PRINCIPLES OF DISTRICT HOSPITAL PLANNING

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ABSTRACT

Introduction: A district hospital is a secondary referral level responsible for a district. To build a district hospital, adequate planning, design, management and maintenance are required. This article provides essential principles for planning district hospital services, pertinent to national health planners, managers and district team leaders as well as international agencies interested in district hospital services planning.

Methodology: A literature review was conducted through manual search, online database and related reports, articles, journals and other related publications pertaining to the principles of district hospital planning were reviewed. Sources were mainly from World Health Organizations (WHO) and Ministry of Health (MOH) Malaysia. Keywords used were district hospital, hospital planning, services planning, and principles.

Result: There are three main sections on district hospital services planning discussed in this article. The first section provides an overview of district hospital services consisting of the history, classification, roles and functions of district hospitals. The second section discusses the general principles of district hospital planning that includes the planning steps, services planning, equipment planning and manpower planning. The district hospital planning steps consist of briefing stage, design stage, construction stage, testing and commissioning stage, operation and post-occupancy evaluation. The final section discusses about district hospital operational policy. Other important aspects of a district hospital planning are disaster preparedness and hospital efficiency.

Conclusion: District hospital services’ planning is a complex process in which various aspects need to be taken into account throughout the course. Therefore, comprehensive planning which requires a multidisciplinary approach is essential to ensure a district hospital functions efficiently and the population benefits from the services provided.

Keywords: District hospital, hospital planning, services planning, principle, Malaysia
1.0 INTRODUCTION

The WHO had acknowledged the districts as the most practical approach towards achieving universal health coverage. The district provides an excellent organizational framework to introduce changes towards an effective and affordable health system (WHO, 1998). The district health systems form the basis of overall health structures and the role of district health facilities particularly district hospitals are crucial in a country’s health system. More specifically, a district hospital is a secondary referral level hospital responsible for a district of a defined geographical area containing a defined population (Ministry of Health & Family Welfare Government of India, 2012). To build a district hospital, there is need to ensure that there is adequate planning, design, management and maintenance of these facilities (WHO, 1998). Thus, this article aims to provide the principles necessary in planning for district hospital services to guide national health planners, managers and team leaders in the districts as well as international agencies interested in district hospital services planning.

2.0 MATERIALS AND METHODS

The information used in this manuscript was obtained from manual searches and also online databases such as Google Scholar, CINAHL and PUBMED. Reports, articles, journals and other related publications pertaining to the principles of district hospital planning were explored. The main sources are from the publications of academic institutions and international organizations such as the WHO and supported by facts from the MOH Malaysia and ministries of health from various other countries. The keywords used were district hospital, hospital planning, services planning, and principles.

3.0 RESULTS AND DISCUSSION

This section will firstly describe the overview of district hospitals in general including its historical background, the organizational structure and subsequently the classification of district hospitals. This section also covers the standard services that district hospitals should have and the roles and functions of a district hospital. Next is the section on district hospital planning which discusses about the roles of the project management team, the hospital planning steps, the equipment, services and manpower planning and the budgeting necessary for a district hospital. This is followed by a section on the general outlook of the operational policy of a district hospital which includes governance, hospital operations, safety, quality, utilization and hospital information system. The last two sections elaborate on disaster preparedness of a district hospital and hospital efficiency.

3.1 Overview Of District Hospital

3.1.1 History of Hospitals

Hospitals had revolutionized over time and its history can be traced from hundreds of years ago. During early Greek and Roman time, places of worship were utilized as hospital where
the sick were given shelter and treated. In the early 19th century, death houses were associated with hospitals as most patients who were admitted to the hospitals with gangrene and infection subsequently died. The nursing revolution in the mid-19th century marked the turning point in the western world history of hospitals (Goel, Gupta & Singh, 2014).

In Malaysia, hospital revolution started since the Portuguese colonization in 1511. During that time, two hospitals were built in Malacca known as Hospital del Rey (Royal Hospital) which served the Portuguese officers and men and Hospital del Porres (Poor Hospital) which was for the poor. This was a historical milestone of western medicine that was first introduced into the Malay Peninsula (Noor Ghani & Yadav, 2008). This was followed by subsequent hospital development during the colonization of the Dutch as well as the British. In 1878, the first government hospital was opened in Taiping known as Yeng Wah Hospital to treat tin mining workers (MOH, 2013). Then in 1880, Chinese settlers built a hospital in Kuala Lumpur. Subsequently a general and pauper hospital was also built in Kuala Lumpur in 1883 by the British Resident (Noor Ghani & Yadav, 2008). The hospital revolution history has led to the current Malaysian modern district hospitals setting.

3.1.2 District Hospital Organizational Structure

An organizational structure is important as it is the foundation and molds the framework of the organization (Yadav, 2006). Figure 1 illustrates the basic organization in a district hospital. According to a circular letter on the organizational structure of a hospital in Malaysia published in year 2000 by the Ministry of Health, the hospital director is accountable to the Deputy Director (Medical) and State Director of the State Health Department.

![Figure 1: Basic Organization of District Hospital](image-url)
3.1.3 **Classification of District Hospital**

Hospitals can be classified according to service, ownership, bed capacity and other types such as teaching or specialist hospital (Pharmatips, 2013). A district hospital in Malaysia can be classified according to either the size (number of beds) or the services provided. Based on the services, it can be either a district hospital with specialist services or without specialists/visiting specialist services. A district hospital can be named according to the location or the name given by the authorities. For example, Hospital Tumpat was named based on its location in Kelantan while Hospital Enche Besar Hajah Kalsom in Kluang, Johor was named by the authorities.

3.1.4 **District Hospital Services**

The services of a district hospital should include the clinical, clinical support, non-clinical support and administrative services (WHO, 1998). These services can be adjusted and prioritized according to the local needs. The services will be described further under “Services Planning” section.

3.1.5 **Role and Functions of District Hospital**

District hospitals have a very important role in supporting Primary Health Care in the district health system. This is because it is the first referral level under the district health system that immediately supports the health activities of the district or community, especially with regards to primary health care activities (WHO, 1998). District hospitals may also serve as the gate keeper for patients with more serious problems, for which skills and resources are most effectively concentrated at even higher levels of care provided at a regional or national level (English et al, 2006).

One of the most important functions of a district hospital is its role as an important supporter for other health services and for patients’ health care in general for the district (WHO, 1998). It also provides wide-ranging technical and administrative support, education, training and research for primary health care (WHO, 1998). Besides, it also provides effective and affordable health care services including patient education and health promotion for a defined population in the district (WHO, 1998).

3.2 **District Hospital Planning**

In order for a hospital to be successfully executed, a lot of attention should be focused during the initial planning of the hospital. In planning, the managers should take into considerations the current government policies (Yadav, 2006). Planning can be in the form of physical planning or programme planning.

3.2.1 **Role Of Project Management Team**

The complexity of the planning and designing a hospital requires a project management team which involves a multidisciplinary involvement. This team includes the health planners, functional planners, financial planners and physical planners, architects, engineers, quantity surveyors, finance managers, staff responsible for procurement of supplies, and end users,
such as the doctors and nursing staffs (WHO, 1998). It is usually led by either the architect or the engineer. In each of the stages in the planning and designing, every member of the team has a role to play either active or consultative role. They may have different roles at different stages and they have to come up with the inputs and outputs accordingly (WHO, 1998). The health planner establishes the need for the hospital, its role in the community and the services it will offer while the functional planner establishes the functioning of the different departments and of the hospital as a whole. The financial planner establishes the financial feasibility of the project and is responsible for identifying and earmarking the funds for the project. The physical planner establishes the relation of the hospital to the town and the community it serves. The architect and the engineering consultants provide professional planning, design and supervision of construction. The construction manager manages people and resources on site to ensure that the project is completed on time within the budget. The contractor produces the hospital in its physical form. The procurement staff and the personnel staff form part of the commissioning team which prepares the hospital for operation by procuring material and recruiting staff. The client/user is the owner and final user of the hospital (WHO, 1998).

3.2.2 Hospital Planning Steps

Hospital planning steps comprise of briefing stage, design stage, construction stage, testing and commissioning stage, operation and post-occupancy evaluation (WHO, 1998).

3.2.2.1 Briefing Stage

At the earlier stage of planning, a feasibility study needs to be carried out in order to clarify the objectives of the project which includes the type of services to be provided, sophistication in building plan and equipment, and investment and returns that is targeted (Hospicon, 2006). From the feasibility study, the potential of the planned institution, medical facilities that are lacking and need to be made available, the migration pattern of the patients and competition between existing hospitals can be identified (Hospicon, 2006).

From the information gathered, a medical brief document is prepared by the briefing team (WHO, 1998). This medical brief describes in detail the overall requirement of the hospital plan which includes the plan of needs, scope of services to be provided, the target population or catchment area, the financial feasibility of the project with cost benefit analysis and the scale of the hospital, such as the bed numbers (WHO, 1998). At this stage, the users should play an active role to establish the demand for the new hospital by giving salient input, such as the information, indicators, projection and output, such as decision to construct. Apart from that, the users should also be actively involved in the design brief preparation by giving inputs, such as the services to be delivered and required functions, and the output which is the design brief.

3.2.2.2 Design Stage

This is a very important step where the architect translates the clinical and administrative needs into architectural and engineering realities (Kunders, 2004). At this stage, the users should play their consultative role. At the designing stage, hospital master plan, detailed design and construction drawing (loaded drawing) is produced (Kunders, 2004). Designing
team is also responsible to prepare a detailed design including the structural, electrical and plumbing specifications (Kunders, 2004).

3.2.2.3 Construction and Installation Stage

This is a stage where construction team implements the design from the approved drawings and technical specifications within the prescribed time and cost (WHO, 1998). At this stage, several elements, such as quality, safety requirement and rules set by various bodies and local authorities need to be considered. Planners on the other hand should focus on the procurement of machinery and equipment and recruitment of the manpower, while the users should play their consultative role (Goel et. al, 2014).

3.2.2.4 Testing and Commissioning Stage

This stage takes place after the construction and installation are completed and usually refers to the last few months before the hospital operates (Goel et. al, 2014). The commissioning team is responsible to staff the hospital, commissions and procures the equipment, furniture and supplies and prepares it for operation (WHO, 1998). The users should actively play their role at this stage by carrying out the testing and verification of the services, processes (such as patient information system and communication system), equipment, structures, water and electrical supply. In summary, every aspects of the hospital should be tested during this phase to ensure that they are able to function when the hospital operates.

3.2.2.5 Operation

This step is the operation of the hospital once it is opened to the public and the implementation of the services and activities planned (Yadav, 2006).

3.2.2.6 Post-Occupancy Evaluation

It is important to monitor and evaluate the performance of a new facility after it has been operational for about a year and to evaluate it at regular intervals (WHO, 1998). Evaluations may reveal defects in operation, design or equipment of the hospital that can be corrected (WHO, 1998) for future planning. Some of the factors to be evaluated include performance in use, basic records that indicate the advantages and drawbacks of the building with regards to the activities of the users, objective observations of performance on site, objective observation of the performance of the hospital as a building, information on maintenance and running costs for comparison with the planned cost. Other evaluation aspects may include the extent to which the building fulfils the brief given to the designers and whether it is being used in the way intended at the time the brief was prepared and examination of the relationship between the objectives and the physical conditions observed in the facilities. Other evaluation should consider the adaptability of the facility to meet future demands and to cope with changing needs (WHO, 1998).

3.2.3 Equipment Planning

Medical equipment has become an important component of modern health services to increase the diagnostic and treatment capabilities. The need for better planning and
management of medical equipment is very important to ensure the efficiency of the equipment is maintained at all time. National policy on medical equipment management is important to give a clear direction on criteria and priorities setting to guide health workers who are responsible to plan and acquire medical equipment (WHO, 1998).

Apart from that, utilization and management of medical equipment involve multi-phasic task, therefore the task is best tackled by setting up multi-disciplinary team at national, community or organizational level (WHO, 1998). Appropriate technology and efficiency of use also should be ensured at the planning stage by giving specific training on management skills to the maintenance supervisors and technician to maintain essential medical equipment in district health facilities (WHO, 1998).

3.2.3.1 Acquisition and selection of medical equipment

Planning and acquisition of medical equipment involves identifying generic specifications and procurement of the equipment which needs to be written in general, non-proprietary terms specifying the characteristics and performance expected from the equipment (WHO, 1998). The selection of medical equipment need to involve a multidisciplinary team comprising doctors, nurses and technical and administrative personnel. There are a few factors that must be included in the selection of medical equipment in a district hospital. This includes the acquiring equipment should meet the health services needs for the hospital, identified and costed, while any training of users and servicing staff, physical facilities and auxiliary supplies should be determined clearly (WHO, 1998).

Selection of medical equipment also involves tender evaluations, comparing quotations, price, delivery time as well as availability and quality of back-up supports, spare parts and technical staff. Moreover, the need to standardize must be considered to facilitate the ease of use and maintenance. (WHO, 1998)

Furthermore, in order to plan and select the essential medical equipment or basic equipment needed for a specified health service delivery will depend on types of services delivered in a particular hospital (WHO, 1998). The type of equipment must depend greatly on the local health practices, physical characteristics and culture of the population (WHO, 1998).

The scope of services with equipment needs can be divided into diagnostic imaging equipment such as x-ray and ultrasound, laboratory equipment such as microscope, general electro-medical equipment such as portable electrocardiograph and other support equipment such as operating theatre table, and other preventive medical equipment, electrical generator and dehumidifier. (WHO, 1998).

3.2.3.2 Classification of Medical Equipment

Generally in planning stage, the medical equipment is classified into class 1, 2, 3 and 4. Class 1 is medical equipment requiring fixed installation such as MRI machine and sterilizer, Class 2 is medical equipment that require installation but not fixed such as portable x-ray, angiogram machine and OT table, Class 3 is equipment not requiring special installation and is mobile for example patient bed and electrocardiograph machine and Class 4 is consumable
The classification of medical equipment is important for procurement of the equipment and scheduling of hospital construction.

3.2.4 Services Planning

Planning the range of district hospital services depends on several factors such as the epidemiology of disease in the catchment area, size and density of the population, geographic and climatic conditions and level of economic development. Apart from that, socio-cultural infrastructure, quality and quantity of health resources, the existing national policy for healthcare and the availability of medical and paramedical personnel are the factors that need to be considered in the planning of type of services in the district hospital (WHO, 1998).

WHO had recommended that a district hospital is expected to be able to serve 85-95% of the medical needs in the district (WHO, 1998). The list of services that a district hospital can provide is divided into clinical services, clinical support services, non-clinical support services and administrative (WHO, 1998). The essentials clinical services recommended by WHO includes Medicine, Surgery, Obstetrics and Gynaecology, Paediatrics and Dentistry while optional clinical services such as Orthopaedic surgery, Otorhinolaryngology, Neurology and Psychiatry (WHO, 1998).

For the clinical support services that are essential includes Anaesthesia, Radiology, Clinical laboratory, while Pathology and Rehabilitation services might be optional. Non-clinical support services includes kitchen, laundry, warehousing (central store), domestic hygiene, waste disposal, maintenance and repair, transport, communications and staff residential housing. Apart from that, the scope of district hospital services also must have administrative component that is responsible for financing, medical records, procurement, personnel and security (WHO, 1998). However, the extent of each service provided is flexible, depending on local financial, social and cultural conditions and can also be extended or modified according to local needs (WHO, 1998). For example, the epidemiological transition from communicable disease to non-communicable disease, notably cardiovascular, smoking-related diseases, and cancer are becoming more prominent in the community, therefore it might have considerable implications for the scope of services that a district hospital should provide in the future.

3.2.4.1 Services Privatization

Some of the services in a district hospital can be privatized. This is to meet the demands beyond current government capacity leading to a better quality of services. Some of the services that are privatized include the non-clinical support services, such as the facility and equipment maintenance services and biomedical equipment maintenance services.

3.2.5 Manpower Planning

Human resource or manpower planning is a very important component in setting up a hospital. It refers to the systems and procedures for ensuring that the appropriate number of people with the required skills is available in the hospital for the achievement of goals of the organization (Yadav, 2006). The process includes identifying the number and types of people that the hospital currently need and will need in the next few years to accomplish the hospital objectives. The human resource planning consists of four inter-related areas of activity which
are demand forecasting, supply forecasting, comparing the supply and demand forecast and preparing plans to deal with forecast deficits or surpluses (Yadav, 2006).

### 3.2.6 Budgeting

Hospital cost information is derived by associating the inputs of resources in monetary terms to the outputs of services provided by the hospital (Newbrander & Lewis, 1999). It is important to the managers and policy makers with regards to decision making on resources allocation and performance comparison between hospitals and on how to improve the performance (Newbrander & Lewis, 1999). Hence, it can be used as a mean to improve the effectiveness and efficiency, to enhance sustainability, and to improve quality of the hospital (Newbrander & Lewis, 1999).

The process of determining the costs of a hospital involves six steps. Firstly is by defining the major and relevant activity areas of the hospital followed by gathering information on the services provided or the output of the hospital (Newbrander & Lewis, 1999). Third step is determining the labour and other recurrent costs and followed by ascertaining the capital costs of the hospital. (Newbrander & Lewis, 1999). Next, allocating indirect costs and finally, reviewing and using the hospital cost summary (Newbrander & Lewis, 1999). In Malaysia, hospital budgeting is done by using the incremental approach where the budget mostly was historical based and depends on the previous year budget.

### 3.3 DISTRICT HOSPITAL OPERATIONAL POLICY

#### 3.3.1 Overview of District Hospital Operational Policy

An operational policy is a document which details the operational intention of a hospital at various levels (WHO, 1998). Commonly the operational policy will be the broad guideline to all decision makings, behaviours and thinking within the hospital (Yadav, 2006).

An operational policy document of a hospital would usually contain an introduction of the hospital in brief including the location and type of the hospital. The first section of the policy would also include the vision and mission of the hospital. For example, the operational policy of a government hospital in Malaysia states that their vision is for the hospital to be a center of excellence in health and medical care, while their mission is to provide quality services through caring, teamwork and professionalism to meet the needs and expectations of all clients (MOH, 2014). This is followed by their objectives, roles and activities and scope of services. In the subsequent sections will be the governance, organization, policy on operations of the hospital, hospital safety, hospital quality, hospital utilization, hospital information system and other details that is deemed necessary by the relevant authorities. However the structure of an operational policy may differ from one hospital to another.

#### 3.3.2 Governance

In a hospital operational policy, governance can be divided into two main areas, corporate governance and clinical governance (MOH, 2014). Corporate governance of a district hospital
covers the general administration of the hospital, finance, revenue collection, human resource, transport services, visiting hours, traffic control, hospital security, boards of visitors, and its public relations. As for clinical governance, it consists of information on patients and families’ rights, patient safety, one stop service counter services, appointment & scheduling, registration & admission, discharge, referrals, death, patient related policies in the ward, infection control, medical records, quality management, training, occupational health & safety policies, policy on suspected child abuse and neglect, breastfeeding policies, organ, tissue, cell donation & transplant policy, end of life withhold and withdrawal of life support therapy.

### 3.3.3 Hospital Operations

All aspects and details are necessary in a day to day operation of a hospital. Examples are the departmental policies for each departments that is available in the hospital including their operational hours and services that is offered. For instance, the operational policy of a government hospital in Malaysia stated that their Emergency and Trauma Department is open every day, 24 hours a day and the services available are emergency care, asthma bay, observation bay, one-stop crisis centre, disaster management and others including how to contact them if need arises (MOH, 2014). This will similarly be seen in the description of every other departments and services which is present in a hospital such as the specialist clinic services, Diagnostic and Imaging Department, Intensive Care Unit and others.

### 3.3.4 Hospital Safety

Hospital safety includes patients’ safety, workers’ safety and workplace safety. There are many threats to the health of the workers and patients in a hospital such as needle stick injuries, slips, trips, and falls, unsafe injections, surgical care errors, lack of appropriate hand hygiene and various other potential hazards. Hospital operational policy includes the occupational health and safety policy that aims to provide a safe workplace for all. It includes policies on sharps injury, safe use and disposal, incident reporting, describes the roles and responsibilities of staffs with regards to occupational health and safety, roles of training and also on essential lightings, floor and walking pathways that should be even and clutter free, and also adequate signage if floor is wet or slippery. Other than that, there are also policies on chemical and cytotoxic safety, and radiology safety.

A hospital operational policy also gives emphasis towards patient safety with the aim to create better awareness on the issue and for good risk management. For example, the hospital operational policy of a government hospital in Malaysia outlined a number of guidelines, best practices and standard operating procedures such as the MOH Patient Safety Goals, Transfusion Safety, and SOP to reduce risk of patient harm resulting from falls (MOH, 2014). As for risk management, the policy stated that the hospital shall actively identify potential risk for patients and organization with the purpose of implementing preventive measures where necessary (MOH, 2014).

### 3.3.5 Hospital Quality

The term quality can be defined as the degree of adherence to pre-established criteria or standards (Yadav, 2006). The concept of total quality management includes quality planning, quality assurance, quality control and quality improvement (Goel et.al., 2014). This can be
seen in a holistic picture of quality starting from introducing the concept of quality in the inception stages of planning for a service or product to monitoring of its existence and then identifying the gaps where it does not meet the said requirements and finally improving upon the assured quality of service or product delivery to the end users (Goel, et. al., 2014).

A hospital operational policy would usually specify the responsible parties in charge of service quality such as the accreditation committee, patient safety committee, quality assurance and training unit including every departments and units in the hospital together with their responsibilities (MOH, 2014). The standards and indicators that they adhere to should also be listed in detail which includes the national indicators, the key performance indicators, list of procedures in cases with shortfalls in quality (SIQ) and also the indicators set by the hospital for individual departments and units (MOH, 2014). In the event of a SIQ, the quality improvement activities that should be taken will also be explained in the operational policy such as incident reporting, client survey, clinical or nursing audit, mortality and morbidity review and other relevant activities to guide the relevant parties and avoid confusion.

3.3.6. Hospital Utilization

Utilization is defined as the manner in which a certain community makes use of its available hospital resources (Yadav, 2006). Evaluating the utilization of a hospital can be done using hospital statistics which is an important part of a district hospital operation. It is measured with the aim of better utilization of staff and hospital beds, and more effective and efficient use of equipment, stores and supplies (Yadav, 2006). A hospital operational policy usually specifies the type of data and statistics that needs to be collected, the datelines or frequency the data should be submitted and the responsible party to collect the data from the other departments and units such as the Statistics Unit or Medical Records Unit (MOH, 2014). Example of data or statistics that is usually collected in a hospital is as follows:

**Bed complement or bed count:** Number of beds regularly maintained for the use of inpatients in the hospital. This includes unofficial beds and cots or bassinets for babies requiring special care but excludes labour room, post anaesthetic or post-operative beds, observation or recovery beds in outpatient departments, and also cots for normal newborn infants in obstetric wards (Yadav, 2006).

**Hospital census (daily inpatient census):** The number of patients present at census taking time, usually at midnight, plus any patients who were admitted after the previous census-taking time and discharged before the next census-taking time (Goel et.al., 2014).

**Average Length of Stay:** Obtained by dividing the total number of patient days (sum of daily census) during a period by the total number of discharges and deaths during the same period (Goel et.al, 2014).

**Bed occupancy rate:** The average percentage of occupancy of the beds in the hospital or a particular ward based on daily census taken at night. This statistic is used to see whether the hospital resources are utilized to the maximum (Yadav, 2006).
3.3.7 Hospital Information System

Hospital information system (HIS) is a comprehensive information management system dealing with all aspects of information processed in a health care organization (Goel et al., 2014). It is an integrated automated system designed to collect, store, and share, handle and retrieve information pertinent to the administrative and clinical aspects of services provided within the health care organization (Goel et al., 2014). HIS enables communication, integrate information and coordinate action among healthcare professionals to ensure that their jobs can be performed effectively and efficiently.

A hospital operational policy on HIS greatly emphasized on several areas particularly the adherence of the users to the cyber laws such as the Communication and Multimedia Act 1998 (MOH, 2014). Other than that the policy highlighted that the users must ensure that all information is accurate and to safeguard the official secrets and official information from unauthorized access (MOH, 2014). This includes good security practice such as safeguarding password, frequent back up and safe keeping of important information, logging off computer before leaving the office and exercising caution when downloading programs and files from the internet (MOH, 2014).

3.4 Disaster Preparedness

A hospital should be prepared for any disasters (WHO, 2003). It might be difficult to forecast all situations but several factors that needs to be sorted out beforehand is the appointment of a team leader, defined function of each staff, protocols, system set up, mapping of facilities, identified training needs, drills and exercise, and communication system (WHO, 2003).

Trauma team is an important component in the disaster plan. It should be led by a senior person. The leader will need to oversee the overall plan, implementation and assign specific tasks (WHO, 2003). In addition, members of the team need to communicate well with the leader. Apart from that, the team will be more effective by practicing the implementation of the disaster plan (WHO, 2003).

3.5 Hospital Efficiency

The World Health Report 2000 emphasized on the importance of efficiency in all functions of the health system and ultimately achieving the goals of health improvement, responsiveness and fairness in financing (WHO, 2010). There are two main measures of efficiency which is the technical efficiency and allocative efficiency (Moshiri, Aljunid, & Mohd Amin, 2010). Technical efficiency is defined as the ability to produce the maximum possible output from a given set of inputs (WHO, 2000). Allocative efficiency reflects the ability of an organization to allocate inputs in optimal proportions, given their respective prices and the production technology (Moshiri, et al, 2010). A hospital is judged to be technically efficient if it is operating on the best practice production frontier in its hospital industry (Farrell, 1957). Measuring technical efficiency allows us to compare hospitals in terms of their real use of inputs and outputs rather than costs or profits (Magnussen, 1996). It refers to the physical relationship between the resources allocated (capital, labour and equipment) and certain health outcomes such as number of patients treated, patient-days, and waiting time which are
intermediate outputs, or final health outcomes such as lower mortality rates, longer life expectancy and others (Moshiri, et al, 2010).

4.0 CONCLUSION

In conclusion, district hospital services require a comprehensive planning from the debriefing stage up to the operational level. There are various aspects of planning that need to be taken into account to ensure the success of a district hospital in providing services with an effective and efficient manner. This complex process also involves a multidisciplinary approach in order for a district hospital to function efficiently so that the district and its population will benefit from its services.

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