✓	
	Alcohol induced behavioral disorders		✓	✓	
	Alcohol induced depressive disorders		✓	✓	
	Alcohol induced anxiety disorders		✓	✓	
	Alcohol induced withdrawal disorders			✓	
	Other alcohol induced mental disorders			✓	
12	Emergency Psychiatric Cases		✓	✓	
	Suicide		✓	✓	
	Aggressive patients		✓	✓	
	Crisis			✓	
	Acute intoxication			✓	

Table 12: Emergency Ambulance for All Levels of Referral Hospitals

Specifications			
Ambulance			
Elements			
1. Ambulance Body	1. Ambulance	1. Types of body	Van with high station wagon
		- Engine	Diesel
		-Power	3000cc or Bigger
		-Tires	4 wheel drive
		-Exhaust control	Respond to Cambodian Standard
		Transmission	5 speed manual
		Fuel content	60 liters or more
		Steering wheel	Left steering wheel with pump
		Air Conditioning	Manual or automatic
			Air tube system: in both a driving cabinet and a patient cabinet
		Accommodation rooms	2 or 3 in the front
			2 or more at the back
		Door	Two doors in the front
			Back door with a ladder for patients
		2. Spare tyre	1
		3-Car repair equipment	One standard set
		4- Light lamp	One for the driving cabinet
			White long lamp for a patient cabinet
		5. Color	White
	2. Spare parts	1. Emergency lamp on the roof	
		2. Electronic siren	
		3. Microphone, amplifier and louspeaker	
		4. Radio communication	The same frequency as in the hospital
		5. Infusion hook	One or more
		6. Fire	

		Extinguishers	
		7. ICOM fixed to the car	
2. Medical Equipment	1. Emergency Package	Oxygen mask, Nasal tube, scissors, pincer, knife, oral canal	
	2. Equipment storage		
	3. Stretcher	With four legs, can be folded, and with safety belt	
	4. Aspirator and accessories	Can be used with battery of 12 voltages	
	5. Oxygen tube	2 for ten liters with an opening and water holder	
	6. Stethoscope		
	7. Sphygmomanometer	Aneroid	
	8. Thermometer	Digital	
	9. Equipment for saving heart and lung	Manual and mask	
	10. Loud speaker		
	11. Artells		
	12. Matress		
	13. Folding pole type sub stretcher		
	14. Cervical collars		

Remarks:

- Ambulance with equipment and a driver should be under the management of a hospital administrator.
- The hospital technical bureau needs to assign an emergency group of physicians including one medical doctor, one medical assistant, one nurse who have been trained and they should all be on shift-duty for 24 hours.

The cockpit of the 2WD L300 has an efficiently designed, easy to use floor shift.

The 2WD L300 features a comfortable front separate seat that easily accommodates 3 persons.

The Excellent Performance Backups Emergency Medical Services

Mitsubishi L300 Ambulance is a fully equipped, high performance vehicle that affords fast, reliable transportation with all the necessary facilities for carrying out prompt, efficient emergency medical services. The L300 is available in three types: 2WD equipped with a high-performance petrol engine, 2WD with a diesel engine and 4WD with a petrol engine. The powerful running provides full mobility, and the design of the instrument panel easier to see and the cockpit easier to use enhances maneuverability in emergency running, in emergency situations.

The Mobility That Only a 4WD Could Achieve

The 4WD model of L300 Ambulance is suitable for difficult driving situations, such as bad roads or bad weather and emergency transportation which requires us to deal with various road conditions. The 4WD L300 works effectively in prompt emergency medical services.

Versatile, Functional Layout

The expansive patient compartment of the L300 Ambulance includes a 3-person attendant's seat, which opens to offer additional storage space. A wide-opening sliding side door and a high-opening rear door with foot-step ensure fast, efficient access. Plus with the extensive optional equipment list, the patient compartment for any model can be specially designed to meet individual requirements.

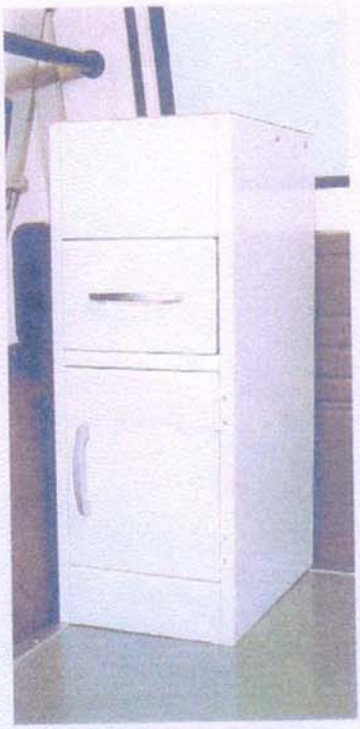
The Picked Emergency Medical Equipment

L300 Ambulance is available with a wide variety of highly maneuverable and functionable standard and optional equipment to support your emergency medical services.

STANDARD EQUIPMENT

Main stretcher with safety belts

Folding pole-type sub-stretcher



Medical cabinet

3-person attendants' seat with storage space

Rear step

STANDARD EQUIPMENT LIST

Item \ Model	L300 (2WD) Ambulance	L300 (4WD) Ambulance
Rotating beacon light (red or blue)	STD	STD
Motor siren	STD	STD
Main stretcher with safety belts	STD	STD
Folding pole-type sub-stretcher	STD	STD
3-person attendants' seat with storage space	STD	STD

Item \ Model	L300 (2WD) Ambulance	L300 (4WD) Ambulance
Room lamp	STD	STD
Linoleum on plywood floor	STD	STD
Rear step	STD	STD
Medical cabinet	STD	STD
Fire extinguisher	STD	STD
Fixed-type intravenous feeding hook	STD	STD

STD: Standard equipment

OPTIONAL EQUIPMENT

Illuminated ambulance signboard


Multi-flash beacon light (red or blue)


Electric siren with amplifier, microphone & speaker

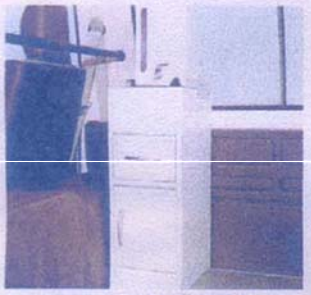

Magnetic searchlight with extension


Electric exhaust ventilation


First-aid kit


Portable oxygen resuscitator set


Portable electric suction pump


Medical cabinet with water tank & basin

Oxygen resuscitator set


Main cot stretcher with safety belts

OPTIONAL EQUIPMENT LIST

Item \ Model	1300 (2WD) Ambulance	1300 (4WD) Ambulance
Front air conditioner	●	●
Front & rear air conditioner	●	—
Multi-flash beacon light (red or blue)	●	●
Illuminated ambulance signboard	●	●
Electric siren with amplifier, microphone & speaker	●	●
Electric exhaust ventilation	●	●
Magnetic searchlight with extension	●	●
Rear door spotlight	●	●
Lamp for patient area	●	●
4-person attendants' seat with storage box	●	—
1-person folding-type attendant's seat	●	●
Frosted glass	●	●
Curtains	●	●

Item \ Model	1300 (2WD) Ambulance	1300 (4WD) Ambulance
Partition with window	●	●
Net shelf	●	●
Sliding-type intravenous feeding hook	●	●
Medical cabinet with water tank & basin	●	●
Oxygen resuscitator set	●	●
Portable oxygen resuscitator set	●	●
Spare oxygen cylinder	●	●
Manually operated resuscitator set	●	●
Portable electric suction pump (DC12V)	●	●
First-aid kit	●	●
Main cot stretcher with safety belts	●	●
Red Cross marks	●	●
Red Crescent marks	●	●
Ambulance marks	●	●

●: Optional equipment, —: Not available.

Nation-Religion-King

Ministry of Health
No.: 004 អបស.មព

Phnom Penh 21 January 2003

Circulation

Senior Minister and Minister of Health
informs

- Directors of National Hospitals and Centers
- Directors of Provincial and Municipality Health Departments
- All owners of private clinics

Subject **:** The use of ambulance

With reference to **:** Directive No. 012 អបស.មព dated 9 June 2000 on the use of ambulance.

According to the above subject and reference, I would like to inform you that the Ministry of Health has noticed that a few state and private clinic ambulances have been used inappropriately and have no proper license plates in accordance with the Ministry of Health's guideline.

Therefore, the following guidelines need to be reapplied by all directors in both public and private institutions:

1. **State ambulance:**

   - State license plate must be appropriately put
   - The word "ambulance" and the name of a hospital or center must be written red in Khmer and French or English in proportion with the size of the wall of the ambulance. And emergency logo must be stuck on both sides of the ambulance.
   - Turning on emergency light or siren is prohibited when there is no emergency case on the ambulance.
   - Using ambulance for family traveling and cargo transportation is prohibited.

2. **Private ambulance**

   - The word "ambulance" and the name of a polyclinic hospital or obstetric clinic or clinics must be written dark blue in Khmer and French or English in proportion with the size of the wall of the ambulance.
   - A clinical logo of the Ministry of Health must be stuck and the red cross sign on both sides of the ambulance must be dark blue (red is not allowed).

- To get a clinical logo, all private clinic owners should bring their ambulances for inspection and registration with the Ministry of Health.
- They should have proper an ambulance card and a license plate issued by the Ministry of Public Transports and registration with municipality/provincial traffic control police department.
- Using this ambulance for family travel and other business transportation will be prohibited. In case of violation of this guideline, the Ministry of Health will use legal means to crack down a perpetrator.

Please, directors and owners, apply this circulation effectively.

Please, Directors, accept the assurance of my high consideration.

Signature

Dr. Hong Sun Huot

CC:

- Council of Ministers-Ministry of Interior
- Phnom Penh City Hall
- Director General for Health
- Director General for administration and finance
- Hospital Service Department
- National Hospitals and centers
- Municipality/provincial health departments
- All private clinics
- For filing

Appendix 1: Referral Letter

The Kingdom of Cambodia
Nation-Religion-King

Ministry of Health
Referral Hospital/Health Center: _____
Section: _____

REFERRAL LETTER

Last and first name:_____Sex_____Age_____Nationality_____
Career _____Address_____
Refer to a hospital/health center _____
Type of disease _____
For _____
_____
_____
Provisional Treatment_____
Additional Comments_____
_____

Date and place:_____
Physician in charge

Appendix 2: Discharge Card

The Kingdom of Cambodia
Nation-Religion-King

Ministry of Health
Referral Hospital_____
No.: _____

DISCHARGE CARD

Last and first name:_____Sex_____Age_____Nationality_____
Career _____
Address_____
Admission date _____Ward_____
Diagnosis _____
_____
Status of a patient at the time of discharge:
_____
_____

Physician's advice:_____
_____

Date and place:_____
Physician in charge

Seen and approved
Director of the Unit

Appendix 3: Admission Card

The Kingdom of Cambodia
Nation-Religion-King

Ministry of Health
Referral Hospital_____
No.: _____

ADMISSION CARD

Physician in charge _____of a hospital_____
Has admitted a patient named:_____Sex____Age____Nationality_____
Father's name: _____Mother's name: _____
Address : House No. _____Street_____Village_____
commune_____District_____City/Province_____
Telephone: _____
Career : _____Institution_____
Diagnosis at the time of admission_____
Ward: _____
Date and time of admission:_____
_____

Date and place:_____
Physician in charge

Seen and approved
Director of the hospital

Appendix 4: Deceased Letter

The Kingdom of Cambodia
Nation-Religion-King

Ministry of Health
Referral Hospital_____
No.: _____

DECEASED LETTER

A patient's name: :_____Sex____Age____Nationality_____
Address : House No. _____Street_____Village_____
commune_____District_____City/Province_____
Career :_____
Date and time of admission_____
Diagnosis at the time of admission_____
Died on the date of _____at_____
Cause of death:_____
Diagnostic at the time of death:_____

Date and place:_____
Physician in charge

Seen and approved
Director of the hospital

Appendix 5: Surgery Agreement

The Kingdom of Cambodia
Nation-Religion-King

Ministry of Health
Referral Hospital_____

SURGERY AGREEMENT

My name _____Nationality_____Sex_____Age____
Address: House #_____Street:_____Village_____
Commune_____District_____City/Province_____
Relationship:_____of the patient named_____Nationality_____
Sex_____Age_____admitted to the hospital on the date of _____

After having got appropriate advice and information from the physician, I would like to agree and allow the physician to treat the patient by operating technical surgery regardless of complications or obstacles which may eventually occur during the provision of this service.

For witness, I would like to fingerprint here.

Place and Date:_____
Fingerprint of the right thumb

Appendix 6: Analysis Bulletin

The Kingdom of Cambodia
Nation-Religion-King

Ministry of Health
Referral Hospital_____

ANALYSIS BULLETIN

First and last name_____Age_____Sex_____
Ward_____Room_____Bed No._____
Diagnosis: _____
Specimen: _____

Request	Result

Date:_____
Physician in charge

Date:_____
Director/representative of Lab

Appendix 7: Prescription

The Kingdom of Cambodia
Nation-Religion-King

Ministry of Health
Referral Hospital_____
No. _____

PRESCRIPTION

A patient's name:_____Age_____Sex
Diagnosis:_____

Date: _____
Physician in charge

Note: Please take the prescription back for next consultation

Appendix 8: Surgery Procedure

Ministry of Health
Hospital_____

Operation Theater
Operation Protocol

Ward _____Room No._____
First and last name_____No._____ Surgeon_____
Entry Date:_____ First assistant_____
Operation Date:_____Second assistant_____
Pre-Operation Diagnosis_____
_____
Per-Operation Diagnosis:
_____
Indication
_____

TECHNICS

File of the Disease Evolution

Date	

Unique Prescription					
Date and time	Physician's signature	Medicines	Dose	How to use (swallow or injection)	A nurse's signature

Appendix 9: Personnel Standard

1. CPA3 Referral Hosptial (100-250 beds)

1	Medical Doctor/Medical Assistant	23-35 Minimum: -6 surgeons, -1 Anesthesia specialist (CESAR), -1 Pediatric surgeon, -1 Ophthlamologist, -1 ENT specialist, -1 psychiatrist, and 2 imagery specialists.
2	Dentist/dentistry nurse	2-3 At least one dentist
3	Nurses and specialty nurses	78-103 (5 anesthesia technician (ISAR)) 6 for equipment and material arrangement, 3 for mental health
4	Midwife	15-20
5	Pharmacist	3-4
6	Lab technician	6-8
7	Radiology technician	3
8	Kinetic Therapist	3-4
9	Technician on maintenance of equipment, material and facility	5-7 At least there should be one electronic engineer
10	Cleaner	4-5
11	Launderer	3-4
12	Kitchen worker	3-4
13	Driver	1-2
14	Administration	4-6
15	Accountant	1-2
16	Information Technology	1-2
	Total	**155-212**

In case of need: workers or floating staff or contracting staff can be recruited.

2. CPA2 Referral Hosptial (60-100 beds)

At least there should be emergency care service and surgery service

1	Medical Doctor/Medical Assistant	11-14 Minimum: 3 surgeons and 1 imagery specialist.
2	Dentist/dentistry nurse	2
3	Nurses and specialty nurses	22-32 (3 anesthesia specialist) 4 for equipment and material arrangement, 2 for mental health
4	Midwife	7-10
5	Pharmacist	2-3
6	Lab technician	3-5
7	Radiology technician	3
8	Kinetic Therapist	2-3
9	Technician on maintenance of equipment, material and facility	3-5
10	Cleaner	3-4
11	Launderer	2-3
12	Kitchen worker	2-3
13	Driver	1-2
14	Administration	3-4
15	Accountant	1
16	Information Technology	1-2
	Total	**68-96**

In case of need: workers or floating staff or contracting staff can be recruited.

3. CPA2 Referral Hosptial (40-60 beds)

At least there should be essential obstetric service with 5-10 beds

1	Medical Doctor/Medical Assistant	5-7
2	Dentist/dentistry nurse	2
3	Nurses and specialty nurses	15-22
4	Midwife	6-8
5	Pharmacist	1-2
6	Lab technician	3
7	Radiology technician	2
8	Kinetic Therapist	1-2
9	Technician on maintenance of equipment, material and facility	2-3
10	Cleaner	2-3
11	Launderer	1-2
12	Kitchen worker	1-2
13	Driver	1
14	Administration	2-5
15	Accountant	1
16	Information Technology	1-2
	Total	**47-65**

In case of need: workers or floating staff or contracting staff can be recruited.

Appendix 10: Hospitalization Records

Ministry of Health
Hospital_____

HOSPITALIZATION RECORDS
(Patient Record Form)

Ward_____

Room_____Bed No._____

Admission No._____
_____

Patient
Name_____Sex_____Age_____

Career_____

Address _____
_____

Entry date_____Time_____

Referred from_____Time_____

Cause_____

Discharge date:_____Time_____

- Discharge with permission ❑_____Referred ❑_____
- Dropping _____Deceased_____

Number of Hospitalization Day_____

Discharge No._____

Diagnostic Entry_____
_____
Referred to_____
Physician's advice_____
_____

Date and place_____
Signature of Physician in charge

I. Cause of Admission

.....
.....
.....

II. Patient's Histories

……
……
……
……

III. Background

- Personal…….
  - Medical…….
  - Surgery……..
  - Gynecology-Obstetrics…….
  - Treatment……..
  - Others……
- Family

……
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……
……

IV. Clinical Examination

a) General Status
   - Tension……..Pulse…….. Temperature…….Weight……..
   - Respiratory Rate……..

b) Complaint symptom

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……
……
……
……

c) Physical signs (Inspection: palpation, percussion and auscultation)

Head-Cervix

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Thorax

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Abdomen

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Skeleton and limbs

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Cardiovascular Apparatus

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Respiratory Apparatus

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Digestive Apparatus

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Urinary genital Apparatus

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Mental Health and Neural psychosis

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Other organs (Skin, ears, nose, throat, eyes, lymphoma, etc.)

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V. Clinical Conclusion

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VI. Different Diagnosis

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VII. Complementary Exam

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VIII. General Conclusion

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IX. Provisional Treatment

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…….....

Signature of a Physician in charge

Appendix 11: Nurses' Hospitalization Filing Standard

The Kingdom of Cambodia
Nation-Religion-King

Ministry of Health

No. 42 អបស.មព

Phnom Penh, 26 December 2006

Minister of Health
informs
Directors of Provincial/Municipality Health Department

Subject **:** The coming into force of the use of Hospitalization Filing Standard at Medical and surgery ward of a referral hospital.

As mentioned in the subject, I would like to inform directors of all Provincial and Municipality Health Department that this standard aims at improving quality of care throughout the country.

I hope that this hospitalization filing standard will be one of the tools which will ease task performance and be useful for nurses to take care of patients more comprehensively.

On behalf of the Ministry of Health, I am pleased and confident that you, all health officials at Medical and Surgery wards, will use this hospitalization filing standard which is attached with the following:

1. 5 pages of patient care files
2. 2 pages of intensity measurement of pain (use for chronic diseases)

Therefore, please, directors of provincial and municipality health departments, apply this directive effectively.

Please accept my high consideration.

For Minister of Health
Secretary of State

Excellency Ung Phyrun

CC:

- Cabinet of Ministry of Health
- Director General for Health
- Director General for Administration and Finance
- Inspection
- Filing

Ministry of Health **Nursing Files**

Hospital: ……..
Date of Admission……..……Time……..……..Ward……..….Bed No. ……..….. Ration…….
First and last name……Age.....Sex……Male ❑ Female ❑ Place of Birth.....
Commune/Sankat……District/Khan……..Province or City…….

Family Situation	**Past History of Illness**
❑ Married ❑ Widowed ❑ No. of children ❑ Divorced or dead ❑ unmarried ❑ separated Profession……. Address: House No. …….Street…….. commune/sangkat…… Khan/District……Province/city……. Telephone…….	Family History……. General Illness History……. Surgery History……. Allergic …….... ……..
Illness History Diagnosis at admission…… ……	Weight……..Height…….……. Blood Pressure……..Pulse…… Temperature……. ……Respiratory Rate…….
Fist and last name of a physician…… Signature	Fist and last name of nurse/midwife……. Signature

Nurses' drug supply

Hospital: ……Ward……Bed No. …….
First and last name…….Age…….. Male ❑ Female ❑ Ration……

Date and signature of a physician	Daily drug supplies provided based on prescriptions	**Time**																							Monitoring Signature of nurses
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	18	19	21	22	23	24	

Request form for ancillary services

Hospital:……Ward…….Bed No…….
First and last name……...Age……..….. Male ❑ Female ❑ Ration…….

Request date and time	Exams	Name and signature of physician in charge	Appointment date	Date for receiving result	Name and signature of nurses

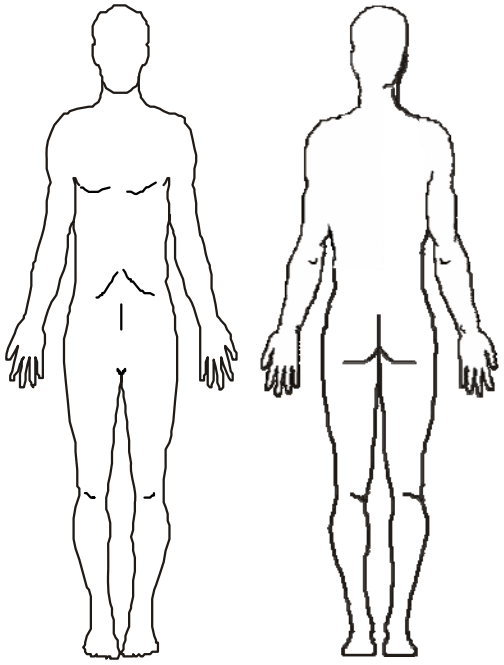
Information Transferred Bulletin

Hospital:……..……Ward……..…….Bed No……..……..
First and last name……..……..Age…….. Male ❑ Female ❑ Ration……

Date and time	Necessary information	Information received from the patient and his/her family	Activities have been taken	Obtained result	Name and signature of nurses

Bulletin for Monitoring the Evolution of Wound

Hospital:…….……Ward…….Bed No…….
First and last name……..Age…..….. Male ❑ Female ❑ Ration…….……

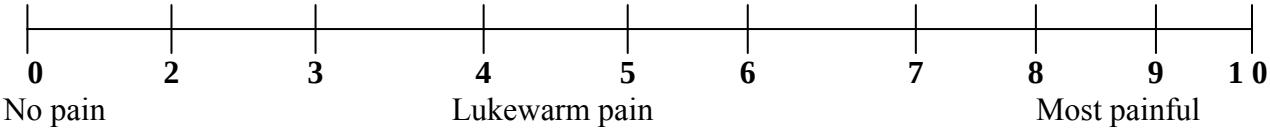


Request Date and time	Name and signature of nurses	Physician in charge	No. of days after surgery	Description of the wound	Duration of nursing

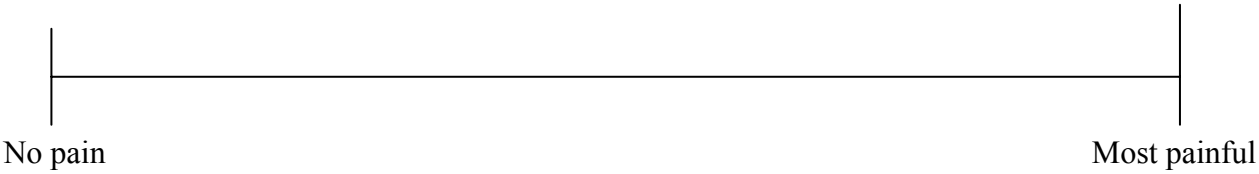
Measurement of Intensity of Pain

a) Simple Descriptive Pain Intensity Scale

b) 0-10 Numeric Pain Intensity



c) Visual Analog Scale (2)



(1) If use graphic to measure the pain, it is advised to use 10 centimeters
(2) It is used a ruler of 10 centimeters long.

Source: Acute Pain management Guideline Panel, 1992.

Date: _____

Table for Initial Evaluation of the Pain

Patient's name……Age……..Room No. ……
Diagnosis……Physician's name……
Nurse's name……..

1. Place: told by the patient or identified by nurses
2. Intensity: The patient describes the pain. Measurement unit used……
` At presence:……...
Very painful:…….
Getting better:……
Acceptable level of pain:…….
3. Characteristic of pain :(Use the patient's complaints such as thrilling, hot throbbing, tearing, stabbing) ……..
4. When, how long, how many times the pain is:

…….
…….

5. Ways to confirm the pain:

…….
…….

6. What can release the pain?

……

7. Causes or Factors that worsen the pain

……..

8. Pain effects

……

Accompanied signs (vomiting)…….
Sleeping…….
Thirsty……
Body movement…….
Relationship with others (e.g. irritating)
Indignation (angry, want to commit suicide, and screaming)……
Thinking…….
Others……

9. Observations

……
……

10. Planning……

May be duplicated for use in clinical practice. From McCaffery, M, and Beebe, A: Pain: CLINICAL MANUAL FOR NURSING PRACTICE, St. Louis, 1989, the CV Mosby Company.

Appendix 12: Medicine Storage Card

STOCK CARD

Code No. ……Sheet No……..

Name, dose, form: ……

Date	No. of invoice	Supply/Destination	Incoming	Outgoing	Adjustment	Balance	Expiry Date	Observation

Appendix 13: Drugs and Consumables Consumption Card

Drugs and Consumables Consumption Report

Provincial Health Department: ……Number of new cases in OPD in the period……month[1] ……Persons
Operational District: ……Number of consulted and referred patients……month[2] ……. Persons
Referral Hospital:…….. Number of hospitalized patients at CPA1 in the period of (CPA1, CPA 2, CPA3) ……month[3] …….
Number of hospitalized patients at CPA2 in the period of ……month[4] …….

From……to ……..

No.	Code	Description	Strength	Form	Initial Stock	Incoming	Total	Outgoing	Balance	Request quantity	Remark
I. BASIC ITEMS											
1. Oral Medicines											
1	AA011	Acetyl Salicylic Acid	500mg	Tab							

Date:…….
Director

Date:……..
Official in charge of pharmacy

Notice:

1. Number of out patients, new cases, for the period of three months for OD (according to Health Information System HC1)
2. Number of referred patients (CPA1 & CPA2) and specialty ward (CPA3) in the period of three month for OD or 1 round of supply for a referral hospital (Health Information System HO2)
3. Total number of hospitalized patients for the period of three months or one round of supply for the referral hospital (CPA1).
4. Total number of hospitalized patients for the period of three months or one round of supply for the referral hospital (CPA2).
5. Total number of hospitalized patients for the period of three months or one round of supply for the referral hospital (CPA3).
6. All medicines and consumables must have code No. according to the Central Medical Store
7. Comply with code number of drugs and consumables.
8. Quantity requested for campaign should be included in the request form and specify reasons in other columns (data from health center) for OD

Appendix 14: Report Format for Health Information System HO2

Monthly report

Province…… From 1st to the last day of the month……200
Operational District……..

Hospital……Code N°……..Population covered by the hospital……
Number of poor patients exempted from user fees…… (…%) Number of consulted patients supported by Equity Fund……. (…….%).

I. Out-Patient Consultation (referred from health centers and consulted here by the hospital)

1. Quantity of Activities	Inside OD	Outside OD	M	F	**Total**
Number of referred patients from HCs					
Number of new cases coming to visit by themselves at the hospital					
Total Consultations					

2. Health Problems (New cases)	0-4 year	5-14 year	15-49 years	> or = 50	**Total**	Refer
Simple diarrhea						
Severe diarrhea						
Dysentery						
Upper ARI						
Lower ARI						
Cough more than 21 days						
Malaria						
Dengue Fever						
Diphtheria						

	0-4 year	5-14 year	15-49 years	> or = 50	**Total**	Refer
Pertussis						
Acute Flaccid Paralysis						
Neonatal Tetanus						
Other Tetanus						
High Blood Pressure						
Skin Infection						
Urethral discharge						
Vaginal discharge						
Genital Ulcer						
Genital Warts						
Road accidents						
Mine accidents						
Eyes diseases						
Goiter Problem						
Substance abuse						
Other mental health						
Malnutrition (weight, age)						
Other health problems						
TOTAL						

II. Number of Illness and Deaths in the hospital	Male		Female	
Total Discharge by sex	Sick	Died	Sick	Died

Discharged diagnosis	0-4 year		5-14 year		15-49 year		> or = 50		**Total**	
Diarrhea	Sick	Died	Sick	Died	Sick	Died	Sick	Died	Sick	Died
Dysentery										
Cholera										
ARI										
Simple Malaria										
Severe malaria										
Dengue Fever										
Dengue/shock										
Typhoid fever										
Measles										
Diphtheria										
Pertussis										
AF paralysis										
Neonatal Tetanus										
Other tetanus										
High blood pressure										
Male STD										

Discharged diagnosis	0-4 year		5-14 year		15-49 year		> or = 50		**Total**	
	Sick	Died	Sick	Died	Sick	Died	Sick	Died	Sick	Died
Female STD										
Gynecology										
Delivery										
Spontaneous abortion										
Induced abortion										
AIDS										
Tuberculosis										
Non-Tuberculosis meningitis										
Hepatitis B										
Breast cancer										
Lung cancer										
Liver cancer										
Cervix cancer										
Uterus cancer										
Diabetes										
Cardiopathy										
Cataract										
Trachoma										
Corneal ulcer										
Glaucoma										
Marask, Kwashiorkor										
Schistosomiasis										
Traffic accidents										
Mine acid										
Goiter										
Substance abuse										
Other mental health										
Others										
Total										

Other:……

III. Hospital Activities

1. General Activities	Medical Ward	Surgery	Pediatrics	Obstetrics	Gyne	Others	Total	TB
Number of beds								
Discharge with permission								
Number of dropping out patients								
Referral								
Dead								
Hospital Mortality Rate[1]								
No. of Hospitalization days								
Average Hospitalization Days[2]								
Bed Occupation Rate[3]								

1. (No. of deaths/discharged) x 100 (discharged with permission, dropping out, referred, dead)
2. No. of hospitalization days/Total number of discharged
3. No. of hospitalization days/number of beds X number of days of the month X 100

2. Surgery Activities

Surgery	Emergency	Scheduled	Total (1)	Dead less than 48 hours (2)	Fatality Rate (2/1x 100
Eyes					
ENT					
Abdominal Surgery					
Tubilization					
Vasectomy					
Obstetrics & Gynecology					
Amputation					
Others					
TOTAL					
Small surgery					

3. Vitamin A Program

PREVENTION			TREATMENT		
Children aged 6-11 months No. of hildren	Children aged 12-59 months No. of children	Post delivery women within 8 weeks No. of women	Lung, eye diseases, and darkness blind No. of children	Measles No. of children	Malnutrition/ Continuing diarrhea/chronic Diarrhea No. of children

- Recently delivered women and breastfeeding women (after birth until 2 months)

4. Activities of Leprosy

	Treated at early month	**New cases discovered in the month**			End of treatment of the month	Sick again, dropping, dead, changed the place	Treatment end of the month
		Total of new cases	Disable level 2	Under 15 years			
PB1							
PB2-5							
MB							
Total							
Rate		/100,000	%	%			

PB1= Single Lesion Paucibacillary
PB2-5 = Paucibacillary
MB= Multibacillary
Dis. Gr2 Disability Grade 2

5. Dental Activities

	Extraction		**Dental filling**					**Prosthrodonctics**		**Others**
Patient	Natural Teeth	Permanent teeth	Provisional	Permanent	Dental curettage	Other surgeries	Root canal Treatment	Fixed	Unfixed	
Age≤15										
Age≥15										
TOTAL										

6. Obstetric and neonatal activities

6. 1. Abortion and Induced abortion	TOTAL	Referred from	Referred to	No. of dead mothers
Spontaneous abortion				
Induced abortion				

6.2. Delivery		TOTAL	Referred from	Referred to	No. of dead mothers
Normal Delivery					
Difficult Delivery	C-section				
	Bleeding				
	Eclampsia				
	Uterus rupture				
	Septicemia				
	Other causes				
Total					
Delivered women received PMTCT					

6.3 Neonatal Birth

	<2kg		2kg&<2.5kg		≥2.5kg		**Live Birth**		**Died at birth**		Stillbirth
Weight	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
No. of newborn											

- Number of live births not included number of stillbirths.

6.4. Folic Acid and Iron Supplementation

Number of delivered women received 42 tablets of folic acid at a referral hospital.

IV. Laboratory activities

1. Quantity of laboratory activities

# of analysis									# of positive cases							
BK*	Blood formula	VDRL	HIV	VCCT	Urine	Feces	Discharge	Other analysis	** BK+	VDRL	HIV	VCCT	Feces			
													Round worm	Hook worm	Ameba	Schystosomias

*BK: All blood slides include analytical blood slides and checked.
**BK: Analytical blood slides for new cases.
VDRL: Venereal Disease Research Laboratory

2. Malaria

2.1. Slides

Slides for **diagnosis**	0-4 years	5-14 years	15-59 years		≥50 years		Total
			Male	Female	Male	Female	
Positive							(1)
Falcifaraum							
Vivax							
Combined							
Negative							(2)
				Total slides to be rechecked			(3)
				Total analyzed slides			(1+2+3)

1.2. Dipsticks

Dipstick for **diagnosis**	0-4 years	5-14 years	15-59 years		≥50 years		Total
			Male	Female	Male	Female	
Positive							(1)
Falcifaraum							
Vivax							
Combined							
Negative							(2)
				Total analyzed dipsticks			(1)+(2)

V. Blood Bank

1. Number of collected and tested blood (calculated in percentage)

Type	# of suppliers	Type		Blood Group				Test									
		M	F	A	B	O	AB	HIV+		HBs+		HCV+		Syphilis +		Malaria+	
								M	F	M	F	M	F	M	F	M	F
Volunteers																	
Family of Patients																	
Mobile Team																	
Total																	

2. Number of blood used

Ward	Medical Ward	Pediatrics	Surgery	Obstetrics	Others	**Total**
Used number (sacks)						

VI. Radiography, Ultrasound, Scanner, Macro graphic, Fibroscopy, Endoscopy, and Cobaltherapy

	Radiography	Ultrasound	Scanner	Macro graphy	Fibroscopy	Endoscopy	Cobaltherapy
# of exams							

VII. Kinetic Therapy

Kinetic therapy	
# of patients	
# of treatment	

X. Other activities and comments

(Summarize key issues occurring in the operation of a hospital. Describe other activities undertaken that are on in the report).

Date of the report_____

Signature of reporter

Signature of a hospital director_____

Appendix 15: Sample of Hospital Regulations

Kingdom of Cambodia
Nation-Religion-King

Ministry of Health
Hospital……. Date:

No. ……

Sample of Hospital Regulations

In order to keep order, respect dignity and comply with administrative and technical discipline, with reference to the civil servant legal statute and MoH's Prakas on a referral hospital, the following regulations are issued for the implementation of hospital framework:

I. General regulation

1. Be present all the time during working hours:
   - Daily routine working hours: 7:30 to 11:30 and 13:30 to 17:30
   - On duty: From 8 am to 8 am of the next day
2. Holidays
   - Holidays determined by the law (Saturdays, Sundays, official holidays, annual leave, maternal leave) except those who are duty and
   - One day off after duty day (taking into effect from 8am of the day off from duty until 7:30am of the day after.
3. Behave Good ethics and courtesy with patients/clients at consultation or hospitalization as well as among colleagues or co-workers.
4. All health staff or officials should wear medical uniform during working hours.
5. Drugs or consumables must be distributed in accordance with prescriptions:
   - Advice to replace medicines which are not available should be sought with a physician
   -Personal medicines should be sold to a patient
   -Filling syringes and injections should be done in front of a patient on a mobile trolley
   - Patients should be treated and cared with correct medical techniques.
6. Extortion of money or asking for additional benefits beside the user fee of a hospital should be prohibited.
7. The hospital user fees should not be used for personal benefits.
8. In case of property loss or any danger to the patients due to late or irregular time on duty, it will be the responsibilities that group who are on duty.
9. Deliberate damage of a hospital property should be reimbursed
10. Patients in the hospital should not be poached to other private clinics
11. Exemption of user fees can only be done based on the principles of cost recovery.
12. Any dissatisfaction of the services should be written and complained to a hospital committee. Hints to provoke any conflict should be avoided.
13. Any kind of gambling's is strictly prohibited in the hospital compound.

II. Discipline

1. Staff who makes mistakes (act against the internal rules of a hospital or against the civil servant legal statute or medical professional ethics) will be fined and punished by a hospital discipline committee. This will be complied in accordance with the civil servant legal statute.

Date:_____
A hospital director

Appendix 16: Kinetic Therapy Bulletin

No…….

Kinetic Therapy Bulletin

Ward……Bed No. …….
Evaluation Date……
Admission Date…….
A patient's name……Age……Sex.....Career…….
Address:
Cause
Diagnosis
Date of medical treatment and surgery
Medical Treatment and Surgery
Main issues of the patient for kinetic therapy

Date	Name of kinetic therapist	Evolution	Kinetic therapy

Advice from a physician in charge:

Appendix 17: Complementary Package of Activities for Referral Hospitals 2006-2010

Assessment of CPA Development Plan for 69 RHs and Former District Hospital Health centers becoming CPA 1 RHs
From 2006 to 2010

ល.រ	ឈ្មោះមន្ទីរពេទ្យ	Referral Hospital Name	Hosp services			Achiev	Health Strategic Plan 2006-10					
			N of Beds	N of People	Operated Planning	Planned 2005	Plan 2006-10	Activity 2006	Plan 2007	Plan 2008	Plan 2009	Plan 2010
1.	មន្ទីរពេទ្យ កំពង់ចាម	Kampong Cham	280	268,663	1979	CPA3	CPA3	CPA3				
2.	មន្ទីរពេទ្យ ចំការលើ	Chamcar Leu	65	141,740		CPA1	CPA2	CPA1	CPA2			
3.	មន្ទីរពេទ្យ ជើងព្រៃ	Cheung Prey	110	181,759		CPA1	CPA2	CPA1		CPA2		
4.	មន្ទីរពេទ្យ ក្រូចឆ្មារ	Kroch Chhmar	80	93,158		CPA1	CPA2	CPA1			CPA2	
5.	មន្ទីរពេទ្យ មេមត់	Me Mut	70	108,705	2002	CPA2	CPA2	CPA2				
6.	មន្ទីរពេទ្យ អូរាំងឪ	O Reang Ov	60	92,077		CPA1	CPA1	CPA1				
7.	មន្ទីរពេទ្យ ពញាក្រែក	Ponhea Krek	60	174,340		CPA1	CPA1	CPA1				
8.	មន្ទីរពេទ្យ ព្រៃឈរ	Prey Chhor	75	178,050		CPA1	CPA1	CPA1				
9.	មន្ទីរពេទ្យ ស្រីសន្ធរ	Srey Santhor	90	150,370		CPA1	CPA2	CPA2				
10.	មន្ទីរពេទ្យ ត្បូងឃ្មុំ	Tbong Khmum	90	180,029	1979	CPA2	CPA2	CPA2				
11.	មន្ទីរពេទ្យ កំពង់ឆ្នាំង	Kg Chhnang PH	125	288,027	1982	CPA3	CPA3	CPA3				
12.	មន្ទីរពេទ្យកំពង់ត្រឡាច	Kampong Trolach	20	140,098		CPA1	CPA2	CPA1			CPA2	
13.	មណ្ឌល-បរិបូណ៌	Boribou HC				FDH	CPA1	HC		CPA1		
14.	មន្ទីរពេទ្យស្ទាច់មានជ័យ	Koh Kong PH	43	51,268	1982	CPA2	CPA3	CPA2	CPA3			
15.	មន្ទីរពេទ្យ ស្រែអំបិល	Sre Ambel	34	71,155		CPA1	CPA2	CPA1		CPA2		
16.	មន្ទីរពេទ្យសែនមនោរម្យ	Mondol Kiri PH	40	40,321	2002	CPA2	CPA2	CPA2				
17.	មន្ទីរពេទ្យ ព្រៃវែង	Prey Veng PH	95	199,739	1979	CPA3	CPA3	CPA3				
18.	មន្ទីរពេទ្យ កំចាយមារ	Kamchay Mear	25	117,494		CPA1	CPA2	CPA1	CPA2			
19.	មន្ទីរ កំពង់ត្របែក	Kampong Traback	50	126,096	1999	CPA2	CPA2	CPA2				
20.	មន្ទីរពេទ្យ មេសាង	Mesang	25	120,431		CPA1	CPA2	CPA1			CPA2	
21.	មន្ទីរពេទ្យ អ្នកលឿង	Neak Loeung	60	170,126	1987	CPA2	CPA2	CPA2				
22.	មន្ទីរពេទ្យ ពារាំង	Pearang	41	183,678	2002	CPA2	CPA2	CPA2				
23.	មន្ទីរពេទ្យ ព្រះស្តេច	Preah Sdach	26	108,272		CPA1	CPA1	CPA1				
24.	មន្ទីរពេទ្យ រតនៈគីរី	Ratanakiri PH	126	110,362	1979	CPA2	CPA3	CPA2		CPA3		
25.	ម.ពេទ ក្រុងព្រះសីហនុ	Sihanouk Ville	90	154,046	1993	CPA3	CPA3	CPA3				
26.	មន្ទីរពេទ្យ ស្វាយរៀង	Svay Rieng PH	168	292,205	1979	CPA3	CPA3	CPA3				

27.	មន្ទីរពេទ្យ ជីភូ	Chiphou	60	101,878		CPA1	CPA2	CPA1	CPA2			
28.	មន្ទីរពេទ្យ រមាសហែក	Romeas Hek	60	129,732	2003	CPA2	CPA2	CPA2				
29.	មន្ទីរពេទ្យ ដូនកែវ	Takeo PH	265	194,119	1980	CPA3	CPA3	CPA3				
30.	មន្ទីរពេទ្យ អង្គរកា	Ang Roka	60	119,086		CPA1	CPA2	CPA1				
31.	មន្ទីរពេទ្យ បាទី	Bati	60	184,122		CPA1	CPA2	CPA1				
32.	មន្ទីរពេទ្យ គីរីវង្ស	Kirivong	80	217,171	2002	CPA2	CPA2	CPA2				
33.	មន្ទីរពេទ្យ ព្រៃកប្បាស	Prey Kabas	25	160,743		CPA1	CPA2	CPA1		CPA2		
34.	មណ្ឌល-រមេញ					FDH	CPA1	HC		CPA1		
35.	មន្ទីរពេទ្យ មង្គលបុរី	B Meanchey PH	260	240,978	1979	CPA3	CPA3	CPA3				
36.	មន្ទីរពេទ្យ អូរជ្រៅ	O Chrov	32	156,005	2005	CPA2	CPA2	CPA2				
37.	មន្ទីរពេទ្យ ព្រះនេត្រព្រះ	Preah Net Preah	70	125,691		CPA1	CPA2	CPA1				CPA2
38.	មន្ទីរពេទ្យ ថ្ពូក	Thmar Pouk	71	112,215	2005	CPA2	CPA2	CPA2				
39.	មណ្ឌល-សេរីសោភ័ណ្ឌ					FDH	CPA1		CPA1			
40.	មណ្ឌល-ស្រែជីក					FDH	CPA1			CPA1		
41.	មណ្ឌល-ប៉ោយប៉ែត១					FDH	CPA1		CPA1			
42.	មន្ទីរពេទ្យ ខេត្តបាត់ដំបង	Battambang PH	270	288,623	1979	CPA3	CPA3	CPA3				
43.	មន្ទីរពេទ្យ មោងឬស្សី	Mong Russey	84	167,971	2001	CPA2	CPA2	CPA2				
44.	មន្ទីរពេទ្យ សំពៅលូន	Sampov Loun	75	75,869	1997	CPA2	CPA2	CPA2				
45.	មន្ទីរពេទ្យ ថ្កោល	Thmar Kol	71	193,673		CPA1	CPA2	CPA1				CPA2
46.	មន្ទីរពេទ្យ ក្រុងកែប	Kep Ville Hop	25	31,526		CPA1	CPA1	CPA1				
47.	មន្ទីរពេទ្យ កំពង់ស្ពឺ	Kampong Speu	130	328195	1981	CPA3	CPA3	CPA3				
48.	មន្ទីរពេទ្យ គងពិសី	Kong Pissey	82	222498		CPA1	CPA2	CPA1	CPA2			
49.	មន្ទីរពេទ្យ ឧដុង្ក	Oudong	70	110492	2004	CPA2	CPA2	CPA2				
50.	មន្ទីរពេទ្យ ខេត្តកំពង់ធំ	Kampong Thom	140	237100	1979	CPA2	CPA3	CPA3				
51.	មន្ទីរពេទ្យ បារាយណ៍	Baray Santuk	70	214831	2005	CPA2	CPA2	CPA2				
52.	មន្ទីរពេទ្យ ស្ទោង	Stong	100	116542	1998	CPA2	CPA2	CPA2				
53.	មន្ទីរពេទ្យ កំពត	Kampot PH	155	131,325	1979	CPA3	CPA3	CPA3				
54.	មន្ទីរពេទ្យ អង្គជ័យ	Angkor Chey	60	169,479	2004	CPA2	CPA2	CPA2				
55.	មន្ទីរពេទ្យ ឈូក	Chhouk	101	169,479		CPA1	CPA2	CPA1	CPA2			
56.	មន្ទីរពេទ្យ កំពង់ត្រាច	Kampong Trach	51	153,112	2000	CPA2	CPA2	CPA2				
57.	មន្ទីរពេទ្យ ក្រចេះ	Kratie PH	150	159,913	1979	CPA3	CPA3	CPA3				
58.	មន្ទីរពេទ្យ ឆ្លូង	Chhlong	55	129,170	2003	CPA2	CPA2	CPA2				

59.	មន្ទីរពេទ្យឧត្តរមានជ័យ	Oddar M Chhey	84	122,108	2001	CPA2	CPA3	CPA2				CPA3
60.	មន្ទីរពេទ្យក្រុងប៉ៃលិន	Pailin Ville Hop	80	40,026	1998	CPA2	CPA2	CPA2				
61.	មន្ទីរពេទ្យ ព្រះវិហារ	Preah Vihear PH	175	128,761	2000	CPA2	CPA3	CPA2			CPA3	
62.	មន្ទីរពេទ្យ ពោធិសាត់	Pursat PH	202	248,652	1979	CPA3	CPA3	CPA3				
63.	មន្ទីរពេទ្យ បាកាន	Bakan	64	120,769		CPA1	CPA1	CPA1				
64.	មន្ទីរពេទ្យ ស្ទឹងត្រែង	Stung Treng PH	81	89,034	1990	CPA3	CPA3	CPA3				
65.	មន្ទីរពេទ្យ សៀមរាប	Siem Reap PH	230	241,887	1979	CPA3	CPA3	CPA3				
66.	មន្ទីរពេទ្យ ក្រឡាញ់	Kralanh	81	101,280	2003	CPA2	CPA2	CPA2				
67.	មណ្ឌល-កំពង់ក្តី					FDH	CPA1	HC	CPA1			
68.	មណ្ឌល-ស្រីស្នំ					FDH	CPA1	HC		CPA1		
69.	មន្ទីរពេទ្យអង្គរជុំ(ពួក)	Angkor Chum	40	191,606		CPA1	CPA2	CPA1		CPA2		
70.	មន្ទីរពេទ្យ សូទ្រនីគម	Sotnikum	120	233,363	2000	CPA2	CPA2	CPA2				
71.	មន្ទីរពេទ្យ តាខៅ	Kandal PH	195	208,120	1979	CPA3	CPA3	CPA3				
72.	មន្ទីរពេទ្យ ក្បែនស្វាយ	Kien Svay	58	253,799		CPA1	CPA2	CPA1				CPA2
73.	មន្ទីរពេទ្យ កោះធំ	Koh Thom	54	146,623	2000	CPA2	CPA2	CPA2				
74.	មន្ទីរពេទ្យខ្សាច់កណ្តាល	Khsach Kandal	35	113,421		CPA1	CPA2	CPA1			CPA2	
75.	មន្ទីរពេទ្យ ស្អាង	Saang	94	150,981	2005	CPA2	CPA2	CPA2				
76.	មន្ទីរ រាជធានីភ្នំពេញ	Municipal	150	261,464	1990	CPA3	CPA3	CPA3				

6561	11,035,641	Planning 2005		**Health Strategic Plan 2006-10**				
TOTAL OF RHs			Plan 2006-10	Plan 2006	Plan 2007	Plan 2008	Plan 2009	Plan 2010
FDH-CPA1		**7HC**	**7RH-CPA 1**	**7HC**	**4HC-3RH**	**7RH**	**7RH**	**7RH**
	CPA1	**25**	**16**	**24**	**22**	**22**	**18**	**16**
	CPA2	**28**	**39**	**27**	**32**	**35**	**38**	**39**
	CPA3	**16**	**21**	**17**	**18**	**19**	**20**	**21**

Phnom Penh, Le 12/11/2006

CPA1: From 40 to 60 beds
CPA2: From 60 to100 beds
CPA3: From 100 to 250 beds

Appendix 18: Referral Hospital and Health Center Signs

The Kingdom of Cambodia

Nation-Religion-King

Ministry of Health
No. 003 ABS/MP

Phnom Penh, 26 Jan. 2005

Prakas

On
New signage for health centers and referral hospitals

Minister of Health

- Seen the Constitution of the Kingdom of Cambodia
- Seen the Royal decree No. NS-RKT/0704/124 dated 15 Jul. 2004 on the nomination of the Royal Government of Cambodia
- Seen the Royal decree No. NS/RKM/0196/02 dated 24 Jan. 1996 declared on the use of law on the organization and nomination of the Ministry of Health.
- Seen the Royal decree No. NS-RKT/0502/112 dated 06 May. 2002 declared on the use and the protection of symbol of Red Cross and Red Croissant.
- Seen the Sub-decree No 67 ANK-BK dated 22 Oct. 1997 declared on the nomination and the implementation of the Ministry of Health.
- Refer to the needs of the Ministry of Health

Declares

Article 1: Create a new signage on the top of the entry gate of health centers and referral hospitals.

Article 2: This new signage consists of three colors:

-The White: represent honesty with patients and good hygiene.

- The Red: represent commitment in serving people's health and replenishment of blood loss of patients

- The Blue: represent humanity, equity, life saving without racial, social and political discrimination.

Article 3: Signage of health centers and referral hospitals have the same size as below:

- Length: 510 cm
- Width: 60 cm
- Blue Khmer scripts located in the middle, with its height of 20 cm

- Blue Latin scripts located in the middle, with its height of 12 cm.
- At both sides, there are adequately sized red circles. In each red circle, there is a white cross in the middle. In each white cross, there is blue letter H in the middle.
- The surface of the signage has the white color

Article 4: Director General for Health, Director General for Administration and Director General for Finance of Ministry of Health, Secretariat of Health, Hospital services department, Provincial and Municipal Health Departments, all Health Centers and Referral Hospitals in Cambodia must follow this Prakas with high effectiveness.

Article 5: This Prakas is valid from the date signed below.

Signature

Dr. Nuth Sokhom

Received places:

- Secretariat of Senator
- Secretariat of Parliament
- Council of Ministers
- Ministry of Interior
- Ministry of Economic and Finance
- As stated in article 4 (for implementation)
- Documentation

ផ្ទាំងសញ្ញាមណ្ឌលសុខភាព និងមន្ទីរពេទ្យបង្អែក

Appendix 19: Sexual Rape Examination Document

The Kingdom of Cambodia

Nation-Religion-King

Ministry of Health
Facility:…….....
No. :.....

Confidential

Sexual Abuse Examination File

(female: done by obstetric-gynaecologist physician, male: can be done by general physician)

-Patient examination files must be kept originally in the original facility or provincial/ municipal forensic committee. This file consists of a total of 7 pages.

- The provincial/municipal forensic committee can provide a copy of this form unless there is a formal written request from: Judiciary police that have duty in the investigation, judge, prosecutor, and lawyer. The copied file must be kept in the sealed envelop in order to ensure confidentiality.

- Operational facility: .....Phone No.....

- Provincial/municipal committee: .....Phone No .....

Fax:.....Email.....

- National forensic committee (MoH): ……..Phone No .....

Fax:.....Email.....

Sexual Abuse Examination File

Name and surname of victim: .....Nickname: .....Sex: Male❑Female ❑

Date of birth: ...../...../..... Current Address :.....

.....Code number: .....

Phone number: .....

Date of examination: ...../……...../.....Hour: .....

Place of examination: .....

Suspected sexual abuse (provided by victim)

❑ Rape
❑ Incest
❑ Indecent Assault
❑ Other sexual abuses: .....

Date of abuse: ...../...../.....Hour:..

Accompanied persons

❑ Self ❑ Police
❑ Friend ❑ Relatives(what) : .....
❑ Others (specify).....

Name:.....

Phone: .....

Informed consent for medical examination

(read to the victim or the guardian with witness)

I totally agree on this medical examination including genital examination and record of the results of this examination. I allow: to collect all necessary analysis samples for laboratory test and take any necessary pictures on the injured parts that are relevant to this medication examination.

Date:...../...../.....

Relationship with victim

❑ Self ❑ Police ❑ Friend
❑ Relatives (what) .....
❑ Others (specify):….....
.....

Signature or right thumb print
Victim or guardian

Signature or right thumb print
Witness

Victim's name.....

Witness' name.....

Signature or right thumb print
Physician-clinical examiner

Signature or right thumb print
Physician Witness

Name of Physician: ……..

Name of Physician witness…….
Career: …….

Victim Examination

Name: .....Place of examination.....

Name of physician: .....Hour of examination.....

Address of facility: .....

1. History and interrogation:

1.1 Antecedent:

A-Heart:	yes ❑	no ❑	B- Liver:	yes ❑	no ❑
C- High blood pressure:	yes ❑	no ❑	D-STD:	yes ❑	no ❑
E- Surgery:	yes ❑	no ❑	F- Mental health:	yes ❑	no ❑

G- Others (specify) : .....

1.2 Menstrual history: Non pubertal: .....Date of first menstruation.....

Date of last menstruation .....

1.3 History of sexual intercourse: first intercourse, date: .....
last intercourse, date:.....

1.4 History of Birth Spacing: Methods:.....numbers:.....when:.....

1.5 Pregnancy history:

A. pregancy:	yes ❑ no ❑	B. Number of pregnacy:	☐ times
C. Number of delivery:	☐ times	D. Number of abortion:	☐ times

1.6 Methods of intercourse:

A. Insert penis in vagina	yes ❑ no ❑	B. Insert fingers in vagina	yes ❑ no ❑
C. Insert penis in mouth	yes ❑ no ❑	D. Insert penis in anus	yes ❑ no ❑

E. Others: .....

1.7 Behaviours after sexual intercourse:

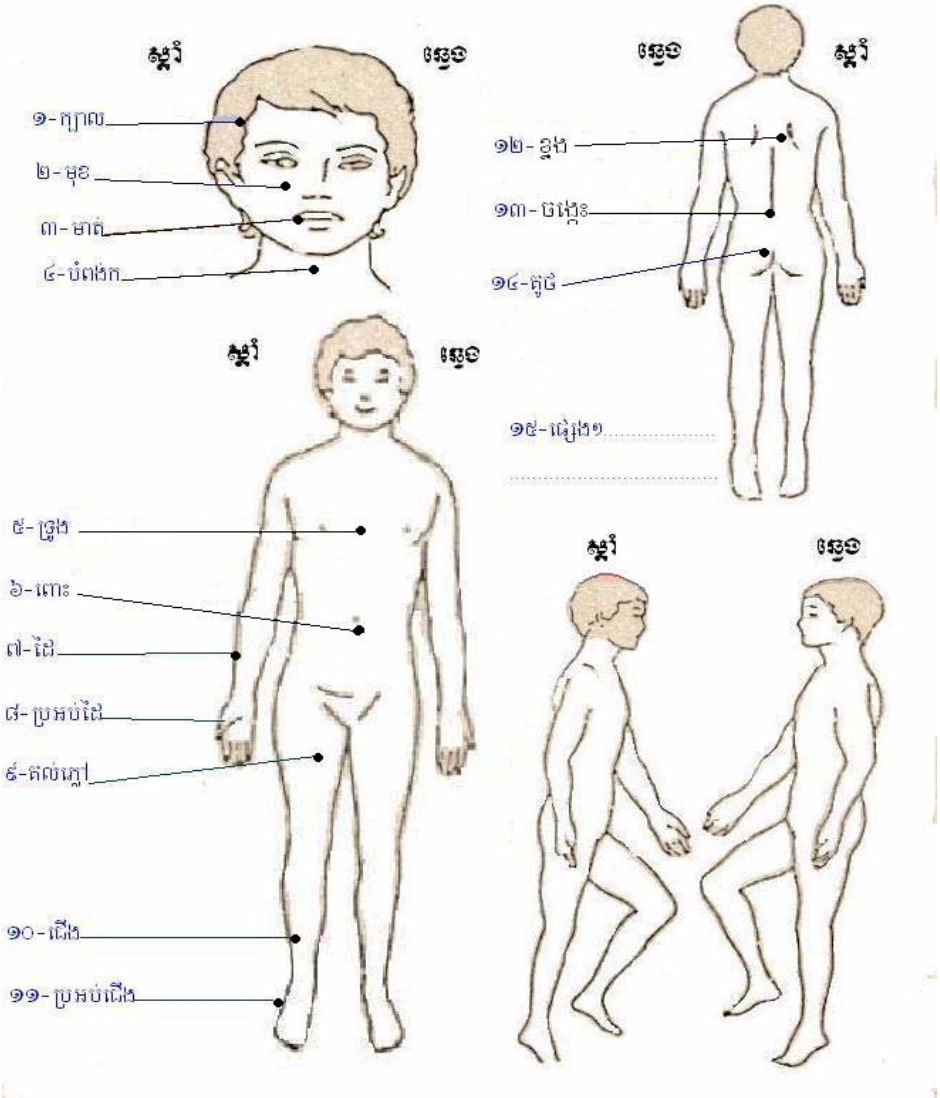
A. Wash vagina	yes ❑ no ❑	B. Urinate	yes ❑ no ❑
C. Defecate	yes ❑ no ❑	D. Shower	yes ❑ no ❑
E. Clean mouth	yes ❑ no ❑	F. Clean Teeth	yes ❑ no ❑
G. Change dresses	yes ❑ no ❑	H. Others:.....	

2. Clinical examination:

2.1 General examination: use the diagram for details on all abrasion, swelling, scratch and tear

	Normal	**Abnormal** (please indicate the size of the wound)
1.	❑ Head	❑ : ……
2.	❑ Face	❑ : ……
3.	❑ Mouth	❑ : ……
4.	❑ Neck	❑ : ……
5.	❑ Chest	❑ : ……
6.	❑ Abdomen	❑ : ……
7.	❑ Arm	❑ : ……
8.	❑ Hand	❑ : ……
9.	❑ Thigh	❑ : ……
10	❑ Leg	❑ : ……
11.	❑ foot	❑ : ……
12.	❑ Back	❑ : ……
13.	❑ Waist	❑ : ……
14.	❑ Buttock	❑ : ……
15.	❑ Others	❑ : ……

Please indicate the place, the size in cm of the wound



2.2 External genital examination:

-Vulva:

❑ Lubrificant ❑ Semen ❑ Blood

❑ Mucus ❑ Pus ❑ Others …….

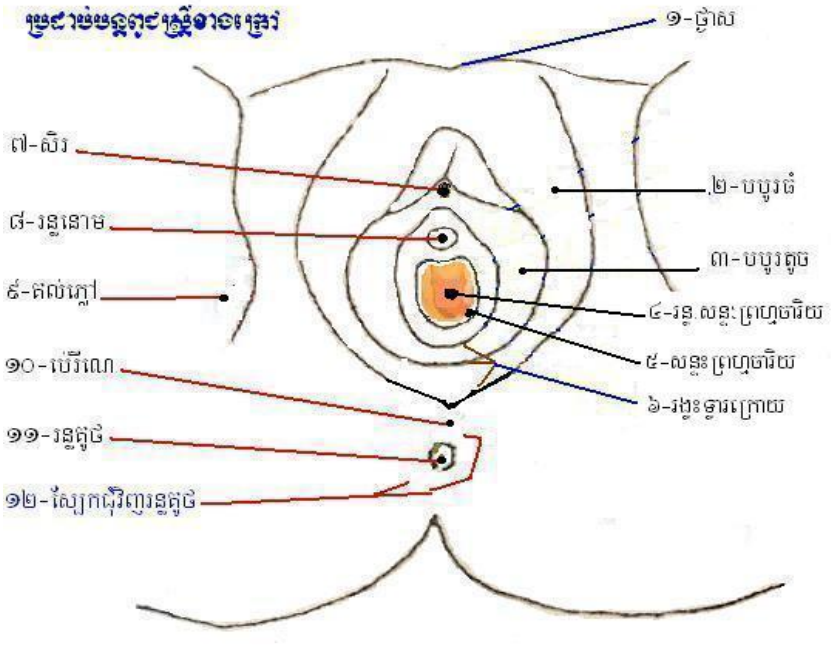
-External genital:

❑ Mature ❑ Pubertal ❑ Pre-pubertal

-Examination record any pain or tenderness

	Normal	**Abnormal** (please indicate the size of the wound)
1-	❑ Mons	❑ : …….....
2-	❑ Labia majora	❑ : …….....
3-	❑ Labia minora	❑ : …….....
4-	❑ Introtus	❑ : …….....
5-	❑ Hymen	❑ : …….....
6-	❑ Posteriour anus	❑ : …….....
7-	❑ Clitoris	❑ : …….....
8-	❑ Meat	❑ : …….....
9-	❑ Inner thighs	❑ : …….....
10-	❑ Perineum	❑ : …….....
11-	❑ Anus	❑ : …….....
12-	❑ Perianal skin	❑ : …….....

Please indicate the place, the size in cm of the wound



- Take analysis samples to detect presence of blood cell or semen

- Procedure before internal genital examination, please take sample by cotton smear for forensic medicine purpose and documentation.

2.3 Internal genital examination:

A. with speculum:

Normal	**Abnormal** (please indicate the size of the wound)
1- ❑ Cul de sac	❑ : …….....
2- ❑ Cervic	❑ : …….....
3- ❑ Anterior vagina membrane	❑ : …….....
4- ❑ Posterior vagina membrane	❑ : …….....

B. Vaginal examination:

..……...

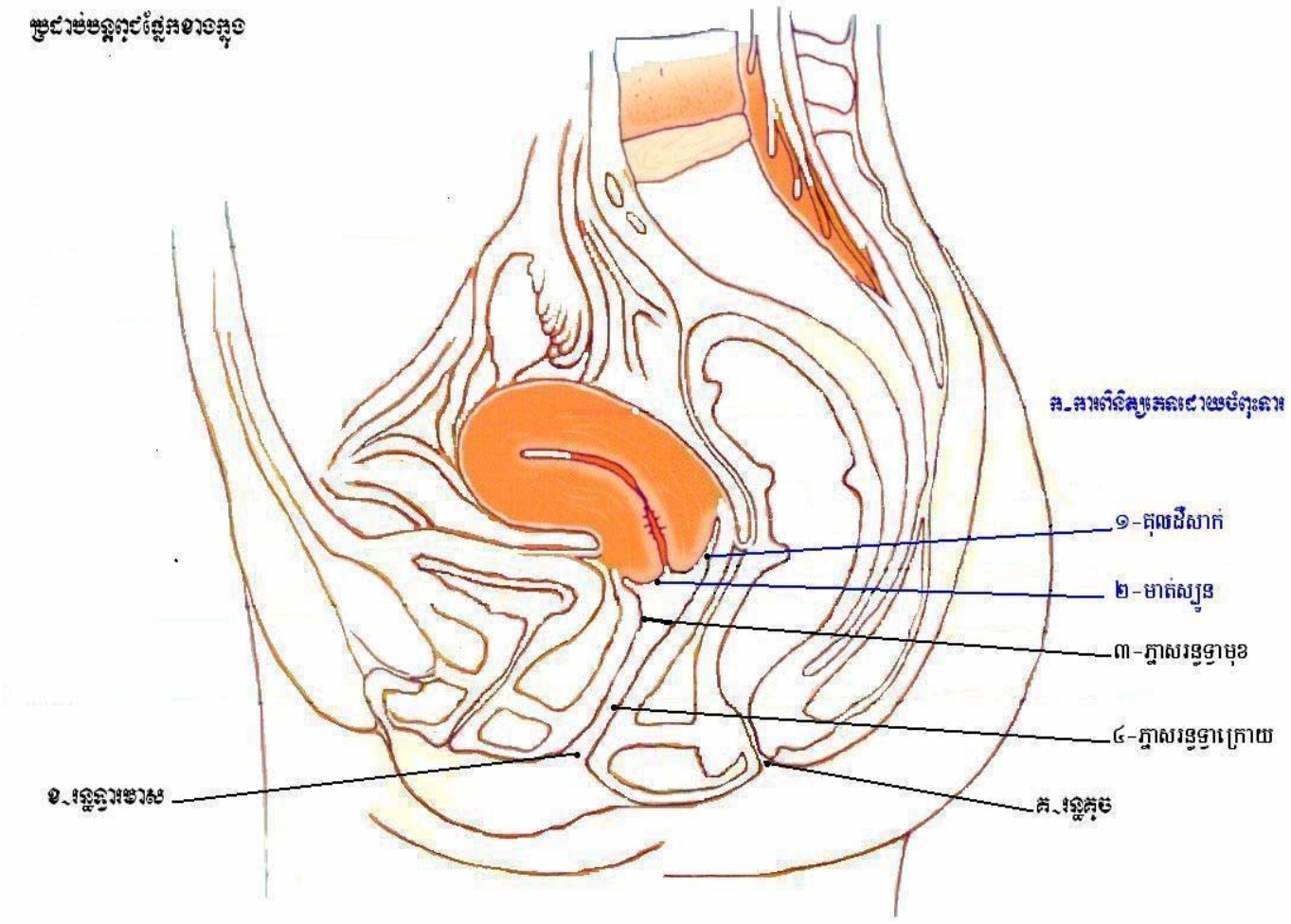
……

C. Rectal examination:

..……..…..

……..…

Please indicate location, size in cm, of the wound



Note: For male or monosexual man, please indicate the wound in the conclusion below:

3. Analysis samples:

-Vagina mucus ❑	-Cervical mucus ❑	-Blood ❑
-Anal mucus ❑	-Hair ❑	- Body hair❑
-Nails ❑	-Other specify ❑ : …….....	

4. Laboratoty examination:

-Wet Mount	☐	-Pregnancy Test	☐
-Gram Stain	☐	- Urine Analysis	☐
-Sperm Check	☐	- HIV Test	☐
-RPR	☐	-Others……...	

5. Conclusion and recommendation:

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Consent Form for Information Delivery to:

Judiciary police that have duty in investigation, judges, prosecutors, lawyers

I, undersigned, permit the hospital ……..or doctor named …… to provide a copy of my sexual abuse examination form and other relevant laboratory reports to judiciary police that have role in investigation, judges, prosecutors, lawyers, that request for the forensic purpose. If needed, the provincial/municipal forensic committee can provide this copy with written request from judiciary polices, judges, prosecutors, lawyers.

Date.....

Signature or right thumb print of victim	Relationship of witness with victim:	Signature or right thumb print of witness
	❑ Parents/Guardian ❑ Relatives ❑ Others (please specify) ..... ❑ Self (if no witness)	

Name (Victim).....

Name (Witness).....

Date.....

Signature with seal

Seen and approved

Hospital-OD.....

Date.....

Signature-Provincial/municipal forensic committee

.....

Director.....

Director.....

Appendix 20: Roles and Responsibilities of Chief of Nursing, Chiefs of Wards and Nursing Managers

Roles and responsibilities of:

1. Chiefs of nursing
2. Chiefs of wards
3. Nursing managers (national and regional levels)

Oct. 2003

Ministry of Health

Department of Hospital Services

CHIEF OF NURSING

Roles and responsibilities

Four essential points:

- Care
- Communication
- Management
- Training and information

1. Care:

Chief of nursing must:

1.1. Put in place the policy on health care in the hospital
1.2. Participate in putting in place the projects of services
1.3. Monitor the quality of care
1.4. Supervise, coordinate and control all activities of each staff related to health care services
1.5. Monitor the improvement of patient condition during their hospitalization.
1.6. Participate in the implementation of the new organization of work (nursing patient file)
1.7. Participate in the study of the problems related to hospital hygiene (infection control) and adaptation of the techniques of care.
1.8. Participate in the progress and adaptation of health care services
1.9. Monitor the correct implementation of protocols of care.

2. Communication:

Chief of nursing must communicate with:

2.1. Hospital director
2.2. Hospital Vice-director in charge of administration
2.3. Hospital Vice-director in charge of techniques
2.4. Chiefs of services
2.5. NGOs active in the hospitals
2.6. Health centers in the province (supervision of nurses and midwives)
2.7. Directors and teachers in the regional training centers located in the province
2.8. Members of National Nursing Committee
2.9. Members of Regional Nursing Committee
2.10. Chief of wards
2.11. Nursing students and new nursing staff
2.12. Put in place and participate in nursing committee
2.13. Participate in different committees (medical committee, hygiene committee…)

3. Management:

3.1. Staff management:

Chief of nursing, in collaboration with management committee, must:

3.1.1. Make job description of each post
3.1.2. Participate in recruitment of new personnel
3.1.3. Supervise daily chief of wards
3.1.4. Give advice in the distribution of incentives (user fee)
3.1.5. Participate in staff appraisals

3.2. Economic management:

Chief of nursing, in collaboration with technical committee, must:

3.2.1. Participate in making request for equipments
3.2.2. Participate in selection of new materials and products
3.2.3. Raise awareness of chief of wards on good practices of maintenance
3.2.4. Supervise chief of wards in the management of stock and request
3.2.5. Participate in the organization and progress of medical services in collaboration with medical committees under the authorization of the hospital director.

3.3. Financial management:

Chief of nursing, in collaboration with financial chief, must:

3.3.1. Aware of statistics in the hospital
3.3.2. Aware of different budget in the services
3.3.3. In the user fee context:
- Participate in the financial management of non paying clients
- Participate in the distribution of incentives

4. Training and information:

4.1. Training:

Chief of nursing must:

4.1.1. Develop training policy for nursing staff
4.1.2. Assess training needs for staff
4.1.3. Advice chief of wards to develop training program in their service.
4.1.4. Stimulate chief of wards to conduct in-service training.
4.1.5. Supervise all training activities in the hospital
4.1.6. Evaluate the trainings conducted.

4.2. Information:

Chief of nursing must:

4.2.1. Search for update information and update documents related to health policy.
4.2.2. Facilitate dissemination of information through chief of wards (e.g nursing committee, information from MoH)
4.2.3. Disseminate nursing care policy to management committee, physicians, and other relevant groups.
4.2.4. Put in place the relevant references in each service (e.g maintenance, hygiene…)
4.2.5. Participate in management of practical training for nursing students, in collaboration with directors of regional training centers and chief of wards.
4.2.6. Facilitate the elaboration of information documents for staff, patients and their families.
4.2.7. Participate in different meetings in the hospital or outside of the hospitals

This document is discussed in the National Nursing Committee meeting in Phnom Penh dated 14 Jun. 2002.

Copied from official letter No. 984/02 ABS-MP
dated 12 Aug. 2002

Seen and approved

Director General for Health
Prof. Eng Huot

CHIEF OF WARD

Roles and responsibilities

Four essential points:

1. Care
2. Communication
3. Management (staff, economic and financial)
4. Training and information

1. Care:

Chief of ward is responsible to ensure the routine and smooth process for patient hospitalization and quality of care provision. Chief of ward must:

1.1. Ensure fair distribution of tasks based on staff competency and skills
1.2. Prepare any necessary means for the implementation of nursing care
1.3. Put in place effectively the protocols of care
1.4. Ensure good organization of wards (hygienic and cleaned materials/equipments)
1.5. Put in place effectively patient transfer means between different members of the teams.
1.6. Facilitate collaboration between nursing team, medical team, patients and families.
1.7. Monitor regularly the progress of patient condition during their hospitalization,
1.8. Evaluate quality of care and quality of patient transfers
1.9. Evaluate the organization of work

2. Communication (human resource management):

Quality of care is mainly based on quality of teamwork, and good collaboration between different teams, so chief of ward must:

2.1. Manage, advice, motivate, and counsel all team members under his/her authority.
2.2. Manage conflicts and dysfunctional.
2.3. Make creative ideas to make staff progress
2.4. Manage staff presence documentation/registration.
2.5. Prepare staff needs based on service needs
2.6. Prepare monthly plans and staff holidays plan taking into account the needs of services.
2.7. Evaluate personnel

3. **Management** (staff, economic and financial management):

3.1. Staff management:

Chief of ward must:

3.1.1. Participate in making the job description
3.1.2. Be Responsible to motivate his/her team daily.
3.1.3. Supervise his/her team members
3.1.4. Be able to evaluate his/her staff especially for the distribution of user fee

3.2. Economic management:

Chief of ward, in collaboration with technical committee, must:

3.2.1. Prepare the service needs based on activities
3.2.2. Aware of necessary materials to use in health care

3.2.3. Manage stocks, requests, distribution and controls.
3.2.4. Participate in selection of new materials and products
3.2.5. Aware of maintenance of existing materials in his/her service
3.2.6. Make maintenance or make request for eventual repairs

3.3. Financial management:

Chief of ward must:

3.3.1. Manage the admission and discharges (statistics)
3.3.2. Participate in budget preparation for his/her service in collaboration with chief of service and administration service
3.3.3. Control the receipts and participate in the distribution of incentives.

4. Training and information:

4.1. Training:

Chief of ward must:

4.1.1. Participate in making training plan.
4.1.2. Propose training activities based on specialty of service
4.1.3. Organize the works related to nursing students in his/her service in collaboration with regional nursing school.
4.1.4. Apply the theory learned and evaluate the trainings

4.2. Information:

Chief of ward must:

4.2.1. Circulate information between team members, management committee, and other services.
4.2.2. Elaborate documentation of information for staff, patients and their families.
4.2.3. Participate in different meetings in the hospital or outside of the hospitals

This document is discussed in the National Nursing Committee meeting in Phnom Penh dated 14 Jun. 2002.

Copied from official letter No. 985/02 ABS-MP
dated 12 Aug. 2002

Seen and approved

Director General for Health
Prof. Eng Huot

NATIONAL AND REGIONAL NURSING MANAGERS

Roles and responsibilities

Roles and responsibilities of national/regional nursing managers consist of:

1. Assist in structuring the nursing services.
2. Assist in dissemination of strategic directions and other documents issued by the MoH.
3. Participate in the preparation of declaration on role and responsibilities of secondary nurses.
4. Prepare and organize the regional committee (local norms discussed)
5. Discuss with director of regional nursing school on the monitoring of nursing students and the place for practical training.
6. Assist in putting in place policy on health care
7. As the regional representative, must participate in the preparation for annual seminar
8. Send information from the region to MoH.
9. Set up meeting with Provincial Health Department Director
10. Assist in experience exchanges between colleagues within the region.

This document is discussed in the National Nursing Committee meeting in Phnom Penh dated 14 Jun. 2002.

Copied from official letter No. 983/02 ASB.MP
dated 12 Aug. 2002

Seen and approved

Director General for Health
Prof. Eng Huot

Appendix 21: Prakas on Roles and Responsibilities of Nurses

Prakas
On
Roles and Responsibilities of Nurses

Senior Minister and Minister of Health

- Seen the Constitution of the Kingdom of Cambodia
- Seen the Royal decree No. NS-RKT/1198/72 dated 30 Nov. 1998 on the nomination of the Royal Government of Cambodia
- Seen the Royal law No 02/NS/94 dated 20 Jul. 1994 declared on the use of law on the organization and nomination of the Council of Ministers.
- Seen the Royal law No NS-RKM/196/06 dated 24 Jan. 1996 declared on the use of law on the organization of the Ministry of Health
- Seen the Sub-decree No 67 ANK-BK dated 22 Oct. 1997 declared on the nomination and the implementation of the Ministry of Health.
- Refer to the needs of the Ministry of Health

Declares

Article 1:

Roles and responsibility of nurses includes analysis, organization, implementation, evaluation of activities and participation in clinical and epidemiological data collection, disease prevention, research, training and health education. In all these activities described, nurses must respect professional morals and ethical codes especially professional confidential. Nurses must perform their jobs in collaboration with other non health professionals such as sociologist, scientist and education professionals.

Article 2:

Care, prevention and treatment, must include technical quality and quality of communication with patients. Their performances must be based on the evolution of sciences and techniques. All activities described above, are based on the respect of individual rights, individual health education needs and different individual personal characteristics needs such as physiological, psychological, economic, social and cultural aspects.

- Protect, care, and encourage patients for better physical and mental health status or better physiological and psychological functioning autonomy in order to make patients to be able to re-participate in their family and social life.
- Organize, prepare documents and collect important information from other professional groups such as physicians, in order to make diagnosis of patients and evaluate the effectiveness of doctor prescription.
- Participate in assessing the degree of patient autonomy.
- Collaborate in treatment through the follow-up of clinical signs and follow-up of the implementation of subsequent prescriptions if available, prescribed by the physician.

- Participate in prevention and assessment of the process of pain relief, and physical and mental individual fear especially those who are nearly dead, by providing various means of treatment and care available, including care from their relatives.

Article 3:

Based on their roles, nurses have duty to provide care and help patients as needed, in order to sustain partially or totally patient life while facing problems of loss or reduction of individual or group autonomy. Nurses must be able to take initiatives in order to apply care of patients as described in article 5 below. Nurses must identify patient needs and make nursing diagnosis based on appropriate health care formula. Nurses can make protocol on health care based on participation from nursing team members by their own initiatives, and are responsible on these initiatives. Nurses are responsible in the implementation and the management of their own nursing care protocols.

Article 4:

If nursing care is a type of hygienic care or socio-medical care, and is under responsibility of nurses, either hospital based or home based, nurses can ensure nursing care under his/her responsibility in collaboration with primary nurses, assistant nurses and qualified and recognized medico-psychological assistants. The four types of personnel above can develop protocol of care as stated in article 3.

Article 5:

Nurses must perform health care by identifying risks, ensuring patient comfort and individual and environmental security and providing information to patients and their neighboring as described below:

- Provide health care to ensure hygiene to patients and their neighboring
- Control hygiene and appropriate food
- Monitor and assess risks related to incorrect treatment procedures
- Advise and monitor on oral medication and its effectiveness and educate patients.
- Insert and change naso-gastric tubes under condition as stated in article 6.
- Take care and monitor patients under enteral or parenteral nutrition
- Monitor urine and stool output and change urine catheter
- Take care and monitor patients under peritoneal or renal dialysis
- Take care and monitor patients under aseptic place
- Place patients based on pathological situations or their disability
- Take care and monitor patients' sleep and rest
- Hold and assist patient to walk without rehabilitated technicians
- Aspirate secretion of patients with or without intubation or tracheotomie.
- Manual or instrumental ventilation by masks
- Use semi-autonomous defibrillator and monitor patients under this machine.
- Apply non drug substance nebulization.
- Collect all necessary notes to assess individual health status and key diagnosis parameters for patients monitoring such as temperatures, pulse, blood pressure,

respiratory rate, urine output, weight, pupil reflex, skin reflex, conscience and assess degree of pain.

- Non medical drug dressing and redressing. Monitor dressing. For other types of dressings, they are stated in article 6.
- Prevent and take care bedsores.
- Prevent vein thrombosis.
- Take care and monitor chronic skin ulcer
- Clean perineum.
- Prepare pre-operative patients especially cleaning skins
- Search for eventual complications for patients under immobilization equipment/procedure.
- Clean mouth
- Clean eyes and apply eye drops.
- Monitor scarification, injection, perfusion, as stated in articles 6 and 8.
- Monitor patients under puncture for analysis diagnosis or for treatment
- Apply tuberculin test and read results.
- Identify and take care skin mycosis.
- Monitor and maintain vital signs
- Monitor catheters, tubes, and drains.
- Participate in diagnosis exploration except only cases as stated in article 9.
- Participate in sterilization of all re-used medical materials/equipments.
- Collect biological data through instant reading techniques.
- Urine: glucose, acetone, protein, hemoglobin, and pH etc…
- Blood: glucose, acetone, etc…
- Provide psychological support
- Monitor behavioral perturbation.

Article 6:

In addition to activities stated in articles 12 and 13, nurses can follow written prescription orders or written protocols dated and signed by physician as below except only in emergency cases:

- Scarification, injection, IVF insertion as stated in bullet No. 1 of article 8.
- Installation and nebulization
- Scarification, vaccination, tuberculin test,
- Put catheter or scalp vein or short needles into peripheral or cephalic veins.
- Monitor central venous catheter, that is correctly placed by physician
- Injection, insert catheter into central vein and inject:
    - Substances except those that are stated in the first bullet in article 8.
    - Products that are not in anesthesia as stated in article 11.

- Drug injection and IVF insertion, must be done with clear written notes that are dated and signed by nurses and are included in the nursing file.
- Provide simple medication as stated in article 5.
- Stick dispositif on skin and monitor its effectiveness
- Change dressing materials.
- Apply and monitor special dressings
- Ablation of materials of skin repair/sutures
- Bandage for immobilization
- Ablation of immobilization materials, change and take out the dressing except pleural and mediastinal drains.
- Insert gastric tube into the stomach for aspiration, washing or feeding.
- Insert bladder catheter for urine collection, washing, instillation, irrigation and/or drainage of bladder except only cases as stated in bullet No.2 of article 9.
- Urethral instillation.
- Vaginal injection
- Insert catheter/tube into rectum for enema, extraction of fecalome and monitor amount of liquid dropped.
- Prepare materials for wound cleaning, monitor wound or colostomie, or bladderstomie, and skin transplant.
- Participate in techniques of dilatation of scar or stomie.
- Take care and monitor patients with intubation/tracheotromie and make changes of canula. The first tracheotomie must be done by physician.
- Participate in correction (treatment) of hypothermia and hyperthermia.
- Provide drug substance nebulization
- Take care of patient mouths using drug and necessary equipments.
- Wash sinus through catheter that is inserted by physician.
- Wash patient ears and apply ear drops.
- Written record in register of normal EKG, normal EEG, except only cases as stated in article 9.
- Measure the central venous pressure.
- Verify, install or monitor the ventilation apparatus, control the process of the machine and monitor patients under this machine.
- Insert oxygen tube, take care of patients under normobar oxygen ventilation
- Connect, monitor, and remove equipment/materials for peritoneal renal dialysis, or plasma exchange circuit.
- Inject vein for blood removal.
- Take blood sample for analysis through insertion of catheter in veins, capillaries and arteries.
- Collect artery blood sample for gazometry.
- Take non bloody samples such as skin, mucus, …

- Collect fluid secretion samples such as sputum, saliva, tear, stool, urine, sweat etc…
- Collect or aspirate aseptic urine
- Transfer or demonstrate knowledge/techniques on how to collect sample for biological and medical analysis.
- Monitor and take care patients during transfers/referral from one hospital to another.

Article 7:

Nurses must be able to initiate pain management according to treatment protocols written in prior that are dated and signed by the physician. The treatment protocol must be included in nursing note or nursing files.

Article 8:

Nurses must follow the written prescription orders with names and amounts of medicines, which are dated and signed by the physician. The following activities can be done only with permission from physician:

- Inject any human substances (blood, platelet, plasma, etc…) that necessarily require nurses to control identity and compatibility of these substances with laboratory.
- Inject pain killers through peridural and intra-thecal catheters after the first demonstration is done by physician.
- Remove central and intra-thecal catheter
- Apply pneumatic tourniquet during surgical intervention
- Immobilization.
- Use manual defibrillator
- Monitor post-operative patients except only the cases as stated in article 11.

Article 9:

Nurses must participate in performing techniques as following under physician order:

- First injection of allergen drugs
- First insertion of bladder catheter for male patient with urinary retention.
- Record into register on EKG, EEG, under effort or medication.
- Take blood pressure, using other simple techniques as stated in article 6.
- Take action urgently in emergency situation
- Explore patho-physiological process, including study of pharmaco- dynamic effect, effort or stimulation.
- Immobilization after ablation.
- Participate in activities done by specialized physicians such as organ transfer, organ/skin transplant.
- Accompany patients during referrals:
    - from one hospital to another must be done by mobile and urgent unit (SAMU)
    - from dangerous place to hospital must be done by mobile and urgent unit

Article 10:

For nurses that work in mental health service, must perform additional tasks as below:

- Take care and stay beside patients and relatives.
- Orientate activities to psychological and social treatment for individuals or groups.
- Monitor and take care patients under isolation room.
- Monitor and assess the therapeutic engagement from physicians, nurses and patients.
- Take care individually and use multidisciplinary team members by orientations to psychological treatment.
- Put in place the therapeutic engagement from physicians, nurses, and patients and isolation protocol.
- Participate in opium severance and treatment by tranquilizing.
- Participate in Sismotherapy

Article 11:

Nurses with Certificate in anesthesia (ISAR) must participate in interventions requested by physician anesthesia-reanimation. If no anesthesia-reanimation specialized physician available, nurses-anesthesia can cooperate with surgeon and only after the skilled anesthesia-reanimation physician examine patients and make treatment protocol, nurses must follow the techniques below:

- General anesthesia
- Local-regional anesthesia and re-injection based on physician anesthesia-reanimation order.
- Reanimation per-operation:
  - Nurses must follow treatment order and protocol of physician anesthesia-reanimation
  - In post-operative room, nurses must ensure that all activities of anesthesia techniques as stated above are well done, and must be responsible for post-operative patients by reducing pain according to techniques.
  - Transport of patients as stated in article 9, must be done in priority by nurses with anesthesia certificate (ISAR).
  - Nurses that are being trained in ISAR, can participate in this activity, with assistance from nurse ISAR.

Article 12:

Child care from newborn to adolescence, particularly all the activities described below must be managed in priority by nurse or midwife with state diploma or nurse/midwife that are being trained for this diploma:

- Monitor child growth and their living condition.
- Monitor infant/newborn feeding practice
- Prevent and monitor urgently their abnormality and disability.
- Take care newborns in the reanimation service.
- Prepare, monitor and remove children under incubator or under phototherapy.

Article 13:

The following activities must be done in priority by nurses with state diploma on surgery and nurses are being trained for this diploma:

- Manage risks related to operational room activities/environment
- Prepare and put in place the nursing care process for patient in operation room.
- Manage and coordinate nursing care in operational room.
- Monitor activities in operational room and other rooms.
- Participate in implementation of sterilization procedures of reused equipments/materials to prevent nosocomial infection in operational room and other rooms.

During operation, nurses have roles in providing materials/equipments: assistance to surgeon. Nurses must be skillful in applying multi skilled tasks to make diagnosis, treatment or sterilization of surgical equipments and hygiene.

Article 14:

In the absence of physician, nurses have rights to use the protocol of emergency care which is written with date and signature of the responsible physician. In this case, nurses must complete other necessary activities to take care patients until there is intervention from physician. These activities must be done with written reports dated and signed by nurses and must submit these reports with patient file to physician.

In urgent situation, nurses must make decision to perform all activities to save patients while waiting for intervention from physician. Nurses must make effort as much as they can in providing care to patients.

Article 15:

Based on activities in hospitals, health centers, private services, factories, schools, prisons, etc… and based on identified needs, nurses must participate in the following activities, when required:

- Basic and continuous training to secondary nurses, nurse assistants, or other health workers.
- Manage nursing students.
- Training, educations, prevention, surveillance especially for primary health care and community health.
- Research, prevention, education on hygiene, individual and public health and safety.
- Research on STD, occupational diseases, and endemic diseases.
- Sexual health education.
- Participate in public health activities.
- Research in nursing care and participate in multidisciplinary research activities.

Nurses equally participate in activities related to disaster, humanity assistance, and other activities related to health and social professionals to share joint responsibility.

Article 16:

Director General for Health, Director General for administration and finance, secretariat for health, secretariat for administration and finance, provincial/municipal health departments and nurses have duty to follow this Prakas with high effectiveness.

Article 17:

All other circulations or provisions which are contrary to this Prakas must be considered as invalid.

Article 18:

This Prakas will come into effect from the date signed below.

CC to:

Copied from Prakas No. 022 ABS-MP dated 07 Oct. 2003
signed by
H.E Senior Minister Hong Sun Huot

- Secretariat of Senator
- Secretariat of Parliament
- Council of Ministers
- Ministry of Social Affairs
- Ministry of Justice
- Ministry of Interior
- Director General for Health
- Director General for admin and finance
- Inspection Department of Ministry of Health
- Municipal/provincial authorities
- Municipal/provincial health departments.
- Documentation

Appendix 22: List of Essential Drugs
Ministry of Health

Department of Drugs, Food, Medical Equipment and Cosmetics

Essential Drug Bureau

The Kingdom of Cambodia

Nation-Religion-King

Nº	Nº	Description	Strength	**Form**	CPA1	CPA2	CPA3	**Comments**
I- BASIC MEDICINES								
I-1- ORAL MEDICINES								
1	1	Acetylsalicylic Acid	500mg	Tab	*	*	*	
2	2	Aluminium Hydroxide	500mg	Tab	*	*	*	
3	3	Aminophylline	100mg	Tab	*	*	*	
4	4	Amoxicillin	250mg	Tab	*	*	*	
5	5	Amoxicillin	500mg	Cap	*	*	*	
6	6	Amoxicillin Dry Powder 60ml	125mg/5ml	Bttl	*	*	*	IMCI
7	7	Ampicillin	500mg	Tab	*	*	*	
8	8	Atenolol	50mg	Tab	*	*	*	
9	9	Bromhexin	8mg	Tab	*	*	*	
10	10	Bromhexine Syrup 60ml	4mg/5ml	Bttl	*	*	*	
11	11	Charcoal Activated (Carbon Absorbent)	500mg	Tab	*	*	*	
12	12	Chlorpheniramine maleate	4mg	Tab	*	*	*	
13	13	Chlorpromazine	25mg	Tab	*	*	*	Psychiatry
14	14	Cimetidine	200mg	Tab	*	*	*	
15	15	Ciprofloxacin	500mg	Tab	*	*	*	STD,Opthl,AIDS
16	16	Cloxacillin	250mg	Tab	*	*	*	
17	17	Cloxacillin	500mg	Tab	*	*	*	
18	18	Co-trimoxazole	100+20mg	Tab	*	*	*	
19	19	Co-trimoxazole	400+80mg	Tab	*	*	*	
20	20	Co-trimoxazole suspension	200+40mg/5ml	Btl	*	*	*	IMCI
21	21	Diazepam	5mg	Tab	*	*	*	Psychiatry
22	22	Diclofenac	50mg	Tab	*	*	*	Pain/Cancer
23	23	Digoxin	0.25mg	Tab	*	*	*	
24	24	Doxycycline	100mg	Tab	SN	SN	SN	
25	25	Erythromycin	250mg	Tab	*	*	*	STD,dermato,AIDS
26	26	Erythromycin Stearate dry powder 60ml	125mg/5ml	Bttl	*	*	*	IMCI
27	27	Ferrous fumarate suspension 60ml	100mg/5ml	Bttl	*	*	*	IMCI
28	28	Ferrous Sulphate + Folic Acid	200+0.40mg (60mg Iron element + 0.4 mg Folic acide)	Red Tab	*	*	*	Nutrition
29	29	Fluconazole	100mg	Tab	*	*	*	
30	30	Folic Acid	5mg	Tab	*	*	*	
31	31	Furosemide	40mg	Tab	*	*	*	
32	32	Glibenclamide	5mg	Tab	SN	SN	SN	Diabetes
33	33	Glyclazide (Diamicron)	80mg	Tab	SN	SN	SN	Diabetes
34	34	Hydralazine	25mg	Tab	*	*	*	
35	35	Hydrochlorothiazide	50mg	Tab	*	*	*	
36	36	Indometacin	25mg	Tab	*	*	*	Pain/Cancer
37	37	Isosorbide Dinitrate	10mg	Tab	*	*	*	

38	38	Mebendazole	500mg	Tab	*	*	*	Schistosomiasis
39	39	Metformine (Glucophage)	500mg	Tab	SN	SN	SN	Diabetes
40	40	Methyldopa (Aldomet)	250mg	Tab	*	*	*	
41	41	Metoclopramide(Primperan)	10mg	Tab	SN	SN	SN	Palliative Care
42	42	Metronidazole	250mg	Tab	*	*	*	STD
43	43	Misoprostol (Cytotec)	200mg	Tab	*	*	*	
44	44	Multivitamin + Mineral		Tab	*	*	*	STD + IMCI
45	45	Nalidixic Acid (Negram)	500mg	Tab	*	*	*	IMCI
46	46	Niclosamide	500mg	Tab	*	*	*	
47	47	Nifedipine (Adalate)	20mg	Tab	*	*	*	
48	48	Nystatin	500.000IU	Tab	*	*	*	STD, AIDS
49	49	Oral Rehydration Salts (low osmolarity 1L) for glucose-electrolyte solution	Glucose: 13.5g/l, Sodium chloride: 2.6g/l Potassiumchloride:1. 5g/l, Trisodium citrate, dihydrate:2.9g/l	Sachet	*	*	*	
50	50	Paracetamol	100mg	Tab	*	*	*	NIP
51	51	Paracetamol	500mg	Tab	*	*	*	
52	52	Paracetamol	500mg	Rectocap	*	*	*	Malaria
53	53	Paracetamol syrup 60ml	125mg/5ml	Bttl	*	*	*	IMCI
54	54	Phenobarbital	50mg	Tab	*	*	*	Psychiatry
55	55	Phenoxymethyl Penicillin	250mg	Tab	*	*	*	
56	56	Potassium Chloride	600mg	Tab	*	*	*	
57	57	Prednisolone	5mg	Tab	*	*	*	AIDS
58	58	Promethazine	25mg	Tab	*	*	*	
59	59	Promethazine 0.1% syrup 60ml	5mg/5ml	Bttl	*	*	*	
60	60	Retinol / Vitamine A blue color capsule with nipple)	100,000IU	Cap	*	*	*	NIP/Nutrition
61	61	Retinol / Vitamine A red color capsule with nipple)	200,000IU	Soft Cap	*	*	*	NIP/Nutrition
62	62	Salbutamol	4mg	Tab	*	*	*	
63	63	Salbutamol Solution for Inhalation 50 doses	1mg/dose	Vial	*	*	*	
64	64	Thiabendazol	500mg	Tab	*	*	*	AIDS
65	65	Tiemonium (Visceralgine)	50mg	Tab	*	*	*	Pain/Cancer
67	67	Vitamin B1	250mg	Tab	*	*	*	
66	66	Vitamin B1 B6 B12	250+250+1mg	Tab	*	*	*	
68	68	Vitamin B6	10mg	Tab	*	*	*	
69	69	Zinc Sulphate (Dispersible)	20mg	Tab	*	*	*	MCH

I-2. INJECTABLE MEDICINES

70	1	Adrenaline	1mg/1ml	Amp	*	*	*	
71	2	Ampicillin	500mg	Vial	*	*	*	IMCI
72	3	Ampicillin	1g	Vial	*	*	*	
73	4	Atropine Sulphate	1mg/1ml	Amp	*	*	*	
74	5	Bupivacaine 0.5% Spinal heavy	20mg/4ml	Vial	/	*	*	
75	6	Butylscopolamine (Hyoscin, Buscopan)	20mg/2ml	Amp	*	*	*	
76	7	Calcium Gluconate 10%	1g/10ml	Amp	*	*	*	
77	8	Ceftriaxone	1g	Vial	*	*	*	STD
78	9	Chloramphenicol	1g	Vial	*	*	*	
79	10	Chlorpromazine	50mg/2ml	Amp	*	*	*	Psychiatry/Pain/Cancer
80	11	Cimetidine	200mg/2ml	Amp	*	*	*	

81	12	Cloxacillin powder	1g	Vial	*	*	*	
82	13	Dexamethasone	4mg/1ml	Amp	*	*	*	Opthalmology/STD
83	14	Dextrose 50%	50ml	Amp	*	*	*	
84	15	Diazepam	10mg/2ml	Amp	*	*	*	Psychi/IMCI
85	16	Dopamine	200mg/5ml	Amp	*	*	*	
86	17	Ephedrine (for dilution)	50mg/1ml	Amp	/	*	*	
87	18	Ergometrine Methyl (Methergin)	0.2mg/1ml	Amp	*	*	*	
88	19	Etamsylate (Dicynone)	250mg/2ml	Amp	*	*	*	
89	20	Fentanyl	0.5mg/10ml	Amp	/	*	*	Pain/Cancer
90	21	Furosemide	20mg/2ml	Amp	*	*	*	
91	22	Gentamycin	80mg/2ml	Amp	*	*	*	Opthalmology +IMCI
92	23	Hydralazine Powder + Solvent	20mg/1ml	Vial	*	*	*	
93	24	Hydrocortisone (as sodium succinate)	100mg/2ml	Vial	*	*	*	
94	25	Insulin, Neutral Injection 10ml	40IU/1ml	Vial	SN	SN	SN	Diabetes
95	26	Ketamine	500mg/10ml	Vial	/	*	*	Pain/Cancer
96	27	Lidocaine 2%	50ml	Vial	*	*	*	
97	28	Magnesium Sulphate 50% (IM/IV)	10ml	Vial	*	*	*	
98	29	Metoclopramide (Primperan)	10ml/2ml	Amp	*	*	*	Pain/Cancer
99	30	Metronidazole	500mg/100ml	Vial	*	*	*	
100	31	Morphine (Hydrochloride or Suphate)	10mg/1ml	Amp	/	*	*	Pain/Cancer
101	32	Neostigmine	0.5mg/1ml	Amp	/	*	*	
102	33	Oxytocin	10IU/1ml	Amp	*	*	*	
103	34	Penicillin - G, IM/IV	1MIU	Vial	*	*	*	
104	35	Potassium Chloride 10%	10ml	Amp	*	*	*	
105	36	Salbutamol	0.5mg/1ml	Amp	*	*	*	
106	37	Sodium Bicarbonate 8.4%	20ml	Amp	*	*	*	
107	38	Suxamethonium	500mg/10ml	Vial	/	*	*	
108	39	Thiopental	1g	Vial	/	*	*	
109	40	Vecuronium + Solvent	4mg/1ml	Vial	/	*	*	
110	41	Vitamine K1 (Ketomenadione)	10mg/1ml	Amp	*	*	*	
111	42	Water for Injections	5ml	Amp	*	*	*	

I-3. IV FLUIDS

112	1	Dextran 40 + IV Giving set	500ml	Btl	*	*	*	Malaria
113	2	Dextrose 10% + IV Giving set	500ml	Btl	*	*	*	Malaria
114	3	Dextrose 5% + IV Giving set	500ml	Btl	*	*	*	
115	4	Dextrose 5%+0.45% Saline + IV Giving set	500ml	Btl	*	*	*	
116	5	N S S 0.9% + IV Giving set	1000ml	Btl	*	*	*	
117	6	Plasma Substitute + IV Giving set	500ml	Btl	*	*	*	
118	7	Ringers Lactate + IV Giving set	1000ml	Btl	*	*	*	DHF +IMCI

I-4. EXTERNAL MEDICINES

119	1	Benzoic Acid 6% + Salicylic Acid 3%	500g	Jar	*	*	*	
120	2	Benzyl Benzoate 25%	1L	Btl	*	*	*	
121	3	Chloramine	500mg	Tab	*	*	*	
122	4	Chlorhexidine gluconate 20%	1L	Btl	*	*	*	
123	5	Fluorthane (Halothane)	250mg	Bttl	/	*	*	
124	6	Gentian Violet Powder	25g	Jar	*	*	*	
125	7	Hydrogen Peroxide (20 volumes)	1L	Color Glass Btl	*	*	*	
126	8	Polyvidone Iodine 10%	200ml	Btl	*	*	*	

127	9	Potassium Permanganate	250g	Bttl	*	*	*	
128	10	Soda lime(Chaux Sodee)	4.5kg	Bttl	/	/	*	
129	11	Vaseline	500g	Jar	*	*	*	
130	12	Zinc oxide 10%	500g	Jar	*	*	*	

II- CONSUMMABLE

131	1	Absorbend Cotton Wool	500g	Roll	*	*	*	
132	2	Adhesive Tape Zinc Oxide	5cmx5m	Roll	*	*	*	
133	3	Adhesive Tape Zinc Oxide perforated	18cmx5m	Roll	*	*	*	
134	4	Adhesive Bandage (Elastic)	10cm x 5m	Roll	/	*	*	
135	5	Airway (ambuls oxygene)	Size 1	Pcs	*	*	*	
136	6	Airway (ambuls oxygene)	Size 2	Pcs	*	*	*	
137	7	A-Scan Biometry		Pcs	/	/	/	Eye Unit Program
138	8	Bag Urine Collecting With Tape	2litre	Pcs	*	*	*	
139	9	Blood Bag (CPD)	350ml		/	/	*	
140	10	Bandage, Crepe	8cmx4m	Roll	*	*	*	
141	11	Bandage, Gauze Non-sterile	7.5cmx10m	Roll	*	*	*	
142	12	Blades for Surgical Knife	#15	Pcs	*	*	*	
143	13	Blades for Surgical Knife	#22	Pcs	*	*	*	
144	14	Burr cylinder Highspeed		Pce	/	SN	SN	Oral Health
145	15	Catheter Foley, Ballon 2 ways, 10ml sterile	CH12	Pcs	*	*	*	
146	16	Catheter Foley, Ballon 2 ways, 10ml sterile	CH14	Pcs	*	*	*	
147	17	Catheter Foley, Ballon 2 ways, 10ml sterile	CH16	Pcs	*	*	*	
148	18	Catheter Foley,Ballon 3 ways 5-15ml	CH22	Pcs	*	*	*	
149	19	Catheter IV	18G	Pcs	*	*	*	
150	20	Catheter IV	20G	Pcs	*	*	*	
151	21	Catheter IV	22G	Pcs	*	*	*	STD,AIDS
152	22	Catheter IV	24G x 1	Pcs	*	*	*	
153	23	Catheter IV	25G x 1	Pcs	*	*	*	
154	24	Cholostomic bag Disposable	38mm	Pcs	/	*	*	
155	25	Cataract with Intra Cocular Lens Set		Pcs	/	*	*	Eye Unit Program
156	26	Developer	1 Gallon	Btl	SN	*	*	
157	27	Drainage Strip (Delbet)	25x3cm	Pcs	/	*	*	
158	28	Disposable Infusion Set with Burette 100ml			/	/	*	
159	29	Diasheric (Volk) lens 90D		Pcs	/	/	*	Eye Unit Program
160	30	Eye shields		Pcs	/	/	*	
161	31	Fixer	1 Gallon	Btl	SN	*	*	
162	32	Gauze Compress parafine Impregnated	19x19cm	Pcs	*	*	*	
163	33	Gauze Rolls	90cmx91m	Roll	*	*	*	
164	34	Gonio Lens 4 Mirrors		Pcs	/	/	*	Eye Unit Program
165	35	Glove Exam non sterile Latex	medium	Pcs	*	*	*	
166	36	Glove Exam non sterile Latex	Small	Pcs	*	*	*	
167	37	Glove Exam non sterile Latex	large	Pcs	*	*	*	
168	38	High Quality Printing Paper upp 110	110mm x 20m	Pcs	*	*	*	

169	39	Indirect Ophtalmoscope	20 D	Pcs	/	/	*	Eye Unit Program
170	40	Indirect Ophtalmoscope	28 D	Pcs	/	/	*	Eye Unit Program
171	41	Iol Intra Ocular Lens	N18	Pcs	/	/	*	Eye Unit Program
172	42	Iol Intra Ocular Lens	N19	Pcs	/	/	*	Eye Unit Program
173	43	Iol Intra Ocular Lens	N20	Pcs	/	/	*	Eye Unit Program
174	44	Iol Intra Ocular Lens	N21	Pcs	/	/	*	Eye Unit Program
175	45	Iol Intra Ocular Lens	N22	Pcs	/	/	*	Eye Unit Program
176	46	Keratometer		Pcs	/	/	*	Eye Unit Program
177	47	Medical Plastic Bags (Khmer printing)	7cm*11cm	Pcs	*	*	*	
178	48	Monotoring electrode with Micropore TN yape and solid gel	Ag/Agcl	Pcs	/	/	*	
179	49	Needle Luer, Reusable	19G	Pcs	*	*	*	
180	50	Needle Luer, Reusable	21G	Pcs	*	*	*	
181	51	Needle Disposable	19G x 1 -½	Pcs	*	*	*	
182	52	Needle Disposable	21G x 1 -½	Pcs	*	*	*	
183	53	Needle Disposable	23G x 1 -½	Pcs	*	*	*	
184	54	Needle Disposable	25G x 5/8	Pcs	*	*	*	
185	55	Needle Disposable	25G x 1	Pcs	*	*	*	
186	56	Needle Spinal Disposable	20G/0.5 x 75mm	Pcs	*	*	*	
187	57	Needle Spinal Disposable	22G/0.7 x 38mm	Pcs	*	*	*	
188	58	Needle Spinal Disposable	25G/0.5 x 90mm	Pcs	*	*	*	
189	59	Needle Spinal Disposable	22G/0.7 x 90mm		*	*	*	
190	60	Needle Spinal Disposable	25G/0.5 x 50mm		*	*	*	
191	61	Needle Spinal Disposable	25G/0.5 x 90mm	Pcs	*	*	*	
192	62	Needle Suture Cutting	Assorted	Pcs	*	*	*	
193	63	Needle Suture Round	Assorted	Pcs	*	*	*	
194	64	Non Absorbent Cotton Wool	500g	Roll	*	*	*	
195	65	Operating Loupe 2.3X		Pcs	/	/	*	
196	66	Oxygen mask with reservoire bag	Children	Pcs	*	*	*	Eye Unit Program
197	67	Oxygen mask with reservoire bag	Adult	Pcs	*	*	*	
198	68	Plaster of Paris Rolls	10cm	Roll	*	*	*	
199	69	Plaster of Paris Rolls	15cm	Roll	*	*	*	
200	70	Plaster of Paris Rolls	20cm	Roll	*	*	*	
201	71	Paper face mask 2 plies			*	*	*	
202	72	Plaster Syringe + Disposable needle 23 x 1"	0,5ml	Pcs	/	*	*	
203	73	Red O Pack		Set	/	*	*	
204	74	Rubber bulb with Valve for sphygmomanometer		Pcs	/	*	*	
205	75	Safety Box	5L		*	*	*	
206	76	Safety Box	10 L		*	*	*	
207	77	Scalp Vein	18G/20G	Pcs	*	*	*	
208	78	Scalp Vein	24G	Pcs	*	*	*	
209	79	Scalp Vein	25G	Pcs	*	*	*	
210	80	Scalp Vein	27G	Pcs	*	*	*	
211	81	Sterile eyes pads		Pcs	/	/	*	
212	82	Surgical Glove non sterile, latex	small	Pcs	*	*	*	
213	83	Surgical Glove non sterile, latex	medium	Pcs	*	*	*	
214	84	Surgical Glove non sterile, latex	large	Pcs	*	*	*	
215	85	Surgical Glove sterile, latex	small	Pcs	*	*	*	
216	86	Surgical Glove sterile latex	medium	Pcs	*	*	*	
217	87	Surgical Glove sterile latex	large	Pcs	*	*	*	
218	88	Surgical Glove sterile, Long Cuff	small	Pcs	*	*	*	

219	89	Surgical Glove sterile, Long Cuff	medium	Pcs	*	*	*	
220	90	Surgical stanless Steel wire 26mm tape curve 20cm mono loop	2/0	Pcs	/	/	*	
221	91	Surgical stanless Steel wire 51mm straight double cutting 35cm	1	Pcs	/	/	*	
222	92	Stomach Wash Out tube, Fraucher Type	CH27	Pcs	/	/	*	
223	93	Sut/Catgut Chromic25mm½circle Rb75cm	.2/0	Pcs	*	*	*	
224	94	Sut/Catgut Chromic30mm½circle Rb75cm	.3/0	Pcs	*	*	*	
225	95	Sut/Catgut Chromic35mm½circle Rb75cm	0	Pcs	*	*	*	
226	96	Sut/Catgut Chromic38mm½circle Rb75cm	1	Pcs	*	*	*	
227	97	Sut/Catgut Chromic40mm½circle Rb75cm	2	Pcs	*	*	*	
228	98	Sut/Catgut Chromic85mm B P Cvd Rb	1	Pcs	*	*	*	
229	99	Sut/Catgut Plain 22mm curved cutting 75cm	3/0	Pcs	*	*	*	
230	100	Sut/Catgut Plain 25mm½ circle Rb 75cm	2/0	Pcs	*	*	*	
231	101	Sut/Catgut Plain 30mm½ circle Rb 75cm	0	Pcs	*	*	*	
232	102	Suture Nylon 30mm ½ circle Rb 75cm	2/0	Pcs	*	*	*	
233	103	Suture Nylon 30mm ½ circle Rb 75cm	4/0	Pcs	*	*	*	
234	104	Suture Nylon Curved Rev cutting 26mm	3/0	Pcs	*	*	*	
235	105	Suture Nylon 5mm double micro-point spatula 30mm	10/0	Pcs	*	*	*	
236	106	Suture Silk double needle micro-point spatula curved 30mm	10/0	Pcs	*	*	*	
237	107	Suture Silk 8mm double needle micro-point spatula ½ circle 30mm	8/0	Pcs	*	*	*	
238	108	Suture Silk 6mm curved 38mm	6/0	Pcs	*	*	*	
239	109	Suture Silk 16mm curved 45mm	4/0	Pcs	*	*	*	
240	110	Sut/Coated, Braided Polyglycolic Acid Violet 30mm½ circle cutting point 75 cm	1	Pcs	*	*	*	
241	111	Sut/Coated, Braided Polyglycolic Acid Violet 30mm½ circle tapercut	2/0	Pcs	*	*	*	
242	112	Sut/Coated, Braided Polyglycolic Acid Violet 30mm½ circle tapercut	3/0	Pcs	*	*	*	
243	113	Sut/Coated, Braided Polyglycolic Acid Violet 30mm½ circle cutting point 75 cm	0	Pcs	*	*	*	
244	114	Sut/Surgisorb 27mm ½ circle RB 90cm	3/0	Pcs	*	*	*	
245	115	Sut/Surgisorb 38mm ½ cut point 40cm	2/0	Pcs	*	*	*	
246	116	Sut/Surgisorb 40mm ½ cut point 45cm	1	Pcs	*	*	*	
247	117	Syringe Disposable & Needle 25G	2ml	Pcs	*	*	*	
248	118	Syringe Disposable & Needle 25G	5ml	Pcs	*	*	*	
249	119	Syringe Disposable & Needle 23G	5ml	Pcs	*	*	*	
250	120	Syringe Disposable & Needle 23G	10ml	Pcs	*	*	*	
251	121	Syringe Disposable	20ml	Pcs	*	*	*	
252	122	Syringe Disposable	50ml	Pcs	*	*	*	
253	123	Talc	1kg	Box	*	*	*	
254	124	Tape Test for Autoclave		Roll	*	*	*	
255	125	Tape/Strips Test For Poupinel		Roll	*	*	*	
256	126	Tape Umbilical Non sterile 3mm		Roll	*	*	*	
257	127	Thermometer Oral/Rectal ^{o}C		Pcs	*	*	*	

258	128	Thorax Drain + Trocart	CH12	Pcs	*	*	*	
259	129	Thorax Drain + Trocart	CH14	Pcs	*	*	*	
260	130	Thorax Drain + Trocart	CH16	Pcs	*	*	*	
261	131	Thorax Drain + Trocart	CH18	Pcs	*	*	*	
262	132	Thorax Drain + Trocart	CH20	Pcs	*	*	*	
263	133	Thorax Drain + Trocart	CH24	Pcs	*	*	*	
264	134	Tongue depressor wood adult		Pcs	*	*	*	
265	135	Tracheal tube	#4	Pcs	/	*	*	
266	136	Tracheal tube	#5	Pcs	/	*	*	
267	137	Tracheal tube	#6.5	Pcs	/	*	*	
268	138	Tracheal tube	#7	Pcs	/	*	*	
269	139	Tracheotomy tube	#4	Pcs	/	*	*	
270	140	Tracheotomy tube	#5	Pcs	/	*	*	
271	141	Tracheotomy tube	#6	Pcs	/	*	*	
272	142	Tracheotomy tube	#7	Pcs	/	*	*	
273	143	Tube Drain Redon	CH12	Pes	/	SN	*	
274	144	Tube Drain Redon	CH16	Pcs	/	SN	*	
275	145	Tube Liaison For Redon	110cm	Pcs	/	*	*	
276	146	Tube Nasogastric/Feeding	CH5	Pcs	/	*	*	
277	147	Tube Nasogastric/Feeding	CH8	Pcs	/	*	*	
278	148	Tube Nasogastric/Feeding	CH12	Pcs	/	*	*	
279	149	Tube Nasogastric/Feeding	CH14	Pcs	/	*	*	
280	150	Tube Nasogastric/Feeding	CH16	Pcs	/	*	*	
281	151	Tube Suction Disposable	CH8	Pcs	*	*	*	
282	152	Tube Suction Disposable	CH12	Pcs	*	*	*	
283	153	Tube Suction Disposable	CH16	Pcs	*	*	*	
284	154	Tubular Elastic Bandage	8mm x 4cm	Pcs	/	/	*	
285	155	Tubular Elastic Net Bandage	8mm x 4cm	Pcs	/	/	*	
286	156	Personal Protection Equipment consisting of: Gant, Blouse economique polypropylene probase 200, Lunettes, Masque Anti-poussiere 3M FFP3 avec soupape taille L-taille 8835		Set				SARS/Bird Flu
287	157	Ultra Sound Gel	1 kg	Bttl	/	*	*	
288	158	Umbilical cord clamp		Pcs	*	*	*	
289	159	Valve Antiretour Pleural Drain		Pcs	/	*	*	
290	160	X ray films	18cm x 24cm	Pcs	SN	*	*	
291	161	X ray films	18cmx43cm	Pcs	SN	*	*	
292	162	X ray films	30 cm x 40cm	Pcs	SN	*	*	
293	163	X ray films	35cm x 35cm	Pcs	SN	*	*	

III-NATIONAL PROGRAM MEDICENES

III-1.EYE UNIT PROGRAM

294	1	Acetazolamide (Diamox)	250mg	Tab	/	/	*	
295	2	Atropine Sulphate 1% eye drop	5ml	Vial	/	/	*	
296	3	Ciprofloxacine eye drop 0.3%	5ml	Vial	*	*	*	
297	4	Fluoresceine eye drop	10ml	Vial	/	/	*	
298	5	Lignocaine 2%		Vial	/	/	*	
299	6	Marcaine 0.5%		Vial	/	/	*	
300	7	Pilocarpine 2% eye drop	5ml	Vial	/	/	*	
301	8	Prednisolone Acetate 1% eye drop	5ml	Vial	/	/	*	
302	9	Tetracaine 0.5% eye drop	5ml	Vial	/	/	*	
303	10	Tetracycline eye ointment 1%	5g	Tube	*	*	*	

304	11	Timolol 0.5%			/	/	*	
305	12	Tropicamide ophtalmic drop 1%	10ml	Vial	/	/	*	
306	13	Viscoelastic Solution	1ml	Vial	/	/	*	

III-2. TUBERCULOSIS MEDICINES

307	1	Ethambutol	400mg	Tab	*	*	*	
308	2	Ethambutol	100mg	Tab	*	*	*	
309	3	Ethambutol / Isoniazide	400mg/150mg	Tab	*	*	*	
310	4	Isoniazide	100mg	Tab	*	*	*	
311	5	Pyrazinamide	400mg	Tab	*	*	*	
312	6	Rifampicine	150mg	Cap	*	*	*	
313	7	Rifampicine / Isoniazide	150 + 75mg	Tab	*	*	*	
314	8	Rifampicine / Isoniazide	60+30mg	Tab	*	*	*	
315	9	Rifampicine / Isoniazide / Pyrazinamide	60+30+150mg	Tab	*	*	*	
316	10	Streptomycine	0.75g or 1g	Vial	*	*	*	

III-3. MALARIA/Shistosomiasis and Helminthiasis/ Dengue Haomrrhagic Fever / Filariasis Program

a-Malaria Program

317	1	A+M2	50mg+250mg	Blister	*	*	*	
318	2	A+M3	50mg+250mg	Blister	*	*	*	
319	3	A+M4	50mg+250mg	Blister	*	*	*	
320	4	Artesunate	50mg	Tab	SN	SN	SN	
321	5	Artesunate Rectocap	50mg	Tab	*	*	*	
322	6	Artesunate Rectocap	200mg	Tab	*	*	*	
323	7	Chloroquine base	150mg	Tab	*	*	*	
324	8	Mefloquine	250mg	Tab	*	*	*	
325	9	Quinine sulphate	300mg	Tab	*	*	*	
326	10	Tetracycline	250mg	Cap	*	*	*	
327	11	Artemeter Inj	80mg/ml	Amp	*	*	*	
328	12	Artemeter injectable	40mg/ml	Amp	*	*	*	
329	13	Quinine Dihydrochloride	600mg/2ml	Amp	*	*	*	

b- Shistosomiasis and Helminthiasis Program

330	1	Praziquantel	600mg	Tab	SN	SN	SN	

c- Dengue Haomrrhagic Fever Program

331	1	5% Dextrose in Isotonic Saline Solution	500ml	Blt	*	*	*	
332	2	5% Dextrose in Acteate ringer solution	500ml	Blt	SN	SN	SN	

d- Filariasis

333	1	Albendazol	400mg	Tab	SN	SN	SN	AIDS
334	2	Diethylcarbamazine	100mg	Tab	SN	SN	SN	

III-4. BIRTH SPACING MEDICINES

335	1	Depomedroxyprogesteroneacetate 3ml	150mg/ml	Vial	*	*	*	
336	2	Norgestrel (Progestin-Only-Pill)	0.075mg	Blister	*	*	*	
337	3	Ethinyloestradiol + Levonorgestrel (Combined Oral Contraceptive)	0,03/0.15mg	Blister	*	*	*	
338	4	Condom	49mm	Pcs	*	*	*	
339	5	IUD Copper T 380A	T380A	Pcs	*	*	*	

340	6	Female Condom (Lubricated loose-fitting Polyurethane, pouch closed at one end, open at the other with soft rings at each end. 160-180mm width, 41-61µ thickness, 2.23-2.53mm outer ring, 56.5-58-5mm inne	160-180mm	Unit	*	*	*	
341	7	Levonorgestrel 0.75mg (Emergency Contraceptive Pills, 2 pill per Blister)	0.75mg	Pcs	*	*	*	
342	8	Implant (subdermal, small, semi-rigis plastic rod, 4 cm in length and 2mm in diameter, containing 68 mg Etonogestrel)	68mg	Unit	*	*	*	

III-5. LEPROSY MEDICINES

343	1	Prednipack		Blister	*	*	*	
344	2	MB Adult		Blister	*	*	*	
345	3	MB Child		Blister	*	*	*	
346	4	PB Adult		Blister	*	*	*	
347	5	PB Child		Blister	*	*	*	

III-6. PSYCHIATRY MEDICINES

348	1	Amitriptyline	25mg	Tab	SN	SN	SN	Pain/Cancer
349	2	Amitriptyline	50mg	Tab	/	SN	SN	Pain/Cancer
350	3	Carbamazepine	200mg	Tab	SN	SN	SN	Pain/Cancer
351	4	Chlorpromazine	100mg	Tab	SN	SN	SN	
352	5	Clomipramine	25mg	Cap	/	SN	SN	
353	6	Fluoxetin	20mg	Cap	/	/	SN	
354	7	Haloperidol	10mg	Tab	/	SN	SN	Pain/Cancer
355	8	Haloperidol	5mg	Tab	SN	SN	SN	Pain/Cancer
356	9	Imipramine	25mg	Tab	SN	SN	SN	
357	10	Lithium Carbonate	300mg	Tab	/	SN	SN	
358	11	Nortriptyline HCL	25mg	Tab	/	SN	SN	
359	12	Perphenazine	8mg	Tab	/	SN	SN	
360	13	Phenytoine	100mg	Tab	SN	SN	SN	Pain/Cancer
361	14	Thioridazine	10mg	Tab	/	SN	SN	
362	15	Trihexylphenidyle	5mg	Tab	SN	SN	SN	
363	16	Benzotropine Mesylate	2mg/ml	Amp	/	/	SN	
364	17	Fluphenazine decanoate	25mg/ml	Amp	/	/	SN	
365	18	Haloperidol	5mg/ml	Amp	/	/	SN	Pain/Cancer
366	19	Haloperidol decanoate	50mg/ml	Amp	/	SN	SN	Pain/Cancer

III-7.STD PROGRAM

367	1	Azithromycine	500mg	Tab	SN	SN	SN	
368	2	Cefixime	200mg	Tab	SN	SN	SN	
369	3	Benzathine Penicilline	2.4MIU	Vial	SN	SN	SN	
370	4	Clotrimazole	500mg	Pessary	SN	SN	SN	Pain/Cancer
371	5	Podophylline solution 25%	5ml	Vial	SN	SN	SN	

III-8.DERMATOLOGIC

372	1	Acyclovir	400mg	Tab	SN	SN	SN	HIV
373	2	Acyclovir Creme	15g	Tube	SN	SN	SN	
374	3	Benzoyl peroxide 5% Gel	40g	Tube	SN	SN	SN	

375	4	Betamethasone Cream / Ointment	30g	Tube	SN	SN	SN	
376	5	Betamethasone Cream +Salicylic Acid Ointment	30g	Tube	SN	SN	SN	
377	6	Betamethasone+Fucidic acide (fobancort)	15g	Tube	SN	SN	SN	
378	7	Clobetasole cream	10g	Tube	SN	SN	SN	
379	8	Clotrimazole 1% cream	30g	Tube	SN	SN	SN	Pain/Cancer
380	9	Crotamiton cream (Eurax)	30g	Tube	SN	SN	SN	
381	10	Fusidic Acid cream	15g	Tube	SN	SN	SN	
382	11	Hydrocortisone 1%	15g	Tube	SN	SN	SN	
383	12	Ketokonazole cream	15g	Tube	SN	SN	SN	AIDS
384	13	Miconazole gel	40g	Tube	SN	SN	SN	
385	14	Tretinoin 0.05% cream	30g	Tube	SN	SN	SN	
386	15	Triamcinolone Cream 0.1 %	30g	Tube	SN	SN	SN	
387	16	Urea Cream 10%	100mg	Tube	SN	SN	SN	AIDS
388	17	Clobetasole lotion	30ml	Bttl	SN	SN	SN	
389	18	Coaltar Lotion (Polyar Liquid)	150ml	Bttl	SN	SN	SN	
390	19	Cetirizine	10mg	Tab	SN	SN	SN	AIDS
391	20	Griseofulvine	500mg	Tab	SN	SN	SN	AIDS/Leprocy
392	21	Itraconazole	100mg	Tab	SN	SN	SN	
393	22	Minocycline	100mg	Tab	SN	SN	SN	

III-9.HIV/AIDS CARE

394	1	Abacavir	300mg	Tab	SN	SN	SN	
395	2	Didanosine	25mg	Tab	SN	SN	SN	
396	3	Didanosine	100mg	Tab	SN	SN	SN	
397	4	Didanosine	250mg	Tab	SN	SN	SN	
398	5	Didanosine	400mg	Tab	SN	SN	SN	
399	6	Efavirenz	50mg	Tab	SN	SN	SN	
400	7	Efavirenz	200mg	Tab	SN	SN	SN	
401	8	Efavirenz	600mg	Tab	SN	SN	SN	
402	9	Lamivudine	150mg	Tab	SN	SN	SN	
403	10	Loperamide	2mg	Tab	SN	SN	SN	
404	11	Nevirapine	200mg	Tab	SN	SN	SN	
405	12	Ritonavir	100mg	Tab	SN	SN	SN	
406	13	Stavudine	40mg	Cap	SN	SN	SN	
407	14	Stavudine	30mg	Cap	SN	SN	SN	
408	15	Stavudine	20mg	Cap	SN	SN	SN	
409	16	Stavudine	15mg	Cap	SN	SN	SN	
410	17	Zidovudine	100mg	Cap	SN	SN	SN	
411	18	Amphotericin B	50mg	Amp	SN	SN	SN	Pain/Cancer
412	19	Cotrimoxazole IV 480mg/5ml	5ml	Amp	SN	SN	SN	
413	20	Lamivudine 100ml Syrup	50mg/5ml	Bttl	SN	SN	SN	
414	21	Nevirapine Syrup	50mg/5ml	Bttl	SN	SN	SN	
415	22	Calamine lotion 15%	100ml	Bttl	SN	SN	SN	
416	23	Abacavir 240ml syrup	20mg/ml	Bttl	SN	SN	SN	
417	24	Zidovudine 100ml Syrup	50mg/5ml	Bttl	SN	SN	SN	
418	25	3 TC 150mg + D_4T 30mg + NVP 200mg	150mg+30mg+200mg	Tab	SN	SN	SN	
419	26	3 TC 150mg + D_4T 40mg + NVP 200mg	150mg+40mg+200mg	Tab	SN	SN	SN	
420	27	3 TC 150mg + D_4T 30mg	150mg+30mg	Tab	SN	SN	SN	
421	28	3 TC 150mg + D_4T 40mg	150mg+40mg	Tab	SN	SN	SN	

422	29	3 TC 150mg + AZT300mg	150mg+300mg	Tab	SN	SN	SN	
423	30	Lopinavir/Ritonavir (133.3mg/33.3mg)	133.3mg/33.3mg	Cap	SN	SN	SN	
424	31	Lopinavir/Ritonavir 80mg/20mg/ml syrup	160ml	Bttl	SN	SN	SN	

III-10.ORAL HEALTH MEDICINES

1- Medicines

425	1	Calcium Hydroxide		B/2P	/	*	*	
426	2	Chlorhexidine digluconate 0.1% antiseptic for oral health 10%	200ml	Bttl	*	*	*	
427	3	Eugenol Usp	10ml	Vial	*	*	*	
428	4	Lidocain 2% Adrenaline 0.01%	1.8 ml	Cart	*	*	*	
429	5	Sodium Fluoride (NaF)* powder	Kg		/	/	*	
430	6	Zinc Oxide Powder	1Kg	Jar	*	*	*	
431	7	Glass ionomer for Rest Gc Fuji II	Powder 15g + liquid 10g	Box	*	*	*	
432	8	Glass ionomer for Rest Gc Fuji IX	Powder 15g + liquid 10g	Box	*	*	*	

2-Materials

433	1	Burr cylinder Highspeed		Pce	/	SN	SN	
434	2	Burr cylinder Lowspeed		Pce	/	SN	SN	
435	3	Burr round for contra Angle Highspeed		Pce	/	SN	SN	
436	4	Burr round for contra Angle Lowspeed		Pcs	/	SN	SN	
437	5	Matrix bands medium (Metal Matrix)		Pcs	/	*	*	
438	6	Mouth Mirrors		Pcs	*	*	*	
439	7	Needle Dental 27G .30mm		Pcs	*	*	*	
440	8	Needle Dental 27G .35mm		Pcs	*	*	*	
441	9	Needle Dental 27G .21mm		Pcs	*	*	*	
442	10	Plastic Strips (Plastic Matrix)		Pcs	*	*	*	

III-11.NATIONAL IMMUNIZATION PROGRAM

443	1	BCG Vaccine + Solvantt (+VVM)	20doses	Vial	/	/	/	
444	2	DPT -Hep B Vaccin (+VVM)	10doses	Vial	/	/	/	
445	3	Hepatitis B Vaccine 100ug/5ml (+VVM)	10doses	Vial	/	/	/	
446	4	Hepatitis B Vaccine 10ug/0.5ml (+VVM)	10doses	Vial	/	/	/	
447	5	Measle Vaccine + Diluants (+VVM)	10doses	Vial	/	/	/	
448	6	Oral Polio Vaccine + Dropper (+VVM)	10doses	Vial	/	/	/	
449	7	Tetanus Toxoin Vaccine (+VVM)	20doses	Vial	/	/	/	
450	8	Autodestruct Syringe 0.5ml + Needle	23G x 1	Pcs	/	/	/	
451	9	Autodestruct Syringe 0.1ml + Needle	27G x ½	Pcs	/	/	/	

III-12-PAIN RELIE MEDICINE/ PALLIATIVE CARE

452	1	Codeine	30mg	Tab	/	SN	SN	
453	2	Morphine Sulphate (Lasting 4 h)	30mg	Tab	/	SN	SN	
454	3	Morphine Sulphate retard	30mg	Tab	/	SN	SN	
455	4	Tramadol Chlorhydratre	50mg	Tab	/	SN	SN	
456	5	Tramadol Chlorhydratre (Retard)	100mg	Tab	/	SN	SN	

457	6	Ibuprofene	200mg	Tab	/	SN	SN	
458	7	Paracetamol +Dextropropoxyphene	400mg+30mg	Gelule	/	SN	SN	

III-13.ANTI CANCER MEDICINES

459	1	Tamoxifen Citrate	20mg	Tab	/	/	SN	
460	2	Etoposide 20mg/ml	5ml	Amp	/	/	SN	
461	3	Bleomycin Sulphate	15mg	Vial	/	/	SN	
462	4	Cisplatin 1mg/ml	50ml	Vial	/	/	SN	
463	5	Cyclophosphamid (endoxan)	500mg	Vial	/	/	SN	
464	6	Dacarbarzine 100mg + Solvent	100mg	Vial	/	/	SN	
465	7	Doxorubicin Hydrochloride	50mg/25ml	Vial	/	/	SN	
466	8	Fluorouracil 50mg/ml	5ml	Amp	/	/	SN	
467	9	Methotrexate 25mg/ml	2ml	Vial	/	/	SN	
468	10	Mitomycine	2mg	Vial	/	/	SN	
469	11	Ondansetron hydrochloride 2mg/ml	4ml	Amp	/	/	SN	
470	12	Vincristine Sulphate 1mg/ml	1ml	Vial	/	/	SN	

III-14.NUTRITION

471	1	Iron-Folate Weekly	60mg Iron element + 3.5 mg Folate	Rose Tab	SN	SN	SN	
472	2	Combine Mineral Vitamin (CMV) Therapeutic	Powder	Bttle	*	*	*	

Note:
* : Available
/ : Not Available
SN : Special Need
ES : Emergency Stock
SC : Special Center

National Essential Drug List Committee

Director General for Health

Appendix 23: Building Brief of Referral Hospitals

A. Hospital Design Standard

There are many arguments in the design of standard hospital plan:

- Plans that are well understood by the MoH, that respond to the CPA guidelines and that health providers are familiar with.

- Plans that do not need to be completely redesigned for each hospital with good cost control and lower cost of civil work.

- Easy for management and maintenance.

However, this does not mean that when they finished an acceptable design, there is no need to continuously improve it. Several problems are inherent to the existing plans of pavilion or modular type building:

- They tend to be designed on an inappropriate size and structure in which the various functions do not fit well.

- There is bad circulation between different medical services

- There are unsatisfactory plans because there is no connection between buildings.

- There is high cost of construction and maintenance due to the ratio of external walls (major works) to internal space, climate exposure etc...

- There is very low density of buildings that consumes a lot of land

- There is difficulty in maintenance of the whole site

There are also some advantages with modular building.

- It is easy to add new services to an existing hospital

- They reduce the risk of the spread of infection in the hospital

- They are easily accepted by rural society as they are a familiar style of building found in schools and other public services

Improvements on the existing building style design can be made by better landscaping, taking more care in the general layout or master plan of the hospital, and connecting buildings with covered walk-ways. These solutions should be in mind. Regarding, the cost of new building or rehabilitation of existing building, the latter cost as much as, if not more than new building. Bad connection between different located services and wards, with covered walk-ways not only costs a lot but not necessarily effective in protecting people from winds and rains, and make a badly organized hospital in the long term. Therefore the choice to rehabilitate buildings rather than rebuild new facilities should be carefully evaluated.

In summary, all the advantages of modular buildings are less than the advantages of a complete redesign of the referral hospital, especially since the "Guidelines of the Complementary Package of Activities for referral hospitals" were finalized in Feb 2003.

The "Guidelines for the Referral Hospital" Feb 2003 of Ministry of Health indicate in detail the services to be covered under each Complementary Package of Activities (CPA). The Minimum Package of Activities (MPA) should be provided within the Referral Hospital compound by locating an Outpatients Consultations Unit in a way that patients can go directly there.

The Civil Working Group (CWG) has decided to centralize certain services that were previously dispersed throughout the hospital departments. These services are as follows:

- Emergency and Major Surgery (including caesarian sections)
- Laboratory tests
- Imagery
- Laundering and Sterilization
- House-keeping

By centralizing these specialized services, they will be:

- more efficient
- easier to maintain
- more cost effective in both the deployment of competent staff and the deployment of equipment per hospital

These centralized services, in addition to other services delivered by the Referral Hospital, constitute a number of "core" functions that should be developed in a coherent standard design that are applicable for all new RH's.

A. a. Standard design for CPA 2 & 3 – CORE SERVICES

A standard core design should be developed for the following basic functions:

1. **Clinical Services**
   1.1. Outpatients Consultations
   1.2. Emergency Department
   1.3. Surgical Department & Operating Theatre

2. **Paraclinical Support Services**
   2.1. Laboratory
   2.2. Pharmacy
   2.3. Imagery (X-ray, Ultrasound)
3. **Technical Support Services**
   3.1. Kitchen
   3.2. Laundry/Sterilization
   3.3. House-keeping
   3.4. Waste Management

Instead of collection of modular buildings that correspond to each separate function, it is proposed that these core functions should be designed as a whole concept. This should make the civil works more cost effective but, especially, by improving the efficiency of the Hospital function, it should contribute to a high standard of health services.

This plan design should encourage:

- Good functioning process between various medical services
- Teamwork amongst the Hospital staff
- Cost effectiveness due to good public works, low maintenance costs and high density.
- Long term reduction of maintenance costs of the site as a whole, through low civil work cost and low energy consumption expenses.
- Sufficient flexibility for future extension

A. b. Standard design for CPA 1 – CORE SERVICES

The CPA 1 is different from CPA2-3 by absence of Surgical services but the Civil Work Group has expressed the aim to improve all CPA 1 Referral Hospitals to be able to provide surgical services. Only 3 of the Hospitals in the WB PIP are CPA 1. A standard core building for CPA 1 should also be designed including the following functions allowing the addition of Surgical Services later:

1. **Clinical Services**
   1.1. Outpatients Consultations
   1.2. Emergency Department

2. **Paraclinical Support Services**
   2.1. Laboratory
   2.2. Pharmacy
   2.3. Imagery (X-ray, ultrasound)

3. **Technical Support Services**
   3.1. Kitchen
   3.2. Laundry/Sterilization
   3.3. House-keeping
   3.4. Waste Management

A. c. Other design work

Comparing the "Table of Functions and Facilities" with the existing plans reveals many discrepancies and argues for a complete review of the design of all the facilities. This should aim at simple functional design, built with easily maintained building materials that result in a cost effective for Hospital both in the short and long term

B. General Criteria And Project Evaluation

Prior to any design, the following factors should be taken into account:

1. Users

1.1. Consulting with the users

The Provincial Health department directors, Hospital Directors, physicians and any NGO's relevant to service delivery either under the CPA guidelines or additional services should be consulted. They should visit existing hospital and take into account patients' needs as much as possible. They should collect the level of coverage and the availability of current and future human resources and used to complete the "Table of Functions and Facilities".

1.2. Identifying the health provider and phases of works

The health provider has to be identified and consulted before commencing any design work. The civil works have to be done in phases depending on the existing situation of the buildings:

Phase 1 - demolition work, new building and landscaping
Phase 2 – demolition or rehabilitation of existing buildings

This will enable the Hospital to continue to function while the new buildings are under construction. After completion of the new buildings, the staff and patients can move to these new buildings and the old ones can be rehabilitated or demolished.

In the case of rehabilitation without constructing the new building, a transitional shelter should be made for patients and staff to stay during construction work.

2. Land Properties

2.1. Size of land

Based on WHO standards, a one hundred bed hospital requires 4 hectares of land. This is a minimum and corresponds to the hospital area only, excluding staff housing and other facilities. If possible, it should be larger area to allow for future extension.
In particular case, where difficult pressure for land, and only after approval from the Ministry of Health, it is allowed to build a high density of building.

2.2. Accessibility and environment

The land should preferably be on major road to ensure easy access by ambulances and should be located in a central service zone with a radius of about 25 km. Attention should be paid to the use of neighboring land to avoid conflicts of usage. If possible it should be grouped with other institutional facilities such as schools. The land should be free from the danger of flooding and other nuisances such as noise and pollution.

2.3. Site master plan

The site master plan has to be carefully studied aiming at an designed landscape integrating water basins, trees, walkways, the best possible adaptation of existing buildings and the integration of new ones. The orientation of the buildings will be chosen preferably with long facades facing north and south (for the least direct sunlight and good cross ventilation).

Attention will be paid to improve the "user-friendliness" of the facilities by considering the circulation.

3. Infrastructure

3.1. Infrastructure

The site should have telecommunications, mains electricity and water supply, or should be in an area where such services are planned in the near future. An abundant and high standard of water is particularly important. If such utilities are not available, substitutes should be adequate (radio, generators and/or solar electricity, wells and/or rain tanks).

3.2. Electricity supply

This can be provided by main electricity, electric generator and/or solar panels. All facilities should be provided with separate electrical circuits with high capacity cable and wiring. All highly equipped facilities (ICU, Operating Theatre, Labor room, Laboratory, Imagery etc.) should have adequate electrical infrastructure for the equipment used with earthed plugs every 2 meters. In some cases this implies tri-phase. In all circumstances, the electricity supply should be stable 220-240 V.

3.3. Water supply

Before envisaging the construction or rehabilitation of a hospital, the ground and surface water supply should be evaluated and tested. In Cambodia, it is practically inconceivable that insufficient water not be available due to the high rainfall in all areas. The hospital should have abundant clean cold water. Drinking water and water used for medical equipment may have to be treated or brought in from outside.

3.4. Waste disposal and waste water treatment

The design of the Hospital should take into account the effective waste disposal and waste water treatment with respect of environmental rules.

3.5. Telecommunications

Where possible, provide fixed telephone lines, (one for internet connection1, another one for calls); if not, mobile phones should be provided. In remote areas, provide radio for linkage between hospital and health centers. This requires a 50 meter mast equipped with an aerial and lightning conductor, to be installed closed to the emergency room.

4. Buildings

4.1. Accessibility and signage for vehicles and external people

The Referral Hospital is to be accessible by ambulances with good signage in both Khmer and English. The emergency unit should be easily found. Out-patients consultations department should also be clearly signed.

[1] it may be a good idea to install the internet connection in the library where it can provide access to website medical information

4.2. Accessibility and circulation of people

All hospital buildings are to be accessible by handicapped people. This may require access ramps equipped with hand-rails and a maximum gradient of 5 degrees. All doors should be doubled, at minimum, with larger of 90 cm and 30 cm, totaling larger of 1.20meter. Emergency fire fighting vehicles must be able to approach all buildings. All facilities should ensure smooth movement of patients. This requires wide corridors and doors and simple circulation. Separated access for staff and patients, ambulances and private vehicles as well as delivery vehicles of equipment and supplies should be taken into account.

4.3. Internal communications

An internal electronic communications system (or staff messenger) should be installed for medical staff but also for an emergency call system for patients.

4.4. Signage of all facilities

Clear signage should be placed in locating services including labeling of all doors.

4.5. Climatic criteria

The whole of Cambodia has a hot equatorial climate with a North hot dry monsoon half of the year and a South hot wet monsoon the rest of the year. The mean temperature only varies 10 degrees between the average minimum temperature and the average maximum temperature.

However, three distinct climate zones can be distinguished:

- The low, flooded plain of the Mekong River that covers approximately 80% of the country

- Mountainous regions such as Mondulkiri and Rattanakiri where the temperature can be considerably lower (up to 10 degrees less)

- The Southern coastal zone that is sometimes exposed to severe storms

Building design should be taken into account these local climate criteria using natural ventilation, natural shade, the best orientation (usually North/South), protection from heavy rain and knowledge of dominant winds for good ventilation. Knowledge of dominant winds is also important for locating isolation wards to avoid spreading germs. In regions exposed to storms, the roof structure should be taken into account the wind factor. The minimum ceiling height will be 4meters to guarantee comfortable natural ventilation at all times (maybe lower in coastal zones exposed to storm). All facilities will be designed for good natural ventilation except where other specific request needed. In flooded areas, buildings should be elevated 2 meters from the ground to avoid seasonal flooding.

4.6. Sanitation

All facilities should be equipped with water based sanitation and separated for staff and patients. Squat toilets should be provided and basins equipped with hand-free taps. Wards

should be equipped with showers and toilets. Latrines are not an acceptable form of toilet for a modern hospital.

4.7. Building materials

When feasible, locally produced building materials with an acceptable standard should be identified and used.

All facilities susceptible to be dirtied by contaminated waste or body fluids, (especially toilets, operating and delivery rooms, laboratory and sterilization unit) should have wall and floor finishes resistant to chemical reaction and be equipped with floor sumps.

In any circumstances, they should not use any internationally unacceptable materials (e.g. any material composing asbestos). In the case of demolition works involving such materials, they should be disposed of with respect of environmental rules and regulations and with the precautions necessary to protect workers from contamination.

5. Services

5.1. Guest accommodation

The hospital should be user friendly and provide easy access for visitors and relatives, including temporary accommodation, protected places for cooking and washing. Better, if there is an efficient canteen that can provide food for all users, including passengers. A small shop could provide toiletries and various goods.

5.2. Food for staff and patients

Good quality food should be supplied for patients, staff and visitors. In the case of TB treatment, food supply is an incentive for patients to respect the treatment regime lasting 20 – 30 days. In the case of staff, readily available food can be important to maintain them in the hospital. A hospital restaurant located in a central place can be both useful for providing meals to staff and visitors and also for informal communications that will improve the teamwork.

5.3. Education

Education is an important area and adequate education and training rooms should be provided in the designed plans. These can be strategically located and equipped with audio-visual material. A library for health literature should be provided. If possible an internet connection should be located in the library. Educational material can be exhibited for the general public in the strategic locations such as in the referrals consultation area.

5.4. Training

Meeting rooms that can also be served as "class-rooms" should be provided.

5.5. Technical support

Caring, house-keeping, centralized sterilization and laundering should be organized effectively in the provision of food, cleaning, and supplies for all the Hospital. A workshop should be provided to maintain equipment and to do any daily building repairs, installation and move of equipment to suit the medical requirements.

5.6. Administration

This can be divided into 2 different locations:

a) One location in close contact with the public for patients records, cashiers etc., directly closed to the admissions place

b) One for hospital management – this does not need to be located in a central location

6. Equipment

All facilities should be designed to take into account the specific requirements of medical equipment, as defined in the "Standard Equipment for the Referral Hospital", Hospital Services Department of the Ministry of Health – Dec. 2003. Except to where indicated in the "Table of Functions and Facilities", all equipment should be mobile.

C. Technical Data to be Provided

The following is standard information to be provided to the Civil Works Group prior to preparing the complete design and formal documents.

1. Reference

Each facility will be given a reference number composed of the Provincial Number, the Operational District Number and the specific health facility number.

2. Site Information:

Location plan showing the location of the health facilities in relation to village, town and road networks including the telecommunication system.

2.1. Size of land

According to WHO standards, a one hundred bed hospital requires 4 hectares of land. This is a minimum and corresponds to the hospital area only, exclusive of staff housing and other facilities. If possible it should be larger to allow for future extension (refer to 5.2.1. above).

2.2. Accessibility and environment

The land should preferably be on major road to ensure easy access by ambulances and should be located in a central service zone with a radius of about 25 km. Attention should be paid to the use of neighboring land to avoid conflicts of usage. If possible it should be grouped with other institutional facilities such as schools. The land should be free from the danger of flooding and other nuisances such as noise and pollution.

2.3. Infrastructure

The site should have telecommunications, main electricity and water supply, or should be in an area where such services are planned in the near future. An abundant and high standard of water is particularly important. If such utilities are not available, substitutes should be adequate such as wells.

The following site information has to be completed for each individual facility:

1. Physical description and land title
2. Land use in adjoining areas
3. Limitations of the site (water and electricity supply)
4. The presence of any landmines or unexploded military equipment, if necessary, a de-mining certificate is needed.
5. The presence of any ancient ruins or artifacts
6. Maps of vicinity, landmarks
7. Existing utilities
8. Nearest city, port, airport
9. Rainfall and data on weather and temperature

From the onset of the study, the potential for the site should be evaluated. The Consultant responsible for civil works should report to the Ministry of Health if the above conditions are not complied with, before going any further in the design process.

3. Site Survey (Survey, showing the physical features of the site)

The following information has to be completed for each individual facility:

3.1. Land boundaries, cardinal directions, GPS and topography, usage of neighboring land.

3.2. Existing buildings, infrastructure, vegetation and any other features, presence of water.

3.3. An evaluation of the potential reuse of existing buildings should be made. Buildings that cannot be rehabilitated as hospital facilities may be used as garages, laundries, stores, temporary accommodation or workshops. If they are unsafe, they must be demolished but they should be considered whether some of their components can be recycled.

3.4. Information about flooding. A site with no apparent drainage problems when bare, may be subject to serious flooding when constructed, if they do not make adequate disposal of rainwater.

3.5. Check soil conditions and resistance.

4. Hospital Operations (Diagram showing the planned development)

The size of the site in relation to the number of beds should be checked e.g. a 100 bed Hospital requires a site of 4 hectares (400 meter square per bed). This is the hospital area only not including any staff housing. The diagram takes into account all the facilities described in the "Table of functions and Facilities" as well as the following:

1. Patient movement
2. Staff movement
3. Medical services
4. Administration

5. Accommodation for staff when applicable
6. Vehicles movement
7. Delivery of supplies
8. Disposal of used goods
9. Laundry services
10. Food services
11. Domestic services (electricity, water supply and waste disposal)
12. Security
13. Engineering services
14. Fire protection
15. Emergency alarm systems
16. Security

5. Site plan (Master Site Plan showing the planned development)

The site plan should be carefully studied to create an organically designed landscaped ensemble integrating water basins, trees, vehicle circulation, walkways, the best possible adaptation of existing buildings and integration of new standard buildings taking into account the tropical climate and dominant winds. Natural features of the site should be taken into account, especially any existing trees, water reservoirs or ponds, topography, roads and fences. The orientation of the buildings will be chosen preferably with long facades facing north and south (for the least direct sunlight). Infrastructure such as the location of sewage treatment, water supply, electricity supply and waste disposal should also be located. Landscaping features will be incorporated into the site plan and specifications.

Where possible, future expansion (phasing) will be taken into account in the design of the master plan.

6. Table of Functions and Facilities (showing plan of accommodation with dimensions etc.)

This describes the building requirements to satisfy the services described in the "Guidelines for the Referral Hospital" February 2003. This is a quantitative table of functions and all the building facilities to be provided. It should be adapted to each specific Hospital for which civil works are programmed, either for rehabilitation or new construction. This table was designed by the Civil Works Group (CWG) of the MoH between July and October 2003. As specified in their meeting of 23.Sep.2003 "the building brief must take into account the potential upgrading of each CPA category". As these evolve, as they will do, so should the building brief – and the table of functions and facilities.

Constraints such as specific activities, wheeled traffic, goods or material, special uses and work flow should be commented.

This table has been designed as a check-list or working document for discussions with users to determine the specific needs of each Hospital in view of completing the information.

Comments about the following constraints, where applicable, should be included in the table:

1. Privacy, supervision, security, fire protection
2. Environment, wind direction, natural and artificial lighting, heat, humidity sterility, cold rooms, sound, ventilation

3. Fixed and movable equipment
4. Electricity, water, ventilation and air-conditioning
5. Flexibility and future extension

7. Preliminary design (showing standard plans for the buildings, and where applicable sketch plans of buildings to be rehabilitated)

8. Cost of civil works and equipment

Approximate cost expectations should be indicated.

This information should be provided to the Civil Works Group of the Ministry of Health before proceeding further with the design of the Hospital.

1. CLINICAL SERVICES 1.1. OUTPATIENTS CONSULTATIONS			Staff	Patients	No	Mech Vent	Air-con	Spec Eq	M2	TOTAL M2	
		The referral consultation receives patients who are referred by the health centre for complementary diagnosis or for health problems that cannot be managed by the health centre Referral consultation should be an autonomous service with its own staff.									
MPA & CPA		When a Health Centre is to be found in proximity to the Referral Hospital, the Outpatients o the Rerreral Hospital only concerns 'referred' patients. In this case, the Outpatients Department of the Rerferral Hospital serves patients from Health Centres and some 'walk-in' patients. When there is no Health Centre within proximity of the RH (at least 3 km) then the Outpatients also provides services within the MPA guidelines. Educational material can be exhibited for the general public in strategic locations such as the referrals consultation area and close to these facilities.									
CPA		Referrals come from Health Centres by ambulance. The access should be clearly signe from the entrance of the Hospital. Admissions are registered by the administration and primary examination and diagnoses of patients so as to direct them to the appropriate department.									
MPA & CPA	1.1.1.	Reception area			1				27		
MPA & CPA	1.1.2.	Administrative office with patients' records for admissions and discharges (shared with Emergency Services - see 1.2.2.) 12m2 + 20m2			1				32		
MPA & CPA	1.1.3.	Dispensary (pharmaceuticals supplied by 2.2. Pharmacy)			1				10		
CPA	1.1.4.	Examination rooms (referred patients) 2 rooms can share a toilet and wash basin (1 = 12M2)			2				24		
MPA & CPA	1.1.5..	Consultation rooms (ante and post-natal, preventive, chronic diseases, family planning, nutrition etc.) 2 rooms can share a toilet and wash basin (1 = 12M2)			4				48		
CPA	1.1.7.	Consultation room - dental (dentist's chair and equipment) Each CPA has a different package of services for dentistry. The room requires to be sealed to accommodate x-ray equipment and to absorb any vibrations from the compressor used with the Dentist's chair that has to be placed oblique in the room. There should be a corner equipped with a sink and a small autoclave for sterilisation.			1			fixed equipment	15		
MPA & CPA	1.1.6.	Consultations for paediatrics, for general health monitoring, parental education, ENT and ARI illnesses prevention. (2 consultations can share a toilet and wash basin)			1				12		
CPA 3	1.1.8.	Consultation - ophtalmology (2 consultations can share a toilet and wash basin)			1				12		
CPA	1.1.9.	Consultation - mental health (2 consultations can share a toilet and wash basin)			1				12		
MPA & CPA	1.1.10.	Consultations for suspected TB patients (2 consultations can share a toilet and wash basin)			1				12		
MPA & CPA	1.1.11.	Meeting room for group discussions for hygiene and health education of the general public (e.g. pregnant women)			1				20		
MPA & CPA	1.1.12.	Sanitary facilities patients (2 toilets with wash basins)			1				6		
MPA & CPA	1.1.13.	Sanitary facilities staff (2 toilets with wash-basins)			1				6		
MPA & CPA	1.1.14.	Store - technical equipt & med supplies			1				10		
MPA & CPA	1.1.15.	Store - house-keeping			1				3		
		TOTAL NET SURFACE								249	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								49.8	
		TOTAL SURFACE - OUTPATIENTS									298.8
1.2.		**EMERGENCY SERVICES DEPARTMENT**	**Staff**	**Patients**	**No**	**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M2**	
		The emergency medicine service provides a high standard of emergency care to those in the community who perceive the need for, or are in need of acute care. This includes what is commonly known as "basic first aid service".									
CPA 1, 2 & 3		This service requires smooth circulation and space that can be converted into small rooms when necessary with rapid access to the Operating Theatre, X ray, ICU and other departments. Provide "clusters" of beds for accidents, obstetrics, paediatrics for 24 hour services: triage, diagnoses, radiology and medical imaging, blood, pharmacy. Patients highl dependent on nursing care should be close to the nursing duty room equipped with portable oxygen and monitoring equipment. It should have easy access to 1.3. Surgical Services (CPA 2 & 3 only) and the central sterile supplies, as well as to 1.6. Obstetrics. For CPA 1, it should be designed so that expansion into Surgical Services as in 1.3. can be realized in th near future.									
	1.2.1.	Ambulance arrival						vehicle access			
MPA & CPA	1.2.2.	Reception office with patients' records for admissions and discharges (to communicate easil with 1.1.2.) and 24 hour a day telephone or radio communications with the OD and Health Centres.							10		
	1.2.3.	Waiting area for attendants							12		
	1.2.4.	Space for stretchers and trolleys to transport patients to the right ward							20		
	1.2.5.	Space for triage respecting patient's privacy (preferably large room that can be divided into small rooms) with medical supplies and basins							24		
	1.2.6.	Patient preparation washing room with shower and 2 toilets							10		
	1.2.7.	Referral consultations medical examination room with toilet and wash-basin accessible by trolleys							16		
	1.2.8.	First-aid and observation ward			4				36		
	1.2.9.	Clean minor emergency operating block (with aseptic procedures & no anaesthesia) complet with changing-room, scrubbing area for two staff and sluice (proximity to surgical operating block in 1.3. for CPA 2 & 3). Roof structure and ceiling design taken into account operating light-fittings. Design should guarantee positive air pressure and be equipped with an air-purifier.					yes	fixed equipment	50		
	1.2.10.	Instrument cleaning-up, washing-trap. Centralized autoclave and sterilisation room (shared with other services) - see 4.2.						fixed equipment	12		
	1.2.11	Resuscitation area to be designed so that specific medical equipment can be hung on the wall behind patients' beds			3			fixed equipment	25		
	1.2.12.	Toilets and showers for male and female staff							8		
	1.2.13	Nursing duty admin room with controlled drug storage and drug preparation areas. It can also be used as a meeting and rest room for 24 hour staff (to be shared with surgical services)							20		

	1.2.14.	Sanitary and shower facilities for staff (to be shared with surgical services)							8		
	1.2.15	Store - mobile equipment (easy access to operating theatre, double doors)							8		
	1.2.16.	Store - technical equipment, laundry & medical supplies							12		
	1.2.17.	Store - house-keeping							3		
		TOTAL NET SURFACE								274	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								54.8	
		TOTAL SURFACE - EMERGENCY SERVICES DEPT									328.8
1.3.	**SURGICAL SERVICES DEPARTMENT & OPERATING THEATRE**		**Staff**	**Patients**	**No**	**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M2**	
		Minor surgery can be performed at all referral hospitals. CPA 2 and CPA 3 hospitals will have major surgical capabilities. The intensive care unit will provide constant medical attention (with specialized equipment) to critically ill patients, such as to control bleeding, to support breathing, to control toxaemia and to prevent or address shock.									
CPA 2 & 3		The surgical unit should be accessible from the 4.2.2. Central sterile supplies, the 1.2. Emergency department and from 1.6. Obstetrics. It should be adjacent to the intensive care unit in a cul de sac with no through traffic. Direct access to 2.4. Imagery unit is required. The circulation of soiled equipment and medical supplies should be separate from clean (linen, people, utensils) ones**.** All operating rooms should have wall and floor resistent to chemical attack.									
	1.3.1.	Consultation office for patients/relatives							12		
	1.3.2	Meeting room for pre-op medical staff							12		
	1.3.3.	Patient preparation room - pre-operation			1				10		
	1.3.4.	Aseptic Operating theatre (with anaesthesia) complete with changing rooms, scrubbing areas for two staff and sluice (proximity to emergency minor operating block in 1.2.9.) Roof structure and ceiling design to take into account operating light-fittings. Design should guarantee positive air pressure and be equipped with an air-purifier.					yes	fixed equipment	84		
	1.3.5	Instrument cleaning-up, washing-trap. Centralized autoclave and sterilisation room in 4.2.2.						fixed equipment	15		
	1.3.6.	Patient recovery room - post-operation			3			fixed equipment	30		
	1.3.7.	Intensive care unit (6 beds minimum to justify sophisticated equipment). The Intensive Car Unit is aseptic, highly equipped, and should be located adjacent to the operating block (1.3.4.). It is exclusively designed for critically ill patients who need constant medical attention. They come either from the operating theatre from wards or the admissions of the hospital. Patients who require long-term intensive care should be referred to a higher-level hospital.			6			fixed equipment	30		
	1.3.8.	Surgical ward for up to 50 patients per month, either under observation or post-operation treatment. Requires space for resuscitation equipment, oxygen etc.			10				90		
	1.3.9.	Nursing duty admin room with controlled drug storage and drug preparation areas. It can also be used as a meeting and rest room for 24 hour staff (to be shared with emergency services 1.2.13.)									
	1.3.10.	Sanitary and shower facilities for staff (to be shared with emergency services) with locker and changing room							20		
	1.3.11.	Store - technical equipment, laundry & medical supplies							10		
	1.3.12.	Store - house-keeping							3		
		TOTAL NET SURFACE								316	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								63.2	
		TOTAL SURFACE - SURGICAL SURFACES DEPT									379.2
1.4.	**CLINICAL AUDIT OF DEATH**		**Staff**	**Patients**	**No**	**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M2**	
		see Mortuary 2.5.									
1.5.	**GENERAL MEDICINE DEPARTMENT**		**Staff**	**Patients**	**No**	**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M2**	
		The Internal Medicine, or General Medicine, unit will provide care for medical conditions fo adults.									
CPA 1, 2 & 3		This ward should be divided up into several units - men/women - chronic/acute disease etc.									
	1..5.1.	Room 1			8				42		
	1.5.2.	Room 2			8				42		
	1.53.	Room 3			8				42		
	1.5.4.	Room 4			8				42		
	1.5.5.	Examination Room with hand-basin (accessible by trolleys)							12		
	1.5.6.	Nursing duty admin room with controlled drug storage and drug preparation areas. It can also be used as a meeting and rest room.							20		
	1.5.7.	Staff toilets showers							8		
	1.5.8.	Patients toilets and showers							12		
	1.5.9.	Store - technical equipment, laundry & medical supplies							10		
	1.5.10.	Store - house-keeping							3		
		TOTAL NET SURFACE								233	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								46.6	
		TOTAL SURFACE - GENERAL MEDICINE DEPT									279.6
1.6.	**OBSTETRICS (& GYNAECOLOGY DEPARTMENT)**		**Staff**	**Patients**	**No**	**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M2**	
		The obstetrics service is responsible for the provision of good quality curative care and delivery for all women, health education on lactation management, family planning, nutritio newborn care.									
CPA 1, 2 & 3		CPA 1 is equipped for an estimated 1.000 deliveries per year. CPA 2 & 3 have over 2.000 deliveries per year. Ambulance access should be provided. This department ensures 24 hou service. The delivery rooms practice aseptic procedures and should be next to the labour and recovery rooms, with direct access to the newborn care unit. This service should be separate from gynaecology. It has easy access to the operating theatre and intensive care un (surgery), a newborn care unit, neonatal resuscitation equipment weighing equipment and measures. Also easy access to X ray and echography and ECG. Ante natal policy in "outpatients". Delivery rooms should have wall and floor resistent to chemical attack.									
	1.6.1.	Examination room with toilet and wash-basin accessible by trolleys							12		
	1.6.2.	Consultation room for family planning, hygiene, nutrition and counselling							12		
	1.6.3.	Mid-wives and nurses duty admin room with controlled drug storage and drug preparatio areas. It can also be used as a meeting and rest room. Should be close to the labour and newborn care unit.							20		
	1.6.4.	Labour room with small rooms and wash-basin, direct access to a toilet. Close to duty room.			3				20		

CPA 2 & 3	1.6.5.	Clean delivery room (with aseptic procedures) divided into 2 parts;"difficult" and "normal" deliveries, with changing room, scrubbing areas for two staff and sluice (no anaethesia, easy access to surgical operating block in 1.3. for CPA 2 & 3) Caesarian sections and surgical operations treated in 1.3. Surgical Services for all CPA's. Roof structure and ceiling design to take into account operating light-fittings. Design should guarantee positive air pressure and be equipped with an air-purifier.								50		
	1.6.6.	Instrument cleaning-up and washing-trap. (4.2. Centralized autoclave and sterilisation room)								15		
	1.6.7.	Neo-natal examination room with cupboard for supplies (resuscitation, post delivery care, bathing, etc.) direct access from deliveries								15		
	1.6.8.	Recovery room. Access from Delivery Room.			2					12		
	1.6.9.	Maternity ward			20					80		
	1.6.10.	Waiting/rest room for fathers & relatives								12		
	1.6.11.	Staff toilets showers								8		
	1.6.12.	Patients' toilets, showers and baby-baths								12		
	1.6.13.	Store - technical equipment, laundry & medical supplies								10		
	1.6.14.	Store - house-keeping								3		
		TOTAL NET SURFACE									281	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION									56.2	
		TOTAL SURFACE - OBSTETRICS DEPT										337.2
1.7.		**GYNAECOLOGY (& OBSTETRICS DEPARTMENT)**	**Staff**	**Patients**	**No**	**Mech Vent**	**Air-con**	**Spec Eq**		**M2**	**TOTAL M2**	
		The gynaecology service is responsible for the provision of good quality curative care.										
CPA 1, 2 & 3		This ward should be separate from obstetrics. CPA 1 treats miscarriage, haemmorage, infections etc. CPA 2 & 3 treats medical and surgical cases. Should be easily accessible from Surgical Unit.										
CPA 1	1.7.1.	Ward			10					40		
CPA 2 & 3	1.7.2.	Ward			20					80		
	1.7.3.	Examination room with hand-basin and toilet.								12		
	1.7.4.	Nursing duty admin room with controlled drug storage and drug preparation areas. It can also be used as a meeting and rest room.								20		
	1.7.5.	Staff toilets showers								8		
	1.7.6.	Patients toilets and showers								12		
	1.7.7.	Store - technical equipment, laundry & medical supplies								10		
	1.7.8.	Store - house-keeping								3		
		TOTAL NET SURFACE									185	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION									37	
		TOTAL SURFACE - GYNAECOLOGY DEPT										222
1.8		**PAEDIATRICS DEPARTMENT**	**Staff**	**Patients**	**No**	**Mech Vent**	**Air-con**	**Spec Eq**		**M2**	**TOTAL M2**	
		The Paediatrics Unit will provide care for neonates and children, and health education for parents. It should be as satisfied as possible to take into account the comfort of children.										
CPA 1, 2 & 3		All beds should be adult beds to allow for mothers to lie with their children and care for them. The isolation rooms should be carefully located to avoid contact with other patients.										
CPA 1	1.8.1.	Ward for 0 - 1 years			5					25		
CPA 1	1.8.2.	Ward for 2 - 5 years			6					30		
CPA 1	1.8.3.	Ward for 6 - 16 years			6					30		
CPA 2 & 3	1.8.4.	Ward for 0 - 1 years			7					35		
CPA 2 & 3	1.8.5.	Ward for 2 - 5 years			10					40		
CPA 2 & 3	1.8.6.	Ward for 6 - 16 years			10					40		
	1.8.7.	Newborn care unit, aseptic, with 2 incubators and sink (non accessible except for staff) equipped with glass screen for parental viewing. Close to Duty room.			2		yes			10		
CPA 2 & 3	1.8.8.	Isolation rooms for infectious diseases complete with resuscitation equipment and hand-basin			3					15		
	1.8.9.	Examination room with hand-basin								12		
	1.8.10.	Nursing duty admin room with controlled drug storage and drug preparation areas. It can also be used as a meeting and rest room.								20		
	1.8.11.	Relaxation corner for child play and parent education about nutrition and hygiene								12		
	1.8.12.	Child washing area								8		
	1.8.13.	Staff toilets showers								8		
	1.8.14.	Patients' attendants toilets and showers								12		
	1.8.15.	Store - technical equipment, laundry & medical supplies								10		
	1.8.16.	Store - house-keeping								3		
		TOTAL NET SURFACE									310	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION									62	
		TOTAL SURFACE - PAEDIATRICS DEPT										372
1.9.		**INFECTIOUS DISEASES DEPARTMENT**	**Staff**	**Patients**	**No**	**Mech Vent**	**Air-con**	**Spec Eq**		**M2**	**TOTAL M^2**	
		This department, is responsible for curative care for tuberculosis patients, health promotion on tuberculosis and testing as well as other diseases such as malaria, dengue etc. In CPA 3, this service can be looking at broader illnesses of the lung, in other words it can be a pneumology service. Due to the lengthy duration of treatment patients should be provided with space for relaxation.										
CPA 1, 2 & 3		Infectious Diseases/Tuberculosis ward – 20 – 50 beds – TB testing to be done in the Hospital Laboratory. The location of this department should be carefully considered so as to clearly separate these contagious patients from others without ostracizing them. The dominant wind should be taken into account in the location of this ward to avoid propagation of germs.										
	1.9.1.	Ward - divided into 4 sub-wards each with a hand-basin			32					180		
	1.9.2.	Examination room with hand-basin								12		
	1.9.3.	Isolation room for extremely contagious patients equipped with resuscitation equipment			3					15		
	1.9.4.	Nursing duty admin room with controlled drug storage and drug preparation areas. It can also be used as a meeting and rest room.								20		
	1.9.5.	Relaxation room for patients "on the mend"								15		
	1.9.6.	Staff toilets showers								8		
	1.9.7.	Patients toilets and showers								12		

	1.9.8.	Store - technical equipment, laundry & medical supplies							**10**		
	1.9.9.	Store - house-keeping							**3**		
		TOTAL NET SURFACE								**275**	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								**55**	
		TOTAL SURFACE - TUBERCULOSIS									**330**

2. PARACLINICAL SUPPORT SERVICES											
2.1.	**LABORATORY**		**Staff**			**Mech Vent**	**Air-con**	**Spec Eq**	**M^2**	**TOTAL M^2**	
		The laboratory service is organised and administered to provide high quality clinical laboratory and diagnostic services appropriate to the clinical services provided by the facility: the microbiological, haematological, and biochemical investigations needed in connection with medical and surgical activities in the hospital. Each CPA has a different package of services.									
CPA 1, 2 & 3		Aims to operate 24 hours/day. The source of water should be checked for compatibility witl medical equipment and tests. (TB, anatomy, haematology, clinical pathology, microbiology) Should be easily accessible from the Operating Theatre. Access should be well ventilated and sunlighted to ensure clean air.	2 to 10								
	2.1.1.	Laboratory, secure, with at least 20M x 1M work table divided into 4 partitioned areas for specific tests with 2 sinks. Sterilisation - necessity for pressure cooker and hot-air oven. TB microscope should have good source of natural light.				**yes**	**yes**	**fixed equipment**	**60**		
	2.1.2.	TB smear preparation room with counter and window giving onto the public circulation fo staff to hand in samples.				**yes**			**12**		
	2.1.3.	Office							**10**		
	2.1.4.	Medical examination room							**10**		
	2.1.5.	Toilets for patients (1 men, 1 women) accessible from examination room							**6**		
	2.1.6.	Store				**yes**	**yes**		**8**		
		TOTAL NET SURFACE								**106**	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								**21.2**	
		TOTAL SURFACE - LABORATORY									**127.2**
2.2.	**PHARMACY**		**Staff**		**No.**	**Mech Vent**	**Air-con**	**Spec Eq**	**M^2**	**TOTAL M^2**	
CPA 1, 2 & 3		Every referral hospital has its own pharmacy service. The pharmacy should be administered by a qualified pharmacist. The pharmacy is organised for an efficient procurement, storage, distribution of drugs within the hospital, and to provide the assurance of appropriate drug usage. A constant drug supply promotes effective health care and inspires confidence in the health facility. Good inventory control makes ordering and drug management easier.									
CPA 1, 2 & 3		Also see 1.1.3. Dispensary, 4.6. Warehouse Storage and nursing duty rooms. The pharmacy is supplied on a daily basis from the Hospital Warehouse and redistributes supplies to the Hospital Departments. Storage for pharmaceuticals, fluids, medical supplies, equipment and miscellaneous – with temperature < 30 C (preferably air-conditioned dust-free room) with thermometers for temperature control, humidity control. Refrigerator for vaccines, blood products, diagnostic testing equipment and some drugs, special conditions for storage of X ray film, secure, with stable electrical supply, clean water, equipped with shelving and air-compressor for equipment cleaning. Aims at 24 hour service. To guarantee correct dispensing provide locked night cabinet with minimum amount of drugs for emergencies. Provide necessary space for the admin of the pharmacy. Should be easily accessible from th Operating Theatre.									
	2.2.1.	Dispensary for medical supplies to Hospital departments only.			**1**				**10**		
	2.2.2.	Pharmacist's office (not partitioned from 2.2.1.)			**1**				**12**		
	2.2.3.	Pharmaceutical Store, secure, equipped with work table, sink and refrigerator (blood products, vaccines, drugs etc)			**1**	**yes**	**yes**		**18**		
		TOTAL NET SURFACE								**40**	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								**8**	
		TOTAL SURFACE - PHARMACY									**48**
2.3.	**BLOOD FACILITY** (CPA 3 only - separate building)		**Staff**		**Beds**	**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M^2**	
		Every Referral Hospital should be provided with adequate blood transfusion services. Blood services are adapted with the particular level of CPA provided by the RH: in hospitals with CPA2 with less surgical activity (eg 10 or less blood transfusions per month) and when geographical circumstances allow it (less than 1 hour time-distance form next provincial blood transfusion centres) these services could be limited to the level of "blood-depot" (such as is provided for within the Laboratory). Blood services are provided on a 24 hour basis.									
CPA 3		This service concerns a complete unit for blood donations, testing, conditioning and distributing and is a separate building that does not necessarily have to be located close to th other services of the Referral Hospital (2.3.4.-2.3.6. can be integrated into 2.1. Laboratory depending on the proximity of the nearest Blood Facility)									
	2.3.1.	Waiting room							**12**		
	2.3.2.	Medical examination and blood taking			**2**				**12**		
	2.3.3.	Rest room for donors			**2**				**12**		
	2.3.4.	Laboratory with blood bank and refrigerators equipped with external thermal captors				**yes**		**fixed equipment**	**24**		
	2.3.5.	Storage				**yes**			**9**		
	2.3.6.	Guard (not necessary when in the Hospital compound)							**9**		
		TOTAL NET SURFACE								**78**	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								**15.6**	
		TOTAL SURFACE - BLOOD FACILITY									**93.6**
2.4.	**IMAGERY**		**Staff**	**No**		**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M^2**	
		Every referral hospital should have a Medical Imaging Service with an X-ray unit and when possible an ultra-sound unit. It should be easily accessible from the Emergency and Surgical Departments. Appropriate selection of imaging methods and correct interpretation are done in consultation with concerned medical consultants. This service should adhere to radiation safety principles relating to both patients and staff safety. X-rays are the first choice of imaging equipment. The radiographs are recorded on well preserved X-ray film. X-rays can image the lungs, skeleton, kidneys, gall-bladder and bowel. X-rays use ionizing radiation, with potential risk to personnel and patients. Ultrasound shoud be the additional imaging equipment. Ultrasound cannot image the lungs or skeleton but it is of greatest importance in obstetrics and for imaging the liver, kidneys, pancreas, gall-bladder and pelvic contents. Ultrasound, as far as is no known, carries no risk to patients or personnel.									
CPA 1, 2 & 3		This service, managed by at least one physician and one technician, should have easy covere access for wheel-chairs, patient trolleys and beds - preferably close to the emergency room. Proper electrical power is required. It comprises an X ray and echography room plus X ray dark room and office, storage space for mobile X ray equipment (eg during surgery), hand-washing and toilet.	**2**								
	2.4.1.	X Ray Room (air-tight with protective masonry, double metal doors, no windows)				**yes**	**yes**	**fixed equipment**	**30**		
	2.4.2.	Observation post for technician with plate-glass screen							**8**		

	2.4.3.	Dark Room equipped with aspirator, image storage cabinet and sink							8		
	2.4.4.	Echography Room with desk, examination bed and echography				yes	yes	fixed equipment	12		
	2.4.5.	Consultation room							10		
	2.4.6.	WC for patients (echography)							2		
	2.4.7.	Storage space forone-year imagery archives							10		
	2.4.8.	Storage space for mobile equipment (kept in Emergency unit)							0		
		TOTAL NET SURFACE								80	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								16	
		TOTAL SURFACE - IMAGERY									96
2.5.	**MORTUARY**		**Staff**	**Beds**		**Mech Vent**	**Air-con**	**Spec Eq**	**M^2**	**TOTAL M^2**	
		The Mortuary will be kept to a standard that is acceptable in terms of hygiene and dignity of the dead, and that is unobtrusive to patients in general.									
CPA 1, 2 & 3		This should be sited on the periphery of the hospital grounds, preferably close to the gate, with easy covered access by vehicles and a visitors waiting/viewing room. The building should be designed with a small landscaped garden and hedge to create intimacy. CPA 3 Referral Hospitals only practise autopsies and require refrigerated body store, staff changing space with showers and toilets, autopsy room, cleaning materials storage room, and easy access to incinerator.									
CPA 1, 2 & 3	2.5.1.	visitors waiting/viewing room, divided into 2 partitioned areas		2					15		
CPA 3	2.5.2.	refrigerated body store (4.50 large x 7.00 with double doors)		1				fixed equipment	32		
CPA 3	2.5.3.	staff changing space with toilets and showers							10		
CPA 3	2.5.4.	autopsy room with autopsy table and sink		1				fixed equipment	15		
CPA 3	2.5.5.	storage room with cleaning facilities for equipment							8		
CPA 1, 2 & 3	2.5.6.	cleaner's room							8		
		TOTAL NET SURFACE								88	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								17.6	
		TOTAL SURFACE - MORTUARY									105.6

3. ADMINISTRATIVE SUPPORT AREAS												
3.1. ADMINISTRATION			**Staff**			**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M²**		
		Management should organize and manage the resources allocated to the hospital to achieve the best possible quality of patient care. This concerns both the material and human resources. The ongoing maintenance, attribution and good-use of equipment and buildings, as well as efficient human resources management, staff coordination and training are important contributory factors to the efficiency of the hospital.										
CPA 1, 2 & 3		Part of the administrative staff should be located in the referral admissions area to handle patients' records and health care charges. The main management staff of the Hospital need not be located in direct contact with medical facilities.										
	3.1.1.	Lobby for informal receptions and visits of large groups (e.g. stakeholders) with receptionist	**1**						**50**			
	3.1.2.	Offices for administrative staff (Director, Vice-Director and Unit Chiefs)	**3**						**25**			
	3.1.3.	Office Clinical Director	**1**						**12**			
	3.1.4.	Offices for senior medical and nursing staff	**7 to 8**						**50**			
	3.1.5.	Staff and tea room with kitchenette (sink unit)							**30**			
	3.1.6.	Meeting room for staff meetings, and management committees							**50**			
	3.1.7.	Sanitary facilities, showers and toilets for staff with changing rooms and 100 lockers							**50**			
	3.1.8.	Archives for "one year" records, if possible computerized (in admissions office see 1.1.2.)										
	3.1.9.	Archives for "2-5 year" records - see 4.7.(equipped with four 5M rows of suspended files and imagery records							**60**			
		TOTAL NET SURFACE								**327**		
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								**65.4**		
		TOTAL SURFACE - ADMINISTRATION										**392.4**
3.2. TRAINING (CPA 3)			**Staff**			**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M²**		
CPA 3		It is important to provide education and training rooms in the plans. These can be strategically located and equipped with audio-visual material. A library for health literature should be provided. If possible an internet connection should be located in the library.										
	3.2.1.	Training room for 30-40 people							**50**			
	3.2.2.	Small library for medical books and maintenance manuals of medical equipment							**15**			
	3.2.3.	Toilets							**8**			
	3.2.4.	Storage for projection and video equipment							**6**			
		TOTAL NET SURFACE								**79**		
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								**15.8**		
		TOTAL SURFACE - TRAINING										**94.8**
3.3. EDUCATION												
CPA 1, 2 & 3		Educational material can be exhibited for the general public in strategic locations such as the referrals consultation area and close to these facilities (see 1.1. Outpatients Consultations).										

4. TECHNICAL SUPPORT SERVICES												
		These services require easy access by vehicles. They are an important contributor to the good running of the Hospital. Providing specific facilities will encourage their implementation.										
4.1.	**KITCHEN/CATERING**		**Staff**			**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M²**		
		The referral hospital supplies meals to the patients. The kitchen should prepare hygienic and nutritious meals for patients and staff. A kitchen should be available for the patients' families and be convenient and secure. The canteen can be a hub for informal meetings of staff and contribute to their well-being when on duty for long periods of time.										
CPA 1, 2 & 3		This service can be contracted out if necessary. A high standard of food should be maintained. This can be an incentive for some patients to remain hospitalized for the full duration of treatment for tuberculosis as an example. A convivial place, or canteen, to eat and drink is important for staff who spend long hours in the Hospital. It is also conducive to good relations and informal professional exchanges. The canteen should be visible to outside customers and located as a focus point.										
	4.1.1.	Kitchen area – for preparation of meals for staff and patients (though often supplied by visitors)							**35**			
	4.1.2.	Kitchen store							**20**			
	4.1.3.	Canteen to seat 50 - for all hospital users can be an external "sala"							**100**			
	4.1.4.	Space for food trolleys for meal delivery							**12**			
	4.1.5.	Toilets and wash basins for kitchen staff							**8**			
	4.1.6.	Waste disposal							**4**			
		TOTAL NET SURFACE								**179**		
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								**35.8**		
		TOTAL SURFACE - KITCHEN AND CATERING										**214.8**
4.2.	**LAUNDRY & STERILISATION**		**Staff**			**Mech Vent**	**Air-con**	**Spec Eq**	**M²**	**TOTAL M²**		
		Although many hospitals do not have bed linen at present, the situation can be improved over years to come. Uniforms, medical gowns and patients' gowns for operations, clearly require proper cleanliness. Dirty and clean laundry use separate containers and any contaminated material (body fluids, infectious patients) should be identified and treated separately.										
CPA 1, 2 & 3		This service can be contracted out if necessary. A high standard of laundering is necessary to ensure aseptic standards for surgical gowns, towels and bed linen (if any). Clothes washing should in no event be mixed up with bathrooms and toilets. This is not compatible. An external clothes washing area can be provided for visitors and attendants.										
	4.2.1.	Laundry – equipped with clothes washing tubs and washing machines (provide plumbing for at least 2 heavy duty washing machines) guaranteeing sterilisation of sheets, towels and gowns						**fixed equipment**	**30**			
CPA 1, 2 & 3	4.2.2.	Centralized sterilisation unit: sterilisation equipment, equipped with one 90 litre capacity high pressure steam steriliser to work with both gas and/or electricity. Preparation of sterile supplies to emergency, surgery and maternity services complete with water supply and sink. (CPA 3: two 90 litre capacity high pressure steam sterilisers)						**fixed equipment**	**20**			
	4.2.3.	Storage for clean laundry and supplies (each Dept has its own laundry and garments identified by tags)				**yes**			**20**			
	4.2.4.	External well-exposed shed for drying washing										
	4.2.5.	Space for dirty and clean carts for delivering laundry							**12**			
		TOTAL NET SURFACE								**82**		
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								**16.4**		
		TOTAL SURFACE - LAUNDRY & STERILISATION										**98.4**
4.3.	**HOUSE-KEEPING**		**Staff**			**Mech Vent**	**Air-con**	**Spec Eq**	**M2**	**TOTAL M²**		
		The most important factor contributing to a good standard of hygiene, is good hospital design. This implies good spatial design, separate circuits for staff and patients, dirty and clean supplies, easy waste disposal. It also means easily cleaned finishes have been chosen for all building surfaces										
CPA 1, 2 & 3		A high standard of cleaning of all hospital facilities is necessary and the staff for this work should be provided with adequate space for storing cleaning equipment and supplies. Each department will have a store for cleaning equipment but stocks of supplies and electrical cleaning equipment will be kept here. The laundry, sterilisation and house-keeping can be grouped together.										
	4.3.1.	Space for storage of cleaning equipment and cleaning products							**12**			
	4.3.2.	Rest room for house-keeping staff with toilet and shower							**20**			
		TOTAL NET SURFACE								**32**		
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								**22.8**		
		TOTAL SURFACE - HOUSE-KEEPING										**54.8**
4.4.	**WASTE MANAGEMENT**		**Staff**					**Spec Eq**	**M²**	**TOTAL M²**		
		The management of waste should be designed to reduce the risk of infection to both patients and staff. This system will be an integral part of the facility's infection control programme. For efficiency, the flow of hazardous and non hazardous waste should be carefully studied so that it does not have to travel large distances within the hospital.										
CPA 1, 2 & 3		It is necessary to segregate hazardous waste from non hazardous by having separate easily identifiable containers. Non-hazardous waste comprises bio-degradables that should be put into red bags and incincerated in the RH incinerator. Hazardous waste comprises of 2 categories: 1. any infectious contaminated material from clinical services, objects soiled by body fluids, human tissues, laboratory waste including post mortem. This should be put into black bags and incinerated on the premises. 2. sharps in safety boxes, pharmaceuticals and chemicals should be put into special bags and taken to a Provincial site for destruction in SICIM incinerator at + 800 celsius. Non-toxic waste can be disposed of through land-fill as long as this is correctly managed.										
	4.4.1.	Incinerator - to be provided on the periphery of the hospital grounds with easy vehicle access and a discreet location										
	4.4.2.	Sharps are hazardous and should be disposed of into safety boxes that can be collected and disposed of through incineration. Each Province has 2 or 3 SICIM incinerators where hazardous waste can be destroyed.										
	4.4.3.	Enclosure with tanking for waste storage before disposal - toxic and non toxic (no contaminated water should filter into the ground)										
4.5.	**GARAGE**		**Staff**			**Mech Vent**	**Air-con**	**Spec Eq**	**New**	**TOTAL M²**		
		All Referral Hospitals must have at least two vehicles: - an ordinary car for general purposes - an ambulance in good condition for specific medical transportation that is on stand-by 24 hours a day										
CPA 1, 2 & 3		These services obviously require easy access for vehicles and can be located on the periphery of the site.										

	4.5.1.	Garage – ambulance and car							40		
	4.5.2.	Guard's accommodation and driver's sleeping quarters including toilet and shower							12		
		TOTAL NET SURFACE								52	
		ADDITIONAL 20% FOR ACCESSORIES AND CIRCULATION								10.4	
		TOTAL SURFACE - GARAGE									62.4
4.6.	**WAREHOUSE STORAGE, MAINTENANCE AND EQUIPMENT**		**Staff**			**Mech Vent**	**Air-con**	**Spec Eq**	**M^2**	**TOTAL M^2**	
		Maintenance and repairs have a great impact on the expected life span of medical and non-medical equipment. Equipment failures can be due to improper utilization, and absence of, or inadequate, maintenance. Repair can be a serious cause of expense for the hospital and will affect the quality of medical care. Pharmaceuticals are ordered and delivered periodically from Operational District Pharmacy Stores.									
		All these facilities require vehicle access for deliveries. Pharmaceutical and medical supplies, equipment storage and maintenance have to be kept impeccably clean.									
CPA 1, 2 & 3	4.6.1.	Warehouse for storage can be calculated on a ratio of 2M2 per bed to include pharmaceuticals, furniture, anaesthesia equipment, archives for "2-5 year" health records equipped with four 5M rows of suspended files. Provide air-con for pharmaceuticals - 50m2 for 50 beds, 75m2 for 100 beds. Storage for pharmaceuticals (CPA 2 & 3), fluids, medical supplies, equipment and miscellaneous should have temperature < 30 (preferably air-conditioned dust-free room) with thermometers for temperature control, humidity control. Refrigerator for vaccines, blood products, diagnostic testing equipment and some drugs, special conditions for storage of X ray film, secure, with stable electrical supply, clean wate equipped with shelving and air-compressor for equipment cleaning. Separate areas for receip and unpacking of deliveries of goods. Provide vault/safe for drugs of addiction and computer for management of stocks.				**yes**	**50**	**fixed equipment**	**200**		
CPA 1, 2 & 3	4.6.2.	Maintenance workshop for medical equipment equipped with water supply, working sink, essential tools and measurement equipment. This has to be dust-free and therefore air-conditioned. It should be equipped with a computer to ensure the implementation of the equipment maintenance guidelines. CPA 3 requires 50M2.					**yes**		**30**		
CPA 2 & 3	4.6.3.	Storage for medical equipment dust-free and air-conditioned.					**yes**		**30**		
CPA 1, 2 & 3	4.6.4.	Maintenance and engineering workshop for buildings and grounds equipped with wate supply, working sink, tools and repairs equipment for minor building repairs and maintenance, electrical and plumbing, externals. This should be equipped with a computer t ensure the implementation of the building maintenance manual.							**50**		
CPA 1, 2 & 3	4.6.5.	Storage for building supplies and equipment							**60**		
CPA 1, 2 & 3	4.6.6.	Archives for "2-5 year" records (equipped with four 5M rows of suspended files) - see 3.1.8-9							**30**		
		TOTAL NET SURFACE								400	
		ADDITIONAL 10% FOR ACCESSORIES AND CIRCULATION								45.2	
		TOTAL SURFACE - WAREHOUSE STORAGE, MAINTENANCE & EQUIPMENT									445.2

5. VISITORS AND STAFF QUARTERS												
CPA 1, 2 & 3		In rural areas the provision of accommodation for the staff is indispensable, but it should remain strictly under the control of the administration who should determine which hospitals qualify for such facilities. Families and attendants play an important role in caring for patients and should be provided with shelter and sanitation.										
	5.1.	Residence for Hospital Director										
	5.2.	Medical staff accommodation										
	5.3.	Accommodation for visitors, trainees and attendants										
6. EXTERNALS AND INFRASTRUCTURE												
6.1.	**ELECTRICITY**											
		The electrical systems within the facility will be convenient and designed for the safety of both patients and staff, to International standards, and these will be integral to the building plans of the hospital. The electrical and water installations are closely connected, as water needs energy to be pumped. Therefore the two should be studied conjointly. Cambodia's standard distribution is 220-240 V.										
		In all circumstances at least two sources of electricity are required to guarantee back-up in case of failure. **Mains supply and generators:** As is often the case if electricity mains supply is not available, other sources need to be used to generate a stable and sufficient supply in the form of generators (usually 25kVA for an 80 bed hospital). Even when mains supply is available, emergency generators have to be provided to ensure continuous functioning of medical equipment and services. In remote areas hospitals may be tempted to rely entirely on fuelled electricity generators, but even this is not totally reliable as there are often problems in procuring fuel due to lengthy administrative procedures or bad roads. **Alternative sources:** All these factors argue in favour of turning to one of the most readily available sources in Cambodia – the sun. The Cambodian climate lends itself ideally to solar energy and although the initial investment is high, cost analysis over a period of five years demonstrates its cost effectiveness in the long term. Maintenance and running costs are also low. **Distribution:** All facilities should be provided with a sufficient number of electrical circuits to take into ac										
		Cost-effectiveness: For each hospital, the cost-effectiveness of various different solutions should be studied before deciding on the best choice. In some cases specific functions such as water-pumps or air-conditioning of the operating theatre, laboratory and pharmacy store, can be envisaged with solar energy, even if the whole Hospital were not equipped.										
CPA 1, 2 & 3	6.1.1.	When possible install mains electricity supply										
	6.1.2.	Electricity generator to guarantee stable electricity supply and/or back-up (usually 25kVA generator for 80 bed hospital) Can be housed in Garage or Maintenance Building										
	6.1.3.	Envisage solar panels to complement electricity supply, or in certain cases generators t complement solar energy										
	6.1.4.	House in appropriate easily accessible building (garage, workshop etc.)										
6.2.	**TELECOMMUNICATIONS AND INTERNAL COMMUNICATIONS**											
CPA 1, 2 & 3		Telecommunications are evolving every day in Cambodia and available systems are likely to change fast over the next few years. All hospitals require 24 hour a day communications with District Health Centres. Adequate solutions should be found for each location.										
	6.2.1.	Where possible provide fixed telephone lines, (one for internet connection , another one for calls); if not, mobile phones. In remote areas provide radio phone for link up between hospital and health centres. This requires a 50M high mast equipped with a lightning conductor. Install close to the emergency room.										
	6.2.2.	An internal electronic communications system (or staff messenger) should be installed for medical staff as well as an emergency call system for patients.										
6.3.	**WATER**											
CPA 1, 2 & 3		Water is the most important pre-requisite for running a hospital. Provision of safe, potable water contributes to the well-being of patients and reduces the risk of infections and propagation of diseases such as dysentery, gastro-enteritis and other water-borne diseases.										
CPA 1, 2 & 3		There are three basic functions regarding water supply: collection, treatment and distribution The normal requirement is 15.000 litres/day for a 100 bed RH to cover the needs of patients, staff and visitors. Adequate water is vital to the Hospital's functioning. An assessment of the available resources should be made before deciding on the best solution for each Hospital.										
		1. Water collection: - preferably mains supply - if not available, ground (tested well-water at minimum 25M – 75M to locate the aquifer) equipped with pumps - surface water with water treatment filter to guarantee quality water with the right pH - rain water can be channelled off from roofs and stored in stainless steel water tanks with a capacity of 15.000 litres - reservoirs as an emergency source of water and also for fire-fighting and landscape maintenance should be supplied. Excess rain water can be drained into these to ensure good drainage and to avoid flooding. 2. Water treatment: All these sources of water require regular testing to ensure their quality; the right ph and mineral content (and absence of arsenic or other chemicals). Well water may need no treatment, but surface water and rain water both require filtering before distribution. 3. Water distribution: Water should be cool & distributed at a pressure of 3.5kg/cm2.										
	6.3.1.	Water supply – preferably mains supply, but if not available, ground or surface										
	6.3.2.	Wells - when other sources of drinking water are not available well-water can be provided from the aquifer - water pump						**define**				
	6.3.3.	Water treatment system may be necessary to eliminate germs, minerals and guarantee the right ph.						**define**				
	6.3.4.	Provide reinforced twin concrete cylindrical sealed tanks to collect roof water - capacit 40.000 l x 2 = 80.000 litres. Alternative could be stainless steel 15.000 litre.										
	6.3.5.	Water distribution system normally 3.5kg/cm2										

	6.3.6.	Water reservoir with storage for 36 hours supply equipped with water pump for efficien distribution.						**define**				
	6.3.7.	Tanks - water reservoirs should be provided for buildings and landscape maintenance, fire-fighting and emergency water supply from rainwater. They should be stocked with aquatic plants and fish and not used for washing.										
		The sanitary systems within the facility will be convenient and designed for optimum remov of all human waste, and will be an integral part of the building plans of the hospital										
		There are three categories of disposable water: 1. rain 2. septic and dirty water (from surgical sluices, kitchen drains, laundry etc.) 3. sewage. They all require to be treated separately.										
	6.3.8.	Rain water should be disposed of separately from sewage and septic water, preferably int open ponds that can serve as reservoirs with the overflow into public drainage (see 6.3.6 & 6.3.7.)										
	6.3.9.	Rainwater should be collected in "storm drains" around the perimeter of buildings to avoid infiltration into the foundations and walls. Open gutters covered with concrete slabs make for easy maintenance.										
	6.3.10.	Water treatment – septic and dirty water should be filtered and decanted to remove any fatt substances. This water can then be added to sewage and treated in a bacterial operated septic tank and filter system, with clean water overflows, located in the grounds of the hospital										
6.4.	**EXTERNALS**							**Spec Eq**				
CPA 1, 2 & 3		Good master site plans and quality site works make a considerable difference to the quality and functioning of the Hospital as a whole. Locating vehicle access carefully for the different departments, providing protected walkways, and siting the buildings of the Hospital well are factors to make it more efficient, more pleasant, and more successful.										
	6.4.1.	Fence should be simple but well built to need low maintenance										
	6.4.2.	Gate should measure at least 4M wide (2x2) and be well designed to need low maintenance. The entrance and exit should be by the same gate for security purposes.										
	6.4.3.	Landscaping should be carefully thought out for the beautification of the site but also for easy maintenance, taking into account trees for shade to buildings to improve climatic response, water basins for heavy rain disposal and as reservoirs, the choice of appropriate materials for walkways etc. Planting is an important aspect of efficient building and site design. The provision of shade trees supplements building design by assisting in the formation of "cool" areas and providing shade for the external walls of buildings, thus making them cooler. They also improve the general aspect of the Hospital as shady, informal, external meeting places. Appropriate finishes should be chosen for external places, pathways, gutters and roads.										
	6.4.4.	Signage should be clear at all levels from external signage to indicate the presence of the Hospital to signage to the emergency and outpatients. All facilities should be clearly signed.										
	6.4.5.	Access road - the internal vehicle circulation should be carefully studied to separate th circulation of vehicles from people. Adequate finishes and drainage should be incorporated in the construction.										
	6.4.6.	Car park - provide adequate parking space for cars and motorbikes at strategic places in the site design.										
	6.4.7.	Paths. In the case of modular buildings they can be connected by covered walkways. They should be finished with adequate easily maintained materials and drainage.										
	6.4.8.	External lighting - especially of access roads and entrances to buildings should be provided										
	TOTAL APPROXIMATE SURFACE OF RH											**4380.8**

	6. External Parts and Infrastructure									
6.4.	External Parts							Spec Eq		
CPA 1, 2 & 3		Good master plan and quality of work will make a remarkable difference for both quality and the entire operation of the hospital. Careful design of entry access for vehicles to allow pedestrian walks and facility locations, making effectiveness, comfort, and success								
	6.4.1.	Simple but steady fence, spending less for maintenance.								
	6.4.2.	Door entrance is at least 4 meters wide and less expense for maintenance. For security reason, exit and entry should be on one way								
	6.4.3.	Landscape design should be taken into consideration of overall beauty of the facility and easy to be maintained. Trees provide shade and enhance atmosphere; a pond holds raining water as a reservoir; etc. Planting trees is the important aspect of a facility design. Tree shade makes the surroundings cold, enhancing overall beauty of the hospital and it is a place where people meet and chat.								
	6.4.4.	There should be clear signs of direction, starting form outside the hospital to the inside areas indicating emergency care ward and out-patient consultation. All facilities must have signs.								
	6.4.5.	Entry: the hospital traffic should be carefully studied and designed.								
	6.4.6.	Parking: Appropriate parking areas for vehicles and motorbikes in the hospital design								
	6.4.7.	Pedestrian path: For separate buildings, a pedestrian path that links the two buildings must be covered by a roof. The path should be designed with sewage system.								
	6.4.8.	External light: Especially at the entry-exit way to the hospital and to different wards.								
	Total Surface of the hospital									4381

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