

IN THE NAME OF GOD THE COMPASSIONATE THE MERCIFUL
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TECHNOLOGY
MANAGEMENT PROGRAMME

**IMPROVEMENT OF THE PERFORMANCE OF THE
EMERGENCY DEPARTMENTS USING THE VALUE
CHAIN TECHNIQUE**

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
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بسم الله الرحمن الرحيم

”وَلَا تَقُولَنَّ لِشَيْءٍ إِنِّي فَاعِلٌ ذَلِكَ غَدًا (23) إِلَّا أَنْ يَشَاءَ اللَّهُ
وَاذْكُرْ رَبَّكَ إِذَا نَسِيتَ وَقُلْ عَسَى أَنْ يَهْدِيَنِي رَبِّي لِأَقْرَبَ مِنْ
هَذَا رَشَدًا (24)“

صدق الله العظيم

(سورة الكهف)

DEDICATION

**I WOULD LIKE TO DEDICATE THIS WORK TO A VERY SPECIAL PERSON,
WHO'S SPIRIT OF KINDNESS, COMPASSION, AND GENEROSITY, WILL
NEVER BE FORGOTTEN TO MY DEAR HUSBAND,
MOHAMMED AL-GHAZALI**

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ABSTRACT

This Research work is intended to suggest how to improve the performance of the emergency department in the Salmaniya Medical Complex. The technique adopted in this work is the value chain analysis technique, by considering the performance of activities, management aspects and technologies in use with a focus on the impact on the patients.

Extensive field studies were carried out in order to understand the function and the activities of the emergency department. The Value Chain analysis Technique was utilized to analyze these activities and find the interlink between them, which assisted in recommending the required actions to improve the healthcare of services. The field's information is gathered by structured questionnaires and interviews. The interviewers were: registration clerks, nurses, physicians, technicians and patients. A regular session of discussions with the management staff of the department was also carried out.

The results of the questionnaires have been derived by using the statistical analysis (SPSS), together with the researcher's field observations. The analysis of these results has identified possible problems that reflect on specific activities within the processes in the emergency department. These activities have been analyzed and their relations with other activities and responses have been determined.

The performance of the chosen healthcare provider, i.e. the Emergency Department, was assumed to be evaluated through a number of evaluating parameters (performance indices). These parameters characterize the healthcare services. The evaluating parameters are: Reliability, Responsiveness, Empathy, Assurance, Cost, and Satisfaction. Factors that affect these evaluating parameters have been defined after consultation with practitioners and management as well as reviewing similar studies and researches worldwide. Possible deficiency of any of these factors has then been measured through predefined indicators.

The analyses of the measured indicators have enabled the researcher to identify a number of problems. Six types of problems are discussed that are concerned with: Documentation Preparation (Registration), Documentation Movement, Staff Shortage,

II

Equipment & Investigation Test, Medical Records (including history) and Non-Urgent cases.

The conclusion and the main recommendations have been set which would improve the medical services in the emergency department in Salmaniya Medical Complex. These recommendations include: the introduction of an Automated Healthcare Information System, the empowerment of the staff, the upgrading of the medical equipment, the treatment of non-urgent cases, and the enhancement of public awareness and knowledge about health aspects.

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CHAPTER 1

(Introduction)

1. CHAPTER 1: INTRODUCTION

1.1 THE HEALTH CARE SYSTEM

According to the World Health Organization (1987), Primary Health Care is defined as: “Care based on practical, scientifically sound, socially acceptable methods and technology; made accessible to individuals in the community through their full participation and at a cost the community and country can afford to maintain at every stage of development, in the spirit of self-reliance and self-determination.”

On the other hand, Khoja (2002) defined the health care services as “Those services provided to a population in order to maintain health and prevent and cure diseases”. Therefore, health care provider organizations need to develop policies and foster initiatives that support promotion of health and prevention of diseases. This is in alignment with the fact that the Health Care System is concerned with human well-being, and hence the enjoyment of a better life, and the increase of the productivity of society.

In their improvement processes, many industries have changed radically in structure, focus, technology deployment and processes. Health care system is no exception. It has changed a lot in recent years. Berwick (1994) showed that the most radical change was that in the aim of the Health Care System. This has moved from solely caring for unhealthy persons in the society (i.e. patients with disease and injury) to improving the health of entire communities (i.e. caring for healthy and unhealthy persons). Therefore, the focus has been changed from purely disease fighting, to include patients’ comfort and rapid cure with minimum suffering and shortest hospitalization period. The restructuring and re-engineering of health care processes in many countries has produced changes in the kinds of care delivery, the quality of services, the shape and equipment at the site where care is received, and the extent to which the patient is acting as an active participant in the process for care and cure (Berwick, 1994).

Simmons (2002) showed that hospitals are reviewing innovative ways to deliver appropriate and quick health care services to patients. This will result not only in better quality service, but also in quick discharge of patients from hospitals so that patients can find beds.

The Emergency Department is one of the critical departments in any hospital. It is well accepted that, in general, hospitals are categorized according to the performance of their Emergency departments.

In this respect, the health statistics book published by the Ministry of Health, Kingdom of Bahrain, for the year 2002 shows that a considerable number of patients in Bahrain have attended the emergency department. With reference to Table 1-1 in Appendix C, 29.2 % of the total numbers of patients attending the eight (8) hospitals in Bahrain were Emergency Department patients. Moreover, 51.3% of the total numbers of patients attending Salmaniya Medical Complex were Emergency Department patients (Health Statistics, 2002)

1.2 THE IMPACT OF TECHNOLOGY

Service deliveries in health care are working towards improvements in the context of two major dimensions, quantity and quality. With the introduction of new equipment and advancement in technology, secondary and tertiary care services worldwide have shown major developments in year 2001 in the areas of diagnostic radiography and ultrasound (Health Statistics, 2001).

The Tools and equipment used by many health care service providers have been redesigned for the deployment of advancement in technology in order to meet the above set objectives. Hospitals have realized that they need to upgrade their emergency system in particular, in order to achieve a better, smooth and controlled flow of patients. The need arises for increasing the utilization of the emergency department services, raising the quality of services, and introducing new technologies (e.g. Computerized Axial Tomography (CAT) scans / Magnetic Resonance Imaging (MRIs)) (Simmons, 2002).

This enables the health services organizations to provide sustainable, high standard health services. Health Care Services, generally speaking, have lagged behind some other industries in their adoption of technology (Laura, 2001).

Advanced technology has a potential to improve the quality of patient-centered health care by reducing human errors, increasing safety, enhancing effectiveness, providing

timely activities, and improving efficiency. It simplifies the key processes (e.g. multiple orders and data entry), which leads to the elimination of many human errors and makes the tracking and follow-up of different processes much easier and more accurate.

Health care services introduce technologies in many fields. In the diagnostic processes, examples are: radiography, measuring instrument, and laboratory testing (materials and equipments). In the surgical and treatment devices, examples are: laser technologies, opto-technologies, robotics, chemical, radio and ultrasonic devices, etc. In the supportive activities, technologies have been introduced in many fields such as: information systems, databases, computer-based patient record handling, inventory handling and procurements, digital facilities that track the patient's movement, telemedicine, etc.

Some organizations in the health care business have adopted technology at different rates, and hence the technological gap is widening between different health care provider organizations. Some providers have implemented computer-based patient records, use wireless devices, order medications and services via the computer and make extensive use of bar coding for accurate identification of persons and objects as well as for administration purposes. Other providers offer care by using telemedicine remotely for diagnostics, treatment and follow-up (Sokol, 2002).

1.3 THE SIGNIFICANT IMPORTANCE OF THE STUDY

The health care organizations - in many cases - do not often make the best use of their resources. There is no doubt that aged population and the increased patient demand for new services, the advancements in technologies and research in drugs are all contributing to a steady increase in health care expenditure. Moreover, experience shows that many types of medical mal-treatments result in subsequent need for additional health care services to treat patients who have been harmed. A highly fragmented delivery system, that largely lacks updated clinical knowledge and information results in poorly designed care delivery processes, characterized by unnecessary clinical practices and services. All the above add to the cost and effort, most probably unnecessarily. (Moore, 2002).

Shortcomings in the health care provided to patients could be due to many factors, such as: shortage of well qualified trained staff, lagging in communication, un-organized processes, the delay in the adoption of newer technologies, using old tools and equipment, inefficient information system, the pressure of the medical errors and the way of treatment.

Like other industries that came new to the improvement processes, some health care organizations (hospitals) often simply think that they are doing well and do not seem to believe that significant improvements are possible.

Many tend to regard disease outcomes as biologically predetermined, that patient expectation for comfort and satisfaction is “unrealistic,” and that excessive health care costs are inevitable (Berwick, 1994).

The continuous improvement of the healthcare services is a major concern to everyone in the society, not only the concern of the healthcare providers but also government, economists, politicians, and/or the society at large. The aim is a healthier life style of the citizens and hence more enjoyable life, and to be more productive. Enhancing the efficiency and increasing the effectiveness of the services would result in more cost-effective services and may even reduce the total cost. Improving the quality of services, mitigating the suffering of the patient, reducing his waiting time when at hospital etc, will make the patient more comfortable and satisfied, and perhaps accelerate his internal self-curing process.

1.4 CHOICE OF TYPE OF SERVICE UNDER STUDY

The health care services in a hospital can be classified into three different types or paths (see figure 1.1), the in-patient, outpatient, and the emergency path.

In-patients are those admitted to the hospital to stay for a certain period of time for treatment.

Outpatients are those who are not staying in the hospital and are attending the clinic perhaps with an appointment.

Emergency patients are those who have arrived at the hospital, and in need of urgent attention and treatment.

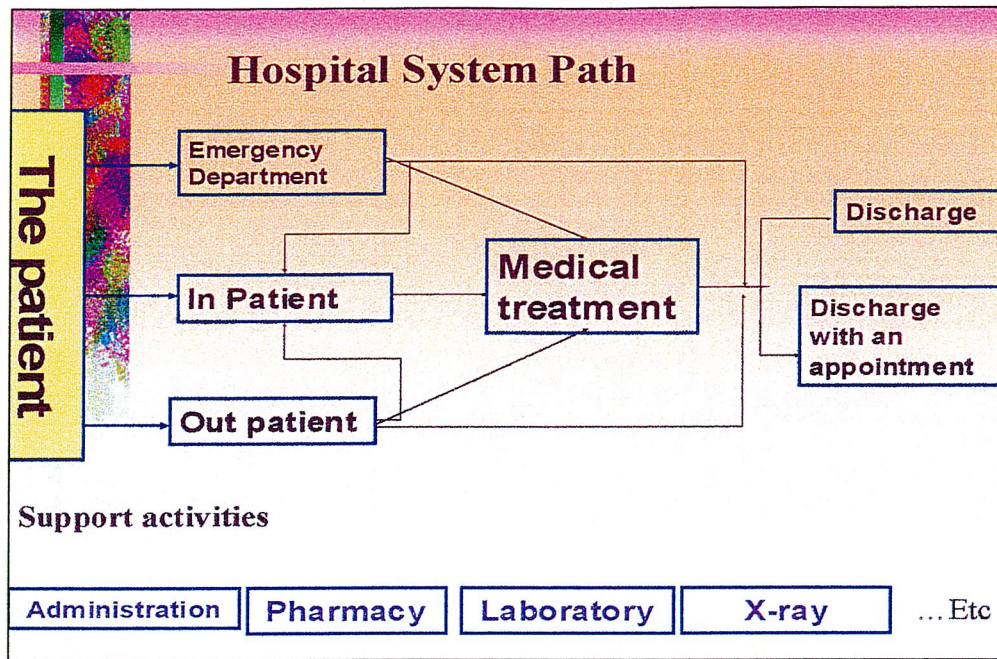


Figure 1.1 Hospital System Path

In any hospital or health care provider organization, the activities in the emergency path are critical (Hadjistavropoulos, et al. 1997). The Accident and Emergency department is a critical area which - in accordance with its name - needs careful, quick and accurate activities. The patients of this department may have a higher probability of risking their lives and need immediate attention.

Adding to the above and as mentioned in table 1-1 (see appendix C), a significant number of patients attend the emergency department in the Kingdom of Bahrain. Hence, the improvement of the performance of the Emergency Department is of utmost importance to the health care services in the Kingdom of Bahrain.

Therefore, this research study will be focused on the activities within the emergency path.

1.5 THE CHOICE OF STUDY FIELD LOCATION

The Salmaniya Medical Complex is the largest hospital in the Kingdom of Bahrain compared to other hospitals such as the International, American Mission, Bahrain Defence Force Hospital, Ibn-Alnafees, etc.. It serves the largest population in the Kingdom (43.5% of patients in all hospitals), and has become increasingly busy.

The health statistics (2002), show that out of 350,954 patients attending the Accident and Emergency Department in all hospitals in the Kingdom of Bahrain, 76.5% of them attended the Accident and Emergency department at Salmaniya Medical Complex.

This high number of patients with urgent medical problems visiting the emergency department of Salmaniya Medical Complex at an average of (736) patient per day reflects the importance of this department at the Salmaniya Hospital. Moreover, the number of patients attending this department in the hospital is increasing yearly. (6% increase between year 2001 and 2002) Therefore, improving the performance of the activities in this department will, then, have a great impact on the medical care service in the Kingdom of Bahrain.

For the above reasons the Emergency Department in the Salmaniya Medical Complex was chosen as a study field location so that the improvement in its services will have greater impact.

1.6 THE CHOICE OF ANALYSIS TOOLS

To study the possible ways for improving the health care services, the process is to be broken down into processes and sub-processes. Each sub-process is tracked and studied to determine those which have the highest impact on the health care services.

There are many tools used in analyzing the processes, such as: (1) Applying Audit (Hadjistavropoulos, et al. 1997), and applying Continuous Quality Improvement techniques (CQI) (Cook S. and D. Sinclair, 1997): which are both auditing tools, (2) Using a Statistical Model: which is a statistical method to represent and compare statistical results (Schwab, 1995), and, (3) Using the Value Chain Analysis technique: which is a tool for diagnosis and finding ways to create the competitive advantages and provide a systematic way to divide the processes into its activities. This enables the examination of the activities, performance and their interlinkages (Porter, 1990).

Since the value chain analysis technique is a more comprehensive tool, which enables the audit, analysis, and diagnosis of the processes in the systems, it has been used in this research work.

Schwab (1995) showed that in order to develop effective changes, we need to understand the nature of the relationships among the processes that make up the activity to be sub-processes are studied in detail and the relationships between different

activities are determined, in order to synthesize how to improve the system to deliver the highest value service.

Burns (2002) applied the value chain techniques to analyze the developments in the USA of the health care system.

1.7 PRINCIPLES OF THE VALUE CHAIN TECHNIQUE

An activity is, in fact, a process. A process is a set of causes and conditions that repeatedly come together in a series of steps to transfer inputs into outcomes (or outputs). Activities can be split into sub-activities and so forth. In this way it would be easier to identify the steps taken within each sub-activity. In each step or process within an activity, or a series of activities, value is added to the object in order to achieve the required output. Inputs, steps, processes and outcomes provide tangible elements that can be measured, on which data can be collected, and around which changes can be developed and tested for improvements.

According to the Value Chain Technique defined by Porter (1985), the activities conducted in any process or a combination of processes in any industry can be divided into two categories, namely: primary activities and support activities. (See figure 1.2 below)

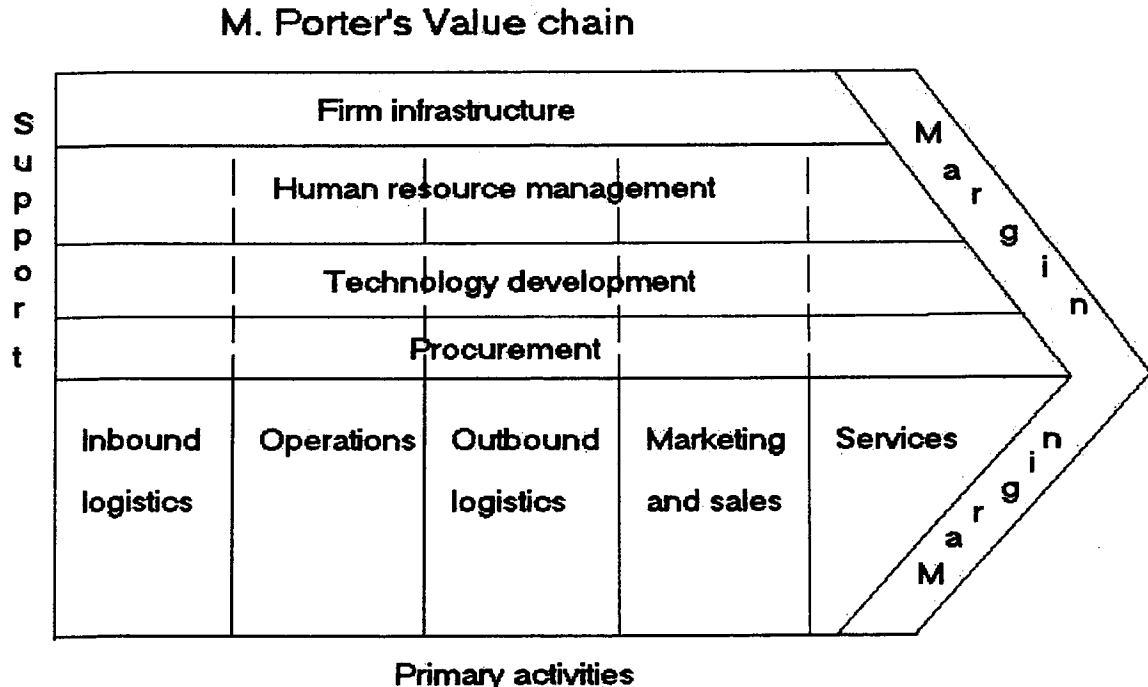
The primary activities are:

1. **Inbound logistics:** Defined as the activities associated with receiving, storing and disseminating inputs to the process.
2. **Operations:** Defined as the activities associated with transferring inputs into the final product form.
3. **Outbound logistics:** Defined as the activities associated with collecting, storing, and physically distributing the product.
4. **Marketing & Sales:** Defined as the activities associated with providing a means by which buyers can purchase the product through advertising, promotion, quoting, channels selection, and pricing.
5. **Services:** Defined as the activities associated with providing service to enhance or maintain the value of the product.

On the other hand, the support activities are:

1. **The infrastructure:** which consist of a number of activities including general management, planning, financing, accounting, legal, government affairs, and quality management.
2. **Human Resources Management:** which consists of the activities involved in the recruiting, hiring, training, development, and compensation of all types of personnel.
3. **Technology development:** Nowadays, every activity that adds value to the process and embodies technology, be it know-how, procedures or technology embodied in process equipment.
4. **Procurement:** which refers to the function of procuring inputs utilized during the processes. Inputs include raw materials, suppliers, and other consumable items, as well as assets such as machinery, laboratory equipment, office equipment, and buildings.

These activities can – in general - be represented (see figure 1.2) as follows:



Source: Michel Porter (1985), 'Competitive Advantage – creating and sustaining superior performance'

Figure 1. 2 The Value Chain Analysis Technique (Porter).

1.8 RE-STATING THE OBJECTIVES OF THE RESEARCH WORK

Considering the above discussions, the ultimate objective of this research work is to be re-stated as follows: “to suggest how we could improve the performance of the health care services in the Emergency Department using Value Chain Analysis tools with an application to Salmaniya Medical Complex.”

1. Improving the overall performance of the health care services in the Emergency Department at Salmaniya Medical Complex using Value Chain Analysis tools.
2. Intermediate objectives to reach the above main objective would be:
 - To examine the efficacy of the emergency processes by examining how emergency services are taking place within the Salmaniya Medical Complex.
 - To develop a value chain analysis model for a healthcare system and identify key processes and core competencies that have a differential advantage in the services provided and/or cost advantage. This will include the identification of the different activities and value added at each step of the process. This will include studying all resources of the sub-processes, such as human, equipment and technologies used.
 - To analyze the value chain model identifying the strengths and weaknesses of the activities and the value added in each.
 - To suggest how to improve the overall performance of the healthcare system with special consideration to:
 - The individual performance in the sub-activities
 - Management and administration aspects
 - Technologies already in use or suggested to be used (including Information Technology).
 - Patient education & awareness.

CHAPTER 2

(Literature Survey)

2. CHAPTER 2: LITERATURE SURVEY

2.1 EXPERIENCES IN THE IMPROVEMENTS OF SYSTEMS:

Experience in Improvement of Healthcare Systems

The well-being of tomorrow's patients demands changes in the healthcare structure of today (Moore, 2002). The Healthcare industry is concerned about human well-being, and hence the enjoyment of better life as well as the increase in the productivity of societies.

Few industries have changed so radically in structure, focus, and process as health care in the United States has in recent years. Integrated delivery systems have replaced hospitals as the powerful force in healthcare delivery (Berwick, 1994). The aim of the delivery system has moved from caring for patients with disease and injury to improving the health of entire communities. Process redesign has produced changes in the kinds of care delivery, the site in which care is received, and the extent to which the patient participates actively in the plan for his health care.

It has been shown in the Source Book of Health Insurance Data (1991), that no country in the world spends more per capita on health care than the United States, and the portion of the gross national product devoted to this area continues to increase alarmingly. And Relman (1988) said, despite these enormous expenditures, there is widespread dissatisfaction with the quality and value of health care. Many believe that the situation is critical and that a revolution in the way they deliver and assess care is required.

In the early 1980s the emphasis was on continuous improvement of processes throughout the organizations. This is to be applied to any process, including the healthcare process. The idea was that everyone should have a chance to improve his/her work (Langley, et al., 1996). Although this is a positive approach, this emphasis had two weaknesses. Firstly, major subsystems - and in particular business subsystems - were not improved in a holistic manner. Secondly, the changes that were made were

relatively small and produced only incremental improvement. On the other hand, when reengineering the overall process those weaknesses were, normally, overcome.

In studying a system, or a process, for improvement, Langley et al. (1996), suggested that a model for this system can be built based on three fundamental questions:

- What are we trying to accomplish (in the organization to which this process belongs)?
- What changes can be made that will result in improvement(s)?
- How will we know that a change has occurred and is an improvement?

Applying the above idea to the healthcare process one can realize that health service researches have demonstrated major opportunities for improvement of the performance of health care processes in at least four arenas: (i) health status outcomes, (ii) service characteristics (measures of satisfaction and ease of use of the system), (iii) breadth of access (including equity among racial and socioeconomic groups), and (iv) levels of wastes (Berwick, 1994).

It is important to carry out continuous quality improvements (CQI) on any system to sustain its improved process. This means that it is not enough to collect data and develop recommendations but, rather, the impact of these recommendations must be systemically evaluated so that the process of improvement in services can continue (Hadjistavropoulos, et al., 1997).

Hospitals in the USA are in the spotlight because they consume 38% of health dollars (Levit, 1991). One approach for improving quality while reducing the cost of hospital-based care emphasizes the importance of weeding out poor and inefficient practices (Goldmann, et al., 1993). Conformance to predetermined performance standard is assured through inspection and detection of outliers (or tax payers), an approach to quality management (Berwick, 1994).

2.2 SUPPLY CHAIN FOR THE HEALTH CARE SYSTEM

A supply chain is a series of customer-supplier links through which goods and services pass to a final customer. The concept is similar to the value chain. The operation and the management is related, but they differ in emphasis. The primary focus is on the

materials flow as distinct from the processes carried out on them. Supply Chain Management is concerned with the coordination of all the processes that enable products and services to be brought to the final customer at the right time, cost, and quality (Baxter, 1999).

The health care industry suggests that the supply chain issue will increase in importance. (Burns, 2002). In a health care industry the supply chain is distinguished as medical supply chain.

Healthcare supply-chain analysis is considered a part of the activities in the healthcare system. It has a tremendous potential to reduce the healthcare cost that is incurred due to existing inefficiencies.

An example is Medical Supply Chain, Inc., which is a privately owned corporation that launched its services in May 2000 in the USA. The company develops and implements supply chain solutions specifically benefiting the Health System and their trading partners. These solutions are designed to support and complement the work and goals of healthcare supply-chain professionals.

The Medical Supply Chain web services enable buyer and supplier to deploy collaborative supply-chain initiatives. For a buyer (in this case the Health Care provider) it will provide a venue to buy and manage the required products. For supplier (Manufacturer/Distributor), it provides a venue to sell and manage the product it sells.

2.3 TECHNOLOGIES IN HEALTHCARE

In his paper, Stefanelli (2002), said, "I strongly believe that technology by itself will not cause the predicted changes without renewed interest in the methodology advances needed to allow effective adoption of technological innovation within the health care organization."

On the other hand Haux, et al. (2002), indicated that from their observations, information and communication technology are deeply transforming the shapes of organizations, which in fact is expected. The coordination of activities is a fundamental need for any organization. This is even more important for health care organizations

since there is an increasing pressure to ensure efficiency and cost-effectiveness, thus balancing cost containment and quality of care.

In focusing on information technology Nelson (2003) indicated that a rich information environment supports the functioning of the small, functional, frontline units - the Microsystems - that provide most health care to most people. Three settings represent case examples of how clinical Microsystems use data in everyday practice to provide high quality and cost-effective care. (i) At the Spine Center at Dartmouth, Lebanon, New Hampshire, a patient value compass, a one-page health status report, is used to determine if the care and services provided are meeting the patient's needs. (ii) In Summit, New Jersey, Overlook Hospital's Emergency Department uses real-time process monitoring on patient care cycle times, and quality and productivity indicator tracking. (iii) The Shock Trauma Intensive Care Unit, International Health Care, Salt Lake City, uses a data system to monitor the patient remotely and share information at any time in real time.

The Confederation of Indian Industry (2000) showed a study entitled, "Use IT advantage to move up the value chain in healthcare", which showed that India is using its Information Technology competitive advantage to aggressively exploit its capabilities to improve the healthcare services and to move up the value chain from traditional medical transcriptions' techniques to the remote tele-medicine technique. A specialized company in India called "Wipro" is already making use of the availability of broadband transmission technologies to connect the hospitals in India to a network providing tele-medicine services from experts who are normally available only in bigger hospitals in the metropolitan cities, so that more people will benefit from the services.

The technological solutions in medical practices, e.g. telemedicine, which are being implemented in a quite a number of countries, spread critical medical expertise across regions and around the globe. For example Moore (2002) showed that a US company believes that the shortage of physicians specializing in intensive care can be mitigated by its telemedicine system. In September 2001 the performance of transatlantic surgery by remote control proved that, with the right equipment, surgeons exploiting advanced tele-communication technologies can perform and teach advanced procedures from thousands of kilometres away.

2.4 THE COMPONENTS OF THE HEALTH CARE SERVICES

An Emergency Services Collaborative National Team in the United Kingdom presented in 2002 a case study to improve the health care services across the country with special emphasis on Emergency Care. They indicated that some of the examples they derived have been developed within individual organizations and departments. Others have arisen from national programmes of the Modernization Agency. The purpose of this agency is to provide ideas and examples of improvements made within emergency care, so that others can adapt them for their own local circumstances.

They identified four key patient flows that form the basis of the programme:

Group 1: Patients who can be treated and discharged relatively quickly, often following a simple diagnostic assessment. These patients will often have a minor injury or illness.

Group 2: Patients who require longer assessments and observations in addition to diagnosis and treatment. These patients are often treated in a Medical Assessment Unit or equivalent.

Group 3: Medical patients who require admission to an acute hospital with a significant length of stay. This will include working on key hospital processes such as bed management and discharge planning.

Group 4: Patients who are admitted for an emergency surgical procedure.

There are also some key practices that may cut across each of these patient groups. These are 'see and treat', access to diagnostics, dedicated assessment services, discharge, scheduling emergency care, access to senior/specialist opinion and bed management/escalation.

2.5 EMERGENCY ROOM (DEPARTMENT) (ER):

By definition, the accident and emergency department is a critical area which - as it is named - needs careful, quick and accurate activities. The patients in this department may have a higher probability of risking their lives and are thus in need of urgent attention and treatment.

Simmons (2002) described what a number of hospitals are doing now to achieve better patient flows through their emergency department. This is in the sense of smooth, quick and controlled flow. Many of the methods used are new - such as infrared

tracking systems to follow patients throughout the hospital, using bedside registration to bypass emergency department waiting rooms, and scheduling staff to reflect the observed pattern of patient demand. The study also discusses how hospitals are reviewing new ways to quickly, but appropriately, discharge patients from hospital in order to open up beds to other waiting patients. It also examines what hospitals in a global national health system are doing to work together when it comes to issues such as “ambulance diversions” a problem that is becoming more common in many communities. The study explains what some hospitals are doing to make their patients in their Emergency Department more satisfied with the care they receive.

Patients coming to the Emergency Department for examination and treatment, who leave without being seen (LWBS) represent high medical and legal risks for hospitals and healthcare providers (McNamara, 1995). Clearly, reduction in the number of these LWBS patients is a desirable goal for all Emergency Departments. From the patients’ standpoint, the main reason for leaving without being seen is dissatisfaction with waiting times.

However Brewster (2001), showed that the Emergency Department being the main entry point into in-patient settings for people requiring non-elective acute care, many patients with less serious medical problems may seek treatment in Emergency Departments because they have difficulty getting immediate care elsewhere. Under USA federal law patients who walk into Emergency Departments cannot be turned away. However, hospitals can exercise more control over patients who are arriving by ambulance. When hospitals lack the capacity to provide emergency care for patients requiring treatment or admission, they commonly divert ambulances to other hospitals.

In a paper presented by Hadjistavropoulos, et al. (1997), they documented the complete audit process of the Regina Health District’s Emergency Departments. The issues examined were triage, non-urgent visits, waiting times, and information management. The findings demonstrated how an audit can effectively monitor the functioning of an Emergency Department and provide data essential to continuous quality improvement.

Hadjistavropoulos, et al. (1997) has applied their philosophy of Continuous Quality Improvements (CQI) to the Emergency Departments’ audit. The primary goal of their

study was to investigate the level of implementation of the audit recommendations, as well as the resultant changes in the functioning of the Emergency Department. They explained that as a result of this audit, many major operational changes had occurred in the Regina Health District.

2.6 THE VALUE CHAIN ANALYSIS TECHNIQUE

Porter (1990) defined the value chain as a sequence of activities describing the movement of products or services from their basic inputs or “raw materials” through a series of enhancement or “value adding” steps such as manufacturing, distribution, and after-sales service of a series of outputs.

The School of Computing and Information Technology introduces Value Chain Analysis, its elements (Primary & Support activities), and how it is to be implemented.

Ensign (2001) provides a comprehensive way to define and categorize the various kinds of linkages and interrelationships between activities in a value chain.

References have shown that the Value Chain Analysis Techniques have been applied to quite a number of diversified types of systems and activities with the aim of improving the quality and competitive advantages, and increasing market share...etc. It is applied in different industries, trade, services, etc.

For example a European study of Value Chain Analysis demonstrated the importance of generating consumer value and [the agreement on] rewarding trading partners in order to create long-term value. The analysis showed that implementing an Efficient Consumer Response method (ECR) created significant cost reduction opportunities and resulted in gaining a good market share (Schiebel, 1996).

Moreover, Turban, Mclean, and Wetherbe (1999) demonstrated the application of the Value Chain Analysis model in different systems to improve the quality and competitive advantages, and increase market share...etc. of businesses. Among the cases studied are:

1. the Chrysler car agency;
2. the Airline industry; and

3. Benetton the fashion retailer.

Rose described the application of Environmental Value Chain Analysis (EVCA) to programmes of end-of-life treatments of products. The analysis examines the information, money and product flows between the players of concern. Those are the producers, government, consumers and recyclers. Within each of these groups, there are internal value chains. The most critical of these turns out to be the producer's internal value chain, which represents the complexity of interaction between different business groups within a company. Rose also showed that the Environmental Value Chain Analysis could help:

- increase recycling collection rates (by understanding interactions with consumer),
- improve logic of proposed legislation (by showing actors influencing decisions, by making transparent the complexity of proposed product and/or fee collection systems),
- decrease recycling costs (by improving the relationship between producer and recycler and by limiting extraneous players), and
- re-organize the value chains in such a way that the systems provide incentives for a design for recycling.

The value chain analysis techniques have been applied in the health care systems. Burns (2002) analyzed developments in the US health care value chain over the past decade. The researchers at Wharton School spent three and a half years (January 1998-June 2001) studying the internal value chain of three major players at various stages of the Health Care value chain, namely:

- Producers (medical equipment and drug manufacturers)
- Purchasers (group purchasing organization and wholesalers/distributors).
- Healthcare providers (hospitals).

The study described the following:

- the profile of the major segments in the health care value chain and some of the key players within them, as well as their resources and capabilities;
- the activities and processes within the healthcare value chain;

- the identification and analysis of the strategic and competitive issues facing the three major players, viz; Producers, Purchasers, and Healthcare providers.
- the impact of e-commerce on the value chain
- the assessment of future prospects for partnership and improved efficiencies between value chain players.

AIM OF THE RESEARCH WORK

The ultimate objective of this research work is to be re-stated as follows: “to suggest how we could improve the performance of the health care services in the emergency department using the Value chain analysis Tools with an application to Salmaniya Medical Complex.”

CHAPTER 3

(Research Methodology)

3. CHAPTER 3: RESEARCH METHODOLOGY

3.1 METHODOLOGY ADOPTED FOR THE RESEARCH WORK

Extensive field studies were carried out in order to understand the function and the activities of the emergency department. The Value Chain Analysis technique was utilized to analyze these activities which would assist in recommending the required improvements of services.

3.2 FIELD OBSERVATION

In order to construct the value chain representation of the processes within the Emergency Department, the methodology described above was applied. Interviews in addition to field observations furnished valuable information for the study of the processes within the emergency department.

3.3 INFORMATION GATHERING

Information were gathered through structured questionnaires filled in through a sequence of interviews during March & April 2004, 3 days a week (Saturday, Tuesday and Friday), 3 shifts a day (morning, evening and night).

The detailed forms of questionnaires are presented in Appendices A& B

The interviews were carried out with:

1. Registration clerks

The tested sample of this study comprised a total of 9 of Bahraini clerks interviewed.

The goals from interviewing the clerks were to identify their activities, the tools used, the time taken, the technologies utilized, etc.

2. The patients

The tested sample of this study comprised a total of (178) Bahraini and non-Bahraini patient of age (6) to (80) years, who attended the emergency Department at Salmaniya Medical Complex.

The goals from interviewing the patients were to examine the efficiency of the services given, the time wasted in waiting, and the patients' expectations and satisfaction.

3. The nurses

The tested sample of this study comprised a total of 17 of Bahraini and non-Bahraini nurses interviewed.

The goals from interviewing the nurses were to identify their activities, the tools used, the time taken, the technologies utilized, their perspective regarding the status of the patients, their evaluation of the outcome, etc.

4. The doctors

The tested sample of this study comprised a total of 12 of Bahraini and non-Bahraini Doctors interviewed

The goals from interviewing the doctors and specialists were to identify the level of service utilization, the process, the time taken to accomplish a process, and the tools, equipment and facilities used in diagnoses. This includes their perspective on the technologies used, their evaluation of the final outcome, etc.

5. The technicians

It also comprised a total of 3 of Bahraini and non-Bahrain technicians interviewed.

The goals from interviewing the technicians were to identify the level of technologies used in the examination, diagnosis, and treatment of the patients. Their responses during the interviews would also help the researcher to assess the technologies and to identify any possible lacks in the technological development in critical areas such as laboratory, radiography....etc.

3.4 A VALUE ADDED CHAIN REPRESENTATION OF THE ACTIVITIES IN THE EMERGENCY DEPARTMENT

When applying the value chain representation to the emergency department, as a process within the health care system, we focus on:

- *Patients*: all the activities that the patient has to do such as, registration, waiting, attending the triage room, attending the blue room or cubicle A or B, or RR room, ..etc.

- *Doctors*: all the activities that the doctors do in relation to the patients such as examination, investigation, diagnosing, describing the treatment, prescribing the medication, doing operations, ..etc.
- *Nurses*: the activities that the nurses have to do related to the patients such as, classifying the patient's condition (emergency, urgent, non-urgent), investigation, taking the vital signs, pre-diagnosing, applying the doctors' orders, doing treatment, ..etc.
- *Technicians*: the activities that the technicians have to perform, e.g. checking, calibrating it and maintaining it, the equipment used in the diagnosis and treatment of patients.
- *Other Staff*: the administration activities that are carried out on the different documents concerning the patient and the processes carried during his presence in the emergency department.

3.5 DEVELOP THE VALUE CHAIN TECHNIQUE

In the following we apply the Value Chain Technique to the Emergency Department as shown in figure 3.1 below:

(A) Primary Activities:

- (1) *Inbound logistics*: refers to the registration and the triage process.
- (2) *Operations*: those activities executed in the Treatment Area. These include all activities related to investigations, diagnosis, and treatments of patients
- (3) *Outbound logistics*: specifies the patient's resultant condition (discharge, in-patient, outpatient, or death).
- (4) *Marketing and Sales*: concerns the awareness, and education activities that the hospital provides to public and staff (including patients). This includes seminars, conferences, lectures, brochures, etc. For example in the waiting area a recorded educating lecture may be displayed for the attention of the patients.
- (5) *Services*: includes the follow up activities of patients after discharge.

(B) Support Activities:

1. *The infrastructure*: includes the management/administrative activities such as hospital strategies relating to: research and development, planning, budgeting, technology acquisition, management information systems, etc.
2. *Human Resources management*: refers to activities such as, staff recruitment, educating, training, and the continuous upgrading of the skills of the staff.
3. *Technology development*: associated with the activities related to technology, such as: information & communication system technologies, continuous research and development programme, expert consultation programme, lab facility equipment, and implementation of technological techniques in the hospital activities.
4. *Procurement*: concerns the procedures for purchasing the equipment and tools for hospital usage, including computer systems (hardware and software), communication systems (hardware and software), medical equipment, lab facilities and modern instruments, medical examination tools, medical operation tools and transportation equipment, etc.

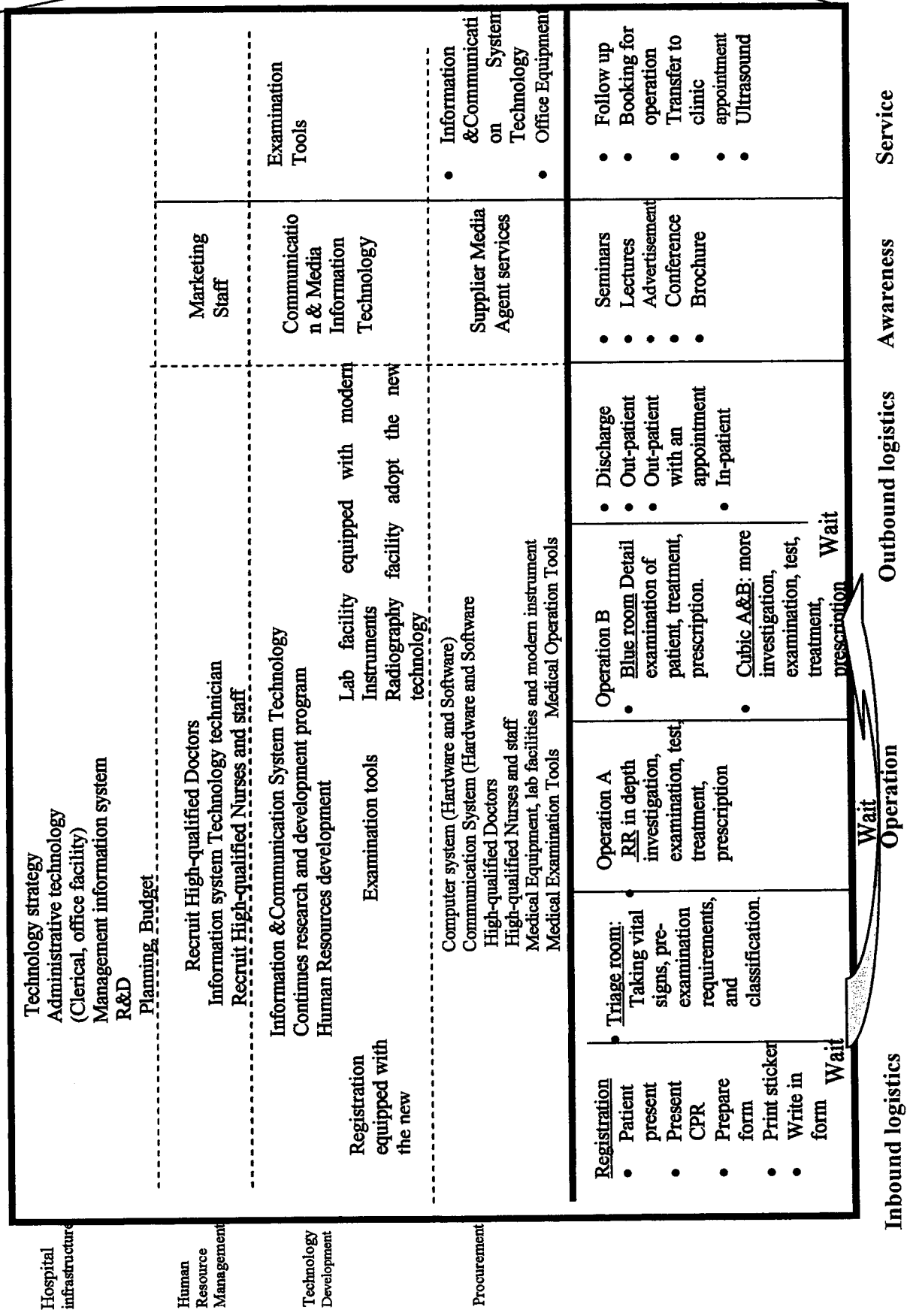


Figure 3.1 The value Chain Technique of the Emergency Department

3.6 PERFORMANCE INDICES

The researcher is adopting the following performance indices as an indication of the quality of the medical services (Mowen, 1993).

These indices, which are defined below, are chosen to be: Reliability, Responsiveness, Assurance, Empathy, and Satisfaction, with the addition of Cost. Such indices can be considered as the evaluation parameters for the medical services.

These parameters are affected by certain factors described as: Skills, Knowledge, Number of Staff, Availability of enough rooms for medical services, Equipment (Technology) and Attitude of the staff.

These factors can be judged upon by measuring what we call here indicators. The questionnaires, interviews and field surveys have been designed to give measures for these indicators. The measures of these indicators can be traced back to the evaluating parameters, which in turn evaluate the elements of the medical services as described above.

Following is a schematic diagram (see figure 3.2) representing the suggested relations between evaluation parameters, factors, indicators, and questionnaires.

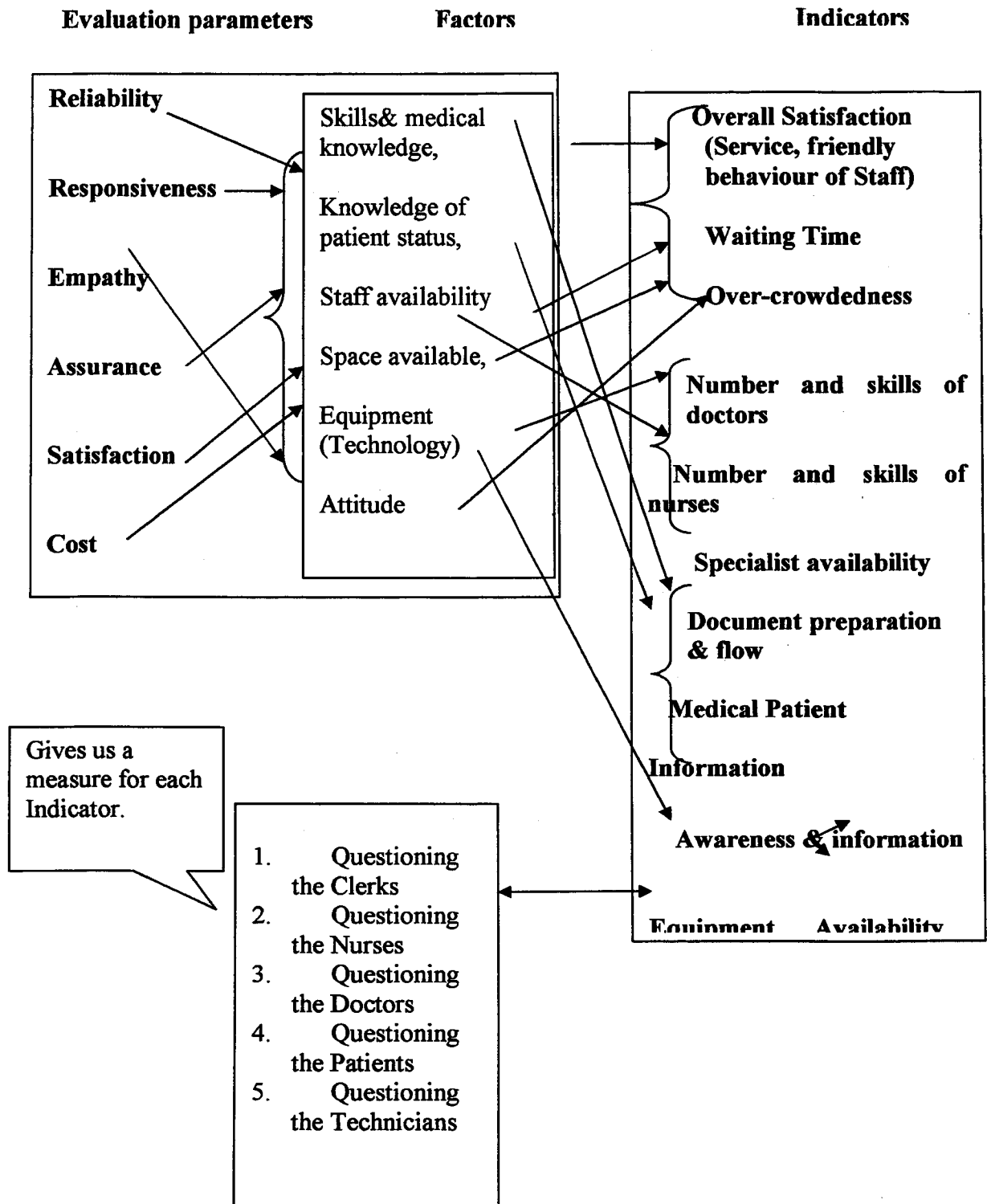


Figure 3.2 The relationship between the Evaluation Parameters, Factors and Indicators

3.7 DEFINITIONS

For the purpose of this research work the researcher adopted the following definitions (derived from the Glossary of health care quality) with minor modifications (Khoja, 2002).

a. Evaluation Parameters (performance indices):

- **Reliability:** the extent to which results of the medical services' activities (investigations, diagnosis, and treatment) are medically successful. The services' activities are consistent through possible repeated services by different medical staff, or at different times by the same staff.
- **Responsiveness:** meeting patients' expectations about the medical services.
- **Assurance:** the act of giving confidence of the service provided and/or the state of being certain of the correctness of the treatment.
- **Empathy:** the attitude of the staff towards each other as well as towards the patients.
- **Cost:** expenses incurred to provide the health care service.
- **Satisfaction:** the result of delivering a product or service that meets patient requirements and expectations.

b. Factors

These are the factors that affect the evaluation parameters:

- **Skills and medical knowledge:** The skills of the staff of the Emergency Department.
- **Knowledge of the patient's status:** The medical knowledge of the technical staff and the medical history of patients.
- **Staff Availability:** The availability in due time of a sufficient number of doctors, specialists, nurses, ..etc.
- **Space available:** The adequacy of health care area (or rooms).
- **Equipment (Technology):** The Technological status and adequacy of medical and administration equipment such as Laboratories, Radiography and Information Technology. This will also include surgical tools, procedures, and techniques.
- **Attitude:** The behaviour of the staff, nurses and doctors.

c. Indicators

- **Service Satisfaction:** A measurement of the patients' satisfaction of the services received from the nurses, doctors, and hospital as a whole..

- **Friendly behavior of Staff:** This is measured by much staff behaviour such as: *Welcoming expressions* Such as Good morning, Good evening, etc., *disturbing activities while attending to the patients* such as the action of talking to others or leaving the patient unattended, *Friendly facial expression* such as smiling and *calling the patient by name* which gives the patient the impression of the acquaintance with his case as well as a friendly atmosphere).
- **Waiting Time:** the time that a patient has to wait until a nurse or a physician sees him/her.
- **Over-crowdedness:** the unorganized number of patients visiting the emergency department.
- **Number of Nurses:** the adequacy of the number of professional nurses who provide clinical treatment and care to patients
- **Number of Doctors:** the adequacy of the number of professional doctors who provide medical activities and care to patients.
- **Skills of Staff (Nurses and Doctors):** the medical skills of the staff.
- **Specialist Response time:** the response time of the medical professional or consultant who is called when referral is requested.
- **Document preparation and flow:** the efficiency and accuracy of document (patient's information) transformation from one place to another.
- **Medical Patient Information:** the information about the patients, such as his personal status, historical data about his health, assessment, findings, results of investigations, treatment details, progress notes and discharge summary. This, then, includes his status before and during attending the hospital
- **Awareness & information:** includes the information given to the patients about his case, investigations, treatment and future implications or treatment.
- **Availability & Suitability of equipment:** This is a measure of the adequacy, efficiency and availability of tools and/or equipment used for the diagnosis, treatment, monitoring and direct care of patients.

These reflect the status of the factors as described above and are hence indicators that we attempt to measure through the questionnaires of the status of the medical services.

4. CHAPTER 4: RESULTS AND ANALYSIS

4.1 THE FLOW OF PATIENTS IN THE EMERGENCY DEPARTMENT

In the Emergency Department of Salmaniya Medical Complex, patients are classified according to the severity of their medical conditions (triaging) into three categories; emergence, urgent and non-urgent (see figure 4.1). **Emergence** cases are defined as those whose lives are threatened and who require immediate medical attention. **Urgent** cases are those whose need of medical attention may be delayed for a little while without much harm (could be for a few hours). **Non-urgent** cases are those that can be adequately treated by a primary care physician and do not require the resources of the Emergency Department.

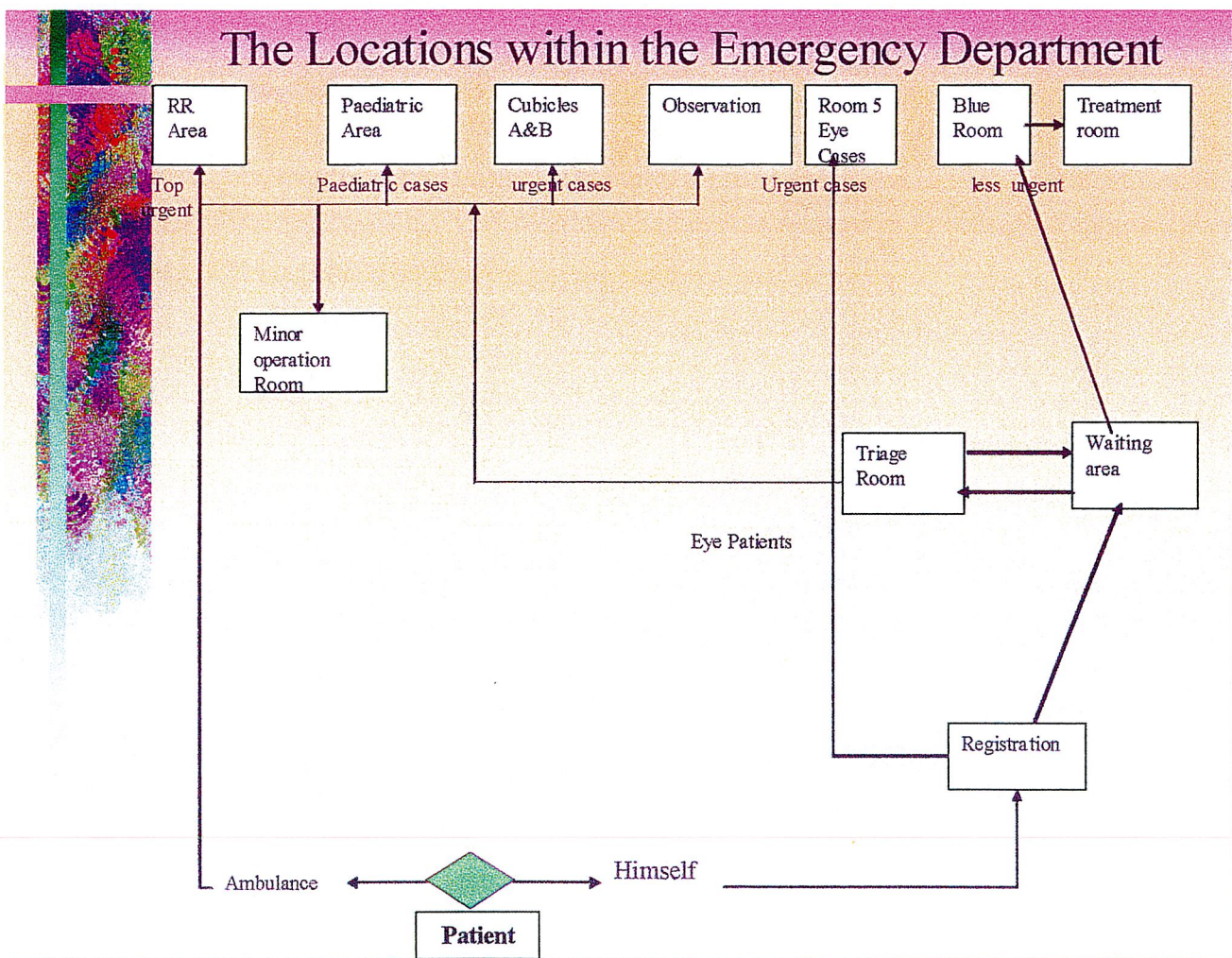


Figure 4. 1 The flow of patients within the Emergency Department

4.2 THE COMPONENTS OF THE EMERGENCY DEPARTMENT

The Emergency Department consists of the following locations:

1. Patient Registration area:

All patients have to register. A number is assigned to each patient at the reception.

2. Waiting Area:

In this area the patients have to wait to be called by nurses or doctors for the next step. There are two waiting areas one for men and the other for women.

3. Triage Room:

In this room the patients are sorted according to severity of the condition (triaging). Qualified nurses do these rapid assessments. There are 2 Nurses per shift.

4. Cubicles A& B:

Patient in urgent conditions are treated in these areas. In each area there are 16 trolleys. The manpower in each area is 2 emergency physicians and 3-4 nurses.

5. Paediatric Room:

This area is dedicated to the treatment of children. There are 6 beds, and 2 nurses serving in that room.

6. Eye clinic:

Room equipped for eye tests and examinations. There is one doctor. In the morning from 8:00am -1:00 pm, this clinic is used for the management of patients with eye problems.

7. Observation Room:

This area is equipped similarly to cubicles A & B and will be opened when Cubic A and B are full.

8. Ambulatory clinics:

These are for non-urgent cases. There is one doctor per room. He examines the patient and investigates his/her condition, then he directs him to the treatment room, the x-ray section, or the lab for a blood test.

9. Treatment Room:

This room is for injections, bandages and dressing.

10. Minor Operations Room:

In this room minor surgery is carried out (e.g. slumming under local anesthesia).

11. Resuscitation Room (RR):

This Room is equipped for emergency cases.

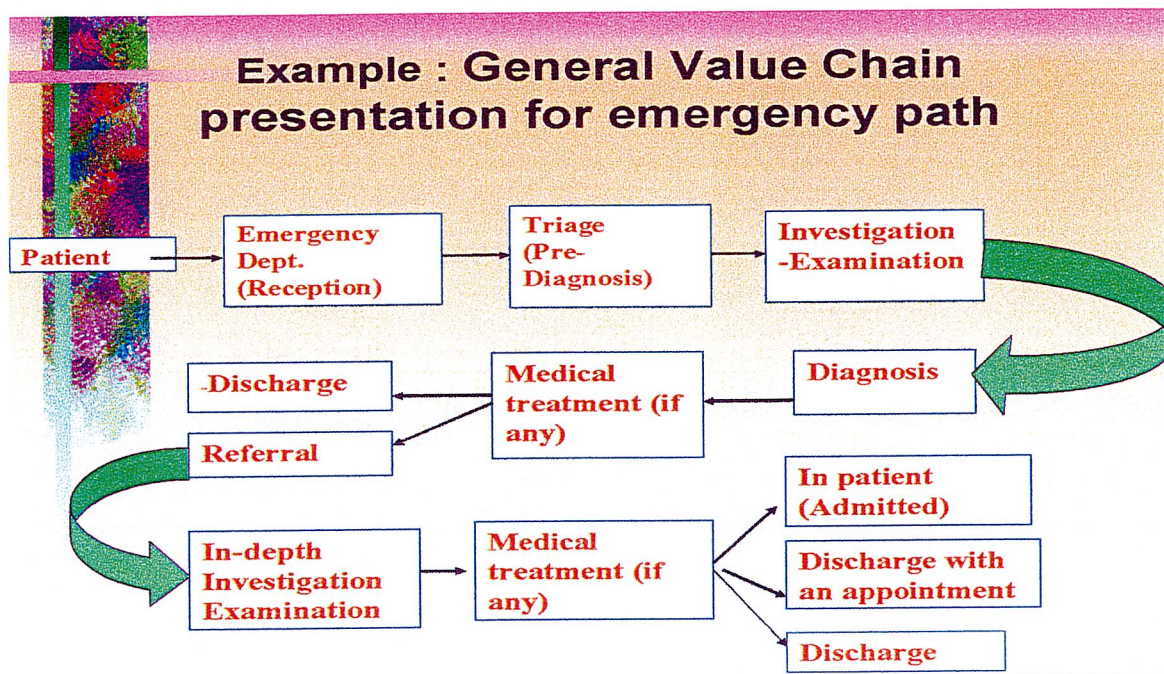


Figure 4.2 Major activities in the Emergency Department

4.3 DESCRIPTION OF PATIENTS' PATH IN THE EMERGENCY DEPARTMENT:

Activities at the Reception:

Patients showing at the Emergency Department arrive either by ambulance or on their own.

Patients have to register at the reception using their Central Population Registration card (CPR) as an identity. Accordingly, the receptionist assigns a number to each patient. However, if the receptionist finds that the patient cannot wait because of acute illness, the registration process is postponed till later stage.

Eye patients are directed to the eye room.

Activities at the Triage Room:

The patient has, then, to wait in the waiting area until the triage nurse calls him/her. In the triage room the nurses make the rapid assessment (pre-diagnosis) in order to classify the case of the patient as an emergency, urgent, or non-urgent case.

Emergency cases are directed immediately to the Resuscitation room. Urgent cases are directed immediately to either Cubicle A or Cubicle B. Patients with non-urgent cases are to wait in the waiting area until doctors call each one to one of the Blue Rooms.

Activities in the Distributed Area:

This area includes: the Ambulatory clinic, Cubicle A & B, Observation Room, Treatment Room, Minor Operations Room, Resuscitation Room, Paediatric Room, and Eye Room.

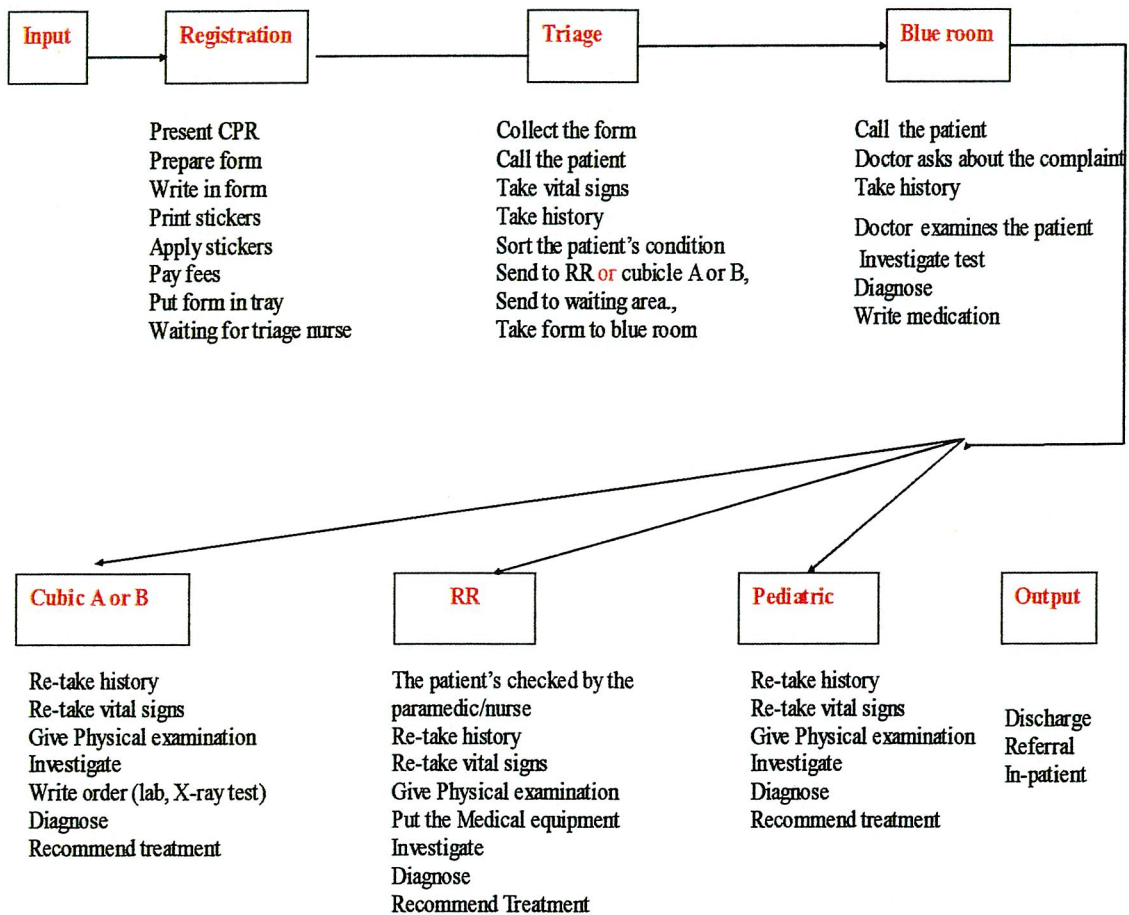
In this area, nurses recheck the vital signs if not taken in triaging, then the doctor takes a focused history and examination of the patient, asking for the necessary investigations and s/he order the initial treatment needed.

If the patient needs further in-depth investigations and examinations, the staff doctor calls for a specialist or a consultant from the hospital. The specialist examines the patient and prescribes the medical treatment, and, if needed, advises the patient for a future appointment for follow-up or admits him/her to the hospital as an in-patient.

Discharge of Patient:

The patient may be discharged after receiving medication from the pharmacy. He/she may also be advised to take a future appointment.

4.4 DETAILED ACTIVITIES WITHIN THE EMERGENCY DEPARTMENT



4.5 RESULTS OF THE QUESTIONNAIRES

Indicators have been judged upon as a result of analyzing the questionnaires. For the purpose of analysis the following steps have been taken:

- i) Some questions have been rephrased.
- ii) Questions have been grouped to give the intended measurement.
- iii) Some questions are repeated as they may give more than one indication.
- iv) Some questions are used for statistical analysis and some are used for contextual analysis (context).
- v) Only questions that showed a negative response are shown here (for the reason of need to improve).

- Vi) The questions have been treated in Statistical Package for Social and Science (SPSS) as follows: (Yes, for positive indication; No, for negative indication)

1. Overall Satisfaction

(a) Service Satisfaction

Derived from the following questions:

Patients' questionnaire:

1. Did the nurse repeat the vital signs and how frequently?
2. Were the sample and the IV successfully done at the 1st attempt?
3. Did the doctor request any tests?
4. Did the doctor explain what these tests were and how they would help your care?
5. Did the doctor use his stethoscope to listen to your heart and your breathing?

The SPSS statistical analysis revealed that:

The first question shows a negative response of 68% in the paediatric area and 58% in Cubicles A & B.

The second question shows a negative response of 68% in cubicle A & B.

The third question shows a negative response of 67% in the Blue Room.

The fourth question shows a negative response of 90% in Blue Room, 88% in Cubicles A & B and 100% in the Resuscitation Room.

Finally the fifth question shows a negative response of 55% in Blue Room.

The analysis of this shows that there are problems leading to dissatisfaction of the patient.

(b) Friendly behavior of Staff

Derived from the following question:

Did the clerk, nurses and doctors use friendly expressions like "good morning", etc.?

The SPSS statistical analysis revealed that:

The question shows a negative response of 60% in registration area, 76% in triage area, 61% in blue room and 56% for nurse and 53% for doctor in cubic a & b

The analysis show that there is a sort of unhealthy attitude of some of the staff of the emergency department.

2. Waiting time:

Derived from the following questions:

Clerks' questionnaire:

1. Was the process of issuing the forms free of problems?
2. Was the process of entering the information free of problems?
3. Was the registration process free of technical problem causing delay?

Nurses' questionnaire

4. How long does the patient wait (From Registration to Triage)? why? (context)
Less than 5-10min (short) More than 10min (long)

The SPSS statistical analysis revealed that:

The first question shows a negative response of 89% in registration area.

The second question shows a negative response of 67% in registration area.

The third question shows a negative response of 89% in registration area.

Finally the forth question shows a negative response of 59% in all area.

The analysis show that there are problems leading to long waiting times.

3. Nurses:

(a) Number of nurses

Derived from the following questions:

Nurses' questionnaire

1. How long does the patient wait? _____, why? (context)

(b) Skills & Medical Knowledge

2. Number of training courses you have attended? 2 training years and above
3. Year of experience? 5 years and above.
4. Average number of attempts in collecting the blood samples? (context)

The SPSS statistical analysis revealed that:

The first question shows a negative response of 59% in all areas.

The second question shows a negative response of 65% in all areas.

The third question shows a negative response of 53% in all areas.

Finally the fourth question shows a negative response of 56% in all areas.

The analysis show that there are problems related to the shortage in the number of skilled nurses.

4. Doctors:

(a)Number of Doctors

Derived from the following question:

Doctor questionnaire

Is your communicating with other doctors free of communication problems? (Non-existence of Juniors or Seniors)

The SPSS statistical analysis revealed that:

The question shows a negative response of 66.7% in all area.

The analysis shows that there is shortage in the number of doctors and/or skills.

(b) Specialist Response time

Derived from the following question:

Doctor Questionnaire

Do you find the specialists easily available and in due time?

The SPSS statistical analysis revealed that:

The question shows a negative response of 72.7% in triage area.

The analysis shows that there is delay in specialist response time.

5. Document Preparation and Flow

Derived from the following questions:

1. Who transferred the form? (context)
2. How long does it take to physically transfer forms to Triage? (context)

From the field observation the analysis shows that there is a problem in the document flow throughout the emergency department.

6. Medical history

Derived from the following questions:

Doctor questionnaire:

1. How did you get information about previous history, was it easy? (context)

Nurse questionnaire

2. Do you have no problem in getting previous history from the computers' side?

The SPSS statistical analysis revealed that:

The first question shows a negative response of 88% in all area.

The second question shows a negative response of No in all area.

The analysis shows that there is a delay in receiving the medical history of the patient or the inaccurate and incomplete information.

7. Awareness & information

Derived from the following questions:

Patient questionnaire:

1. Did the nurse inform you about any investigations needed?
2. Did you receive any future instructions from the nurse?
3. Did the doctor explain what these tests were and how they would help your care?
4. Did you receive any instruction from the Doctor for future awareness?

The SPSS statistical analysis revealed that:

The first question shows a negative response of 61% in paediatric and 68% in cubicle A & B.

The second question shows a negative response of 96% in the triage area, 86% in paediatric area, 97% in Cubicle A & Band 83% in the resuscitation room.

The third question shows a negative response of 90% in blue room, 88% in cubic A & Band 100% in the resuscitation room.

Finally the fourth question shows a negative response of 79% in blue room, 71% in paediatric area, 87% in Cubic A & Band 90% in Resuscitation room.

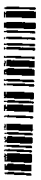
The analysis shows that there is a problem in giving the patient the awareness and the information needed.

8. Availability & Suitability of equipment

Derived from the following questions:

Patient questionnaire:

1. Did the nurse repeat the vital signs and how frequently?



2. Were the sample and the IV successfully done at the 1st attempt?
3. Did the doctor use his stethoscope to listen to your heart and your breathing?

Nurse questionnaire:

4. Was the examination process free of technical problem causing delay?
5. Was the equipment used in taking the vital signs free of problems?

Doctor questionnaire:

6. Are the tests needed available in the hospital?
7. Do you have enough equipment or tools?

The SPSS statistical analysis revealed that:

The first question shows a negative response of 68% in paediatric area and 58% in cubicle A & B.

The second question shows a negative response of 68% in cubic a & b.

The third question shows a negative response of 55% in blue room.

The fourth question shows a negative response of 65% in all areas.

The fifth question shows a negative response of 88% in all areas.

The sixth question shows a negative response of 58% in all areas.

Finally the seventh question shows a negative response of 58% in all areas.

The analysis shows that, there is a problem related to the availability and suitability of equipments in emergency department.

4.6 ANALYSIS OF RESULTS

The in-depth analysis of the questionnaires together with the researcher's field observations have identified possible problems that reflect on specific activities within the processes carried out in the Emergency Department. These problems have in fact been derived from a combination of indicators as described above. Such problems would affect at the end of the cause and result chain the evaluation performance indices of the healthcare services provided. Following the value chain analysis technique, these activities have been analyzed and their relations with other activities and responses have been determined. Six types of problems are discussed in the following.

4.6.1 Problem1: Documentation Preparation (Registration)

(A) The Process:

Filling the form, printing the form, printing the stickers, applying them to the form, and putting the form in the out-tray which will then, finally be collected by the nurse. The patient is waiting to be called for first the investigation step (triage).

The sequence of activities for the document preparation is presented in Figure 4.3.

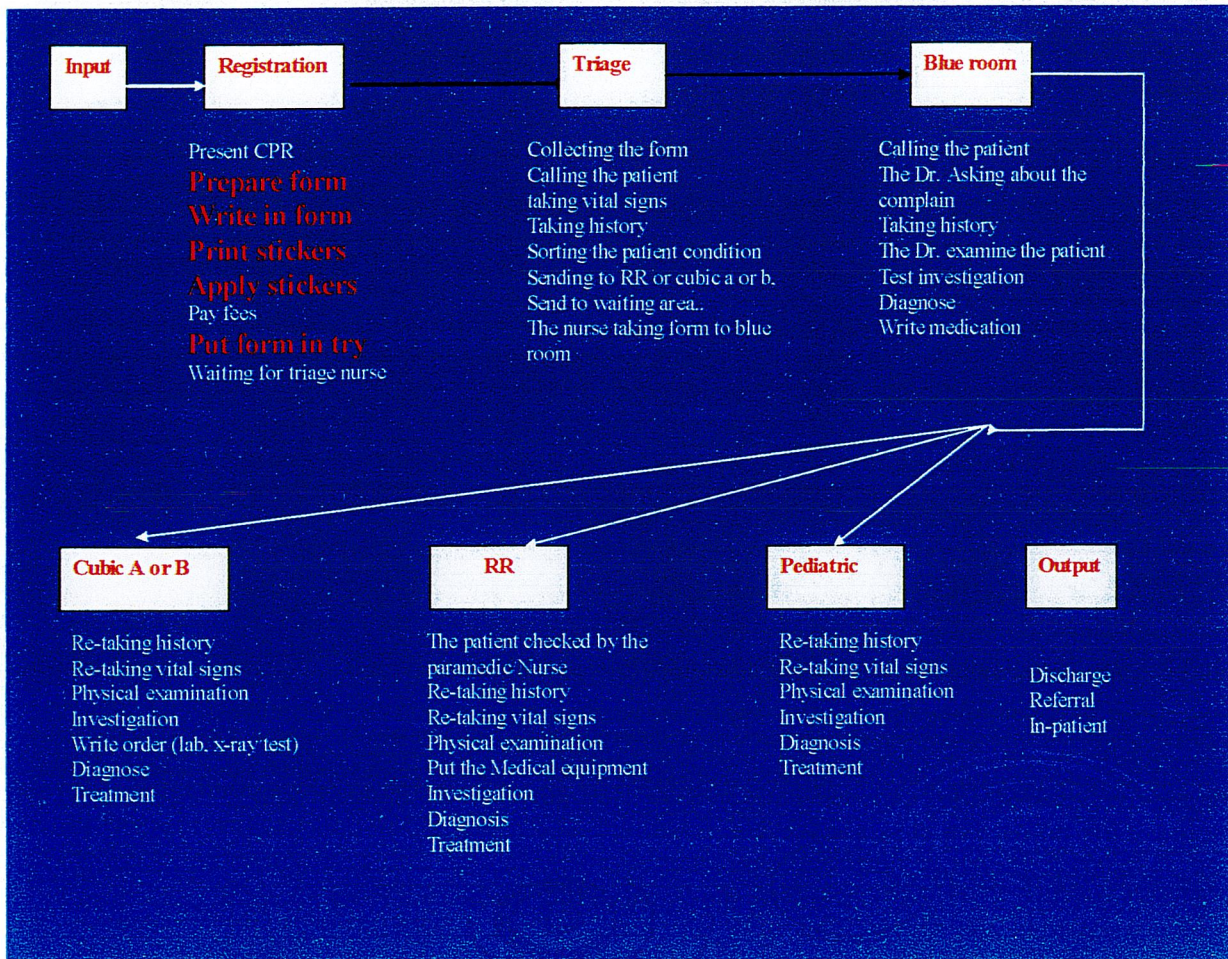


Figure 4.3 : The sequence of activities for the document preparation.

(B) Description of the problem:

These activities are time consuming and subject to errors, which lead to dissatisfaction of the patient, who has to wait until the triage nurse collects the form and calls him/her. In addition, if a mistake occurs during printing the form or the sticker, the clerk has to reprint the form and the sticker again which takes time, increase the cost and cause over-crowd ness.

(C) The analysis:

The analysis is shown below making use of the value chain presentation of the Document preparation as follows.

Value chain technique for the Document preparation problem (see Figure 4.4).

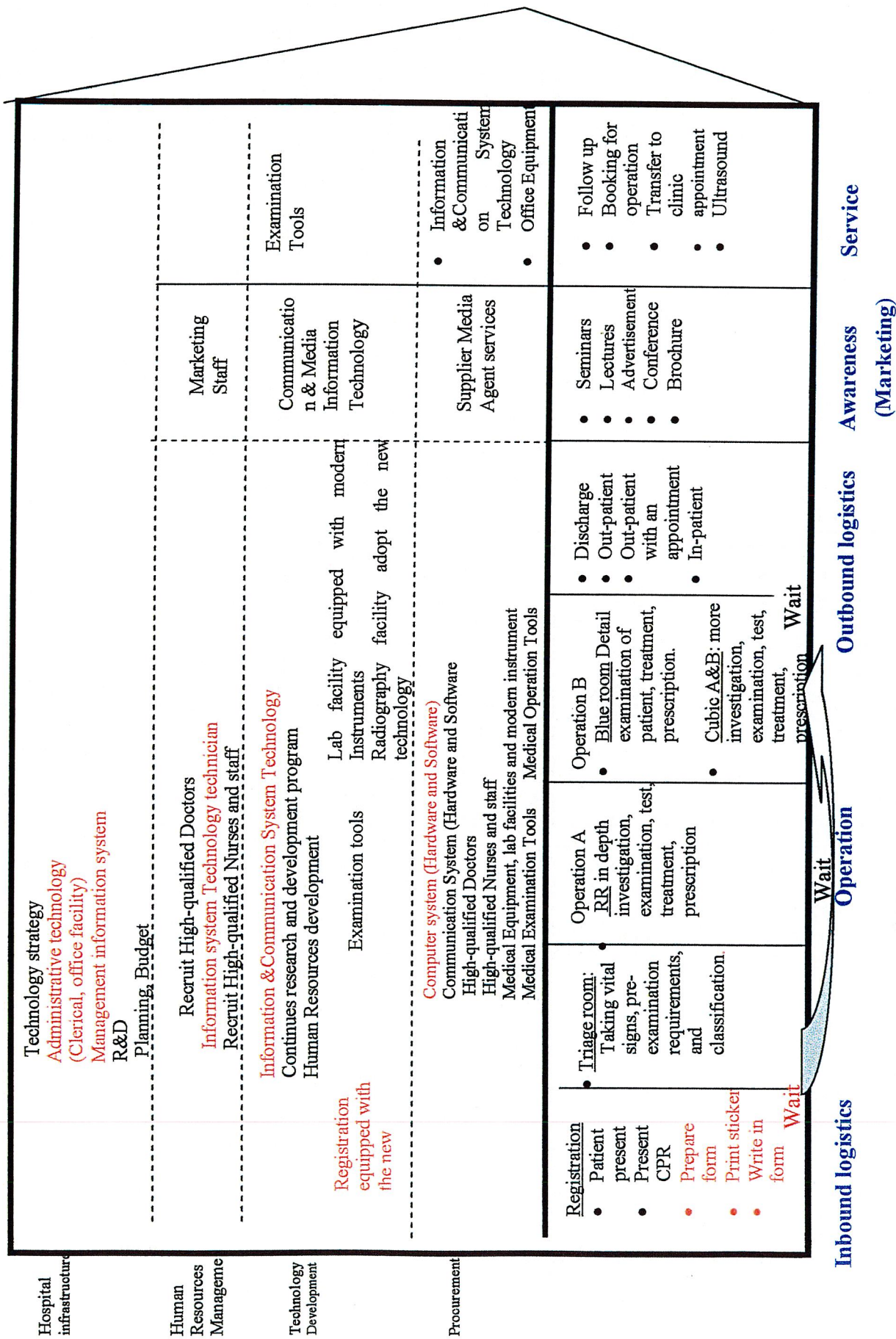


Figure 4.4 The Value Chain Technique of a Document Preparation

In the value chain presentation, improving the highlighted support activities will improve the activities concerned within the inbound logistic. This includes: upgrading administrative technological Tools (Clerical, office facility), hiring information system technician, developing the Information & Communication System Technology, equipping the registration with an automated new information technology system.

4.6.2 Problem 2: Documentation Movement

(A) The process:

The analysis revealed that the document movement from the registration area to investigation, diagnosis, treatment, and other areas is done by hand carrying of the nurses.

The sequence of activities for the document flow is presented on Figure 4.5.

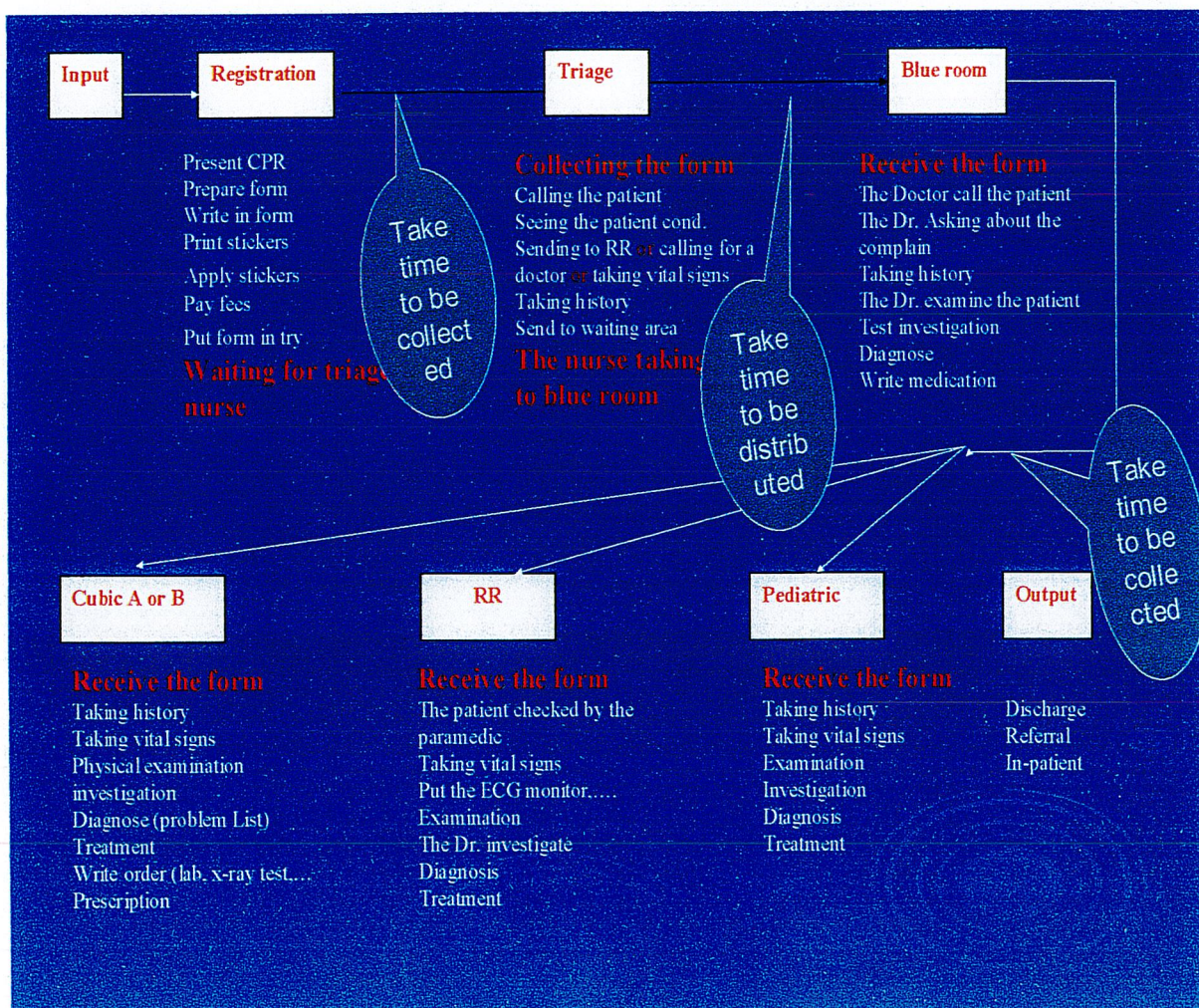


Figure 4.5 The sequence of activities for the document flow.

(B) Description of the problem:

Shortage on the number of the triage nurse, who is taking and distributing the forms to the specific area.

The analysis revealed that the document movement from the registration area to the triage area takes time. This is due to the shortage in the number of the triage nurses, who is collecting and distributing the forms to the specific areas. The researcher has also, recognized that not enough number of staff was covering the service of 24 hour/day in the triage area. This leads a severe work pressure on the triage nurse. These nurses have to deal with documents transfer between almost all areas in the emergency department. Delay will, then, lead to over-crowdness and dissatisfaction of the patients.

(C) The analysis:

The analysis is shown below making use of the value chain presentation of the Document movement as follows.

The value chain technique for the Document movement problem (see Figure 4.6).

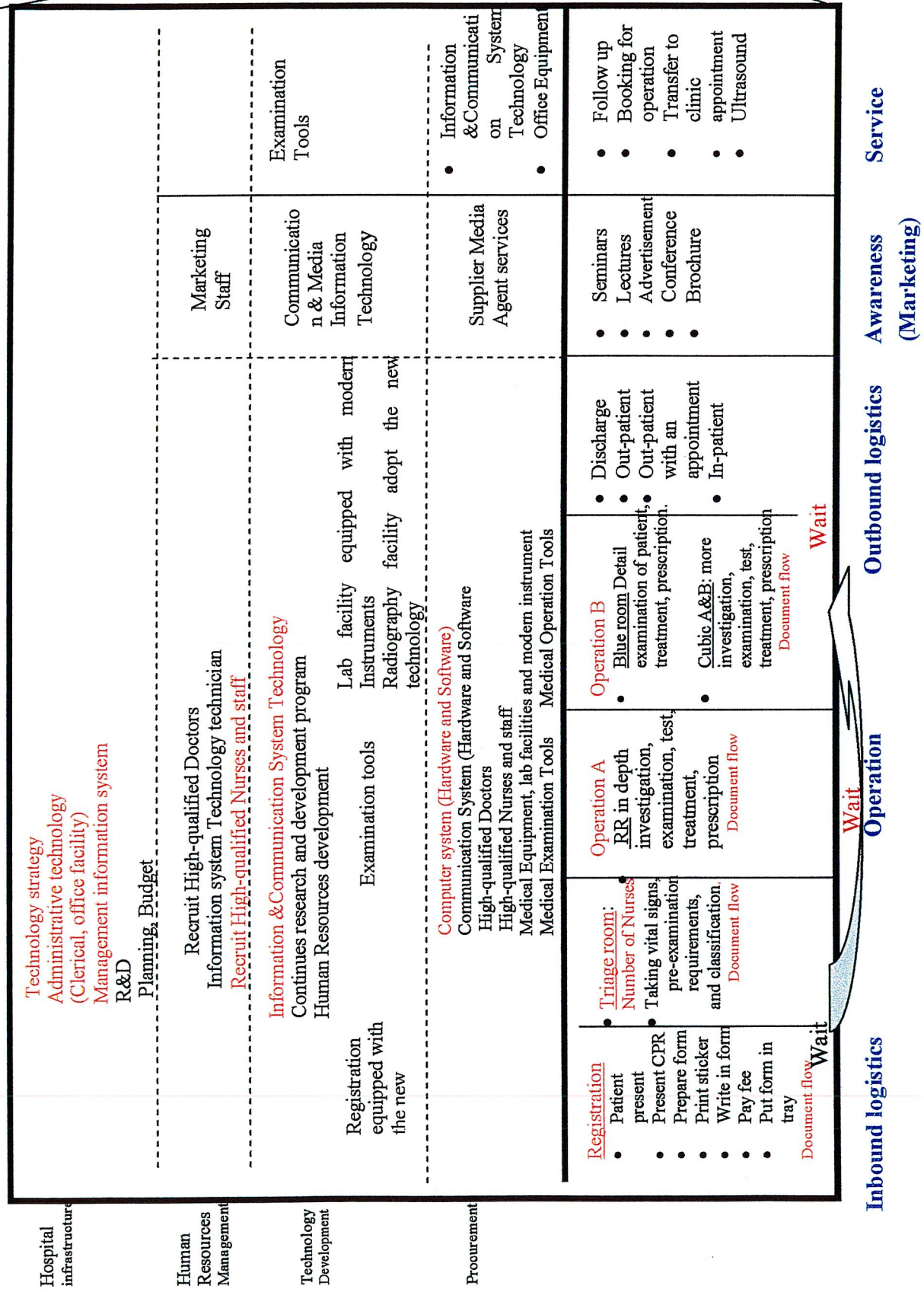


Figure 4.6 The Value Chain Technique of a Document Movement

In the value chain presentation, improving the highlighted support activities will improve the activities concerned within the inbound logistic, operation and the outbound logistic. This includes: setting technology strategy, upgrading administrative technological Tools (Clerical, office facility), establishing a new management information system, hiring high qualified nurses and doctors, developing the Information & Communication System, and procure new Computer system (Hardware and Software).

4.6.3 Problem3: Staff Shortage:

1. Shortage of the number of clerk.

(1-A) The status:

The number of clerk was seen not enough in the registration area, which cover all type of patient. The shift staffed as follows: one staff in the morning shift, two staff in the evening and two staff in the night shift.

(1-B) Analysis of the problem:

The analysis revealed that shortage in the number of staff in the registration area leads to pressure on staff all the time. This some time causes delay and leads to crowiness of patients waiting to be registered. This is affecting the attitude of the staff with the patients and increase in waiting time.

2. Shortage of the number of Nurses.

(2-A) The status:

The number of nurses covering all the areas, viz; triage, cubic a or b, RR, paediatric, was noticed to be not enough.

(2-B) Analysis of the problem:

The analysis has shown that the shortage in number of nurses is affecting the immediate action needed to see the urgent and emergent cases. This result in long waiting time of the patient until the nurse can examine him/her, it may also affect the attitude of the nurses towards the patients due to work pressure. The satisfaction of the patient of the service is seriously affected.

3. Shortage of the number of the Doctors:

(3-A) The status:

The number of doctors in department is seen to be not enough to deal with the huge number of patient visiting the emergency department daily seeking for medical treatment.

(3-B) Analysis of the problem:

The shortage in number reflects on the time the patient has to wait until a doctor can see him/her.

This results in long waiting time and over crowd ness. This all lead to dissatisfy the patient.

(C) Analysis

The analysis is shown below making use of the value chain presentation as follows.

The value chain technique for Staff shortage problem (see Figure 4.7).

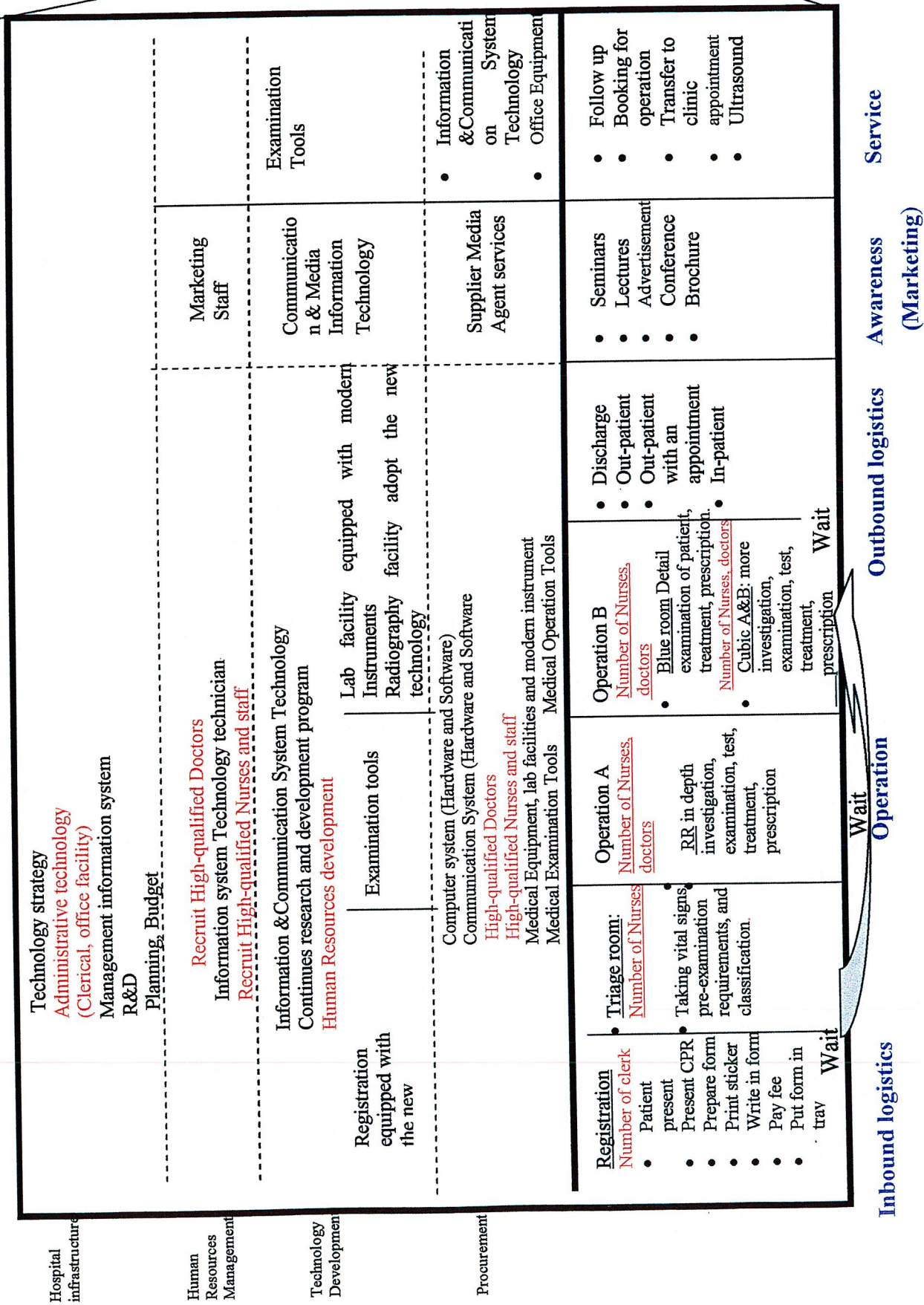


Figure 4.7 The Value Chain Technique of shortage of staff

In the value chain presentation, improving the highlighted support activities will improve the activities concerned within the inbound logistic, operation and the outbound logistic. This includes: hiring high-qualified nurses, staff and doctors, as well as developing the human recourses' skills.

4.6.4 Problem4: Equipment & Investigation Test

The process:

The analysis revealed that the lack and the condition of the equipment are affecting the examination, investigation and diagnosis of the patient condition. (see Figure 4.8)

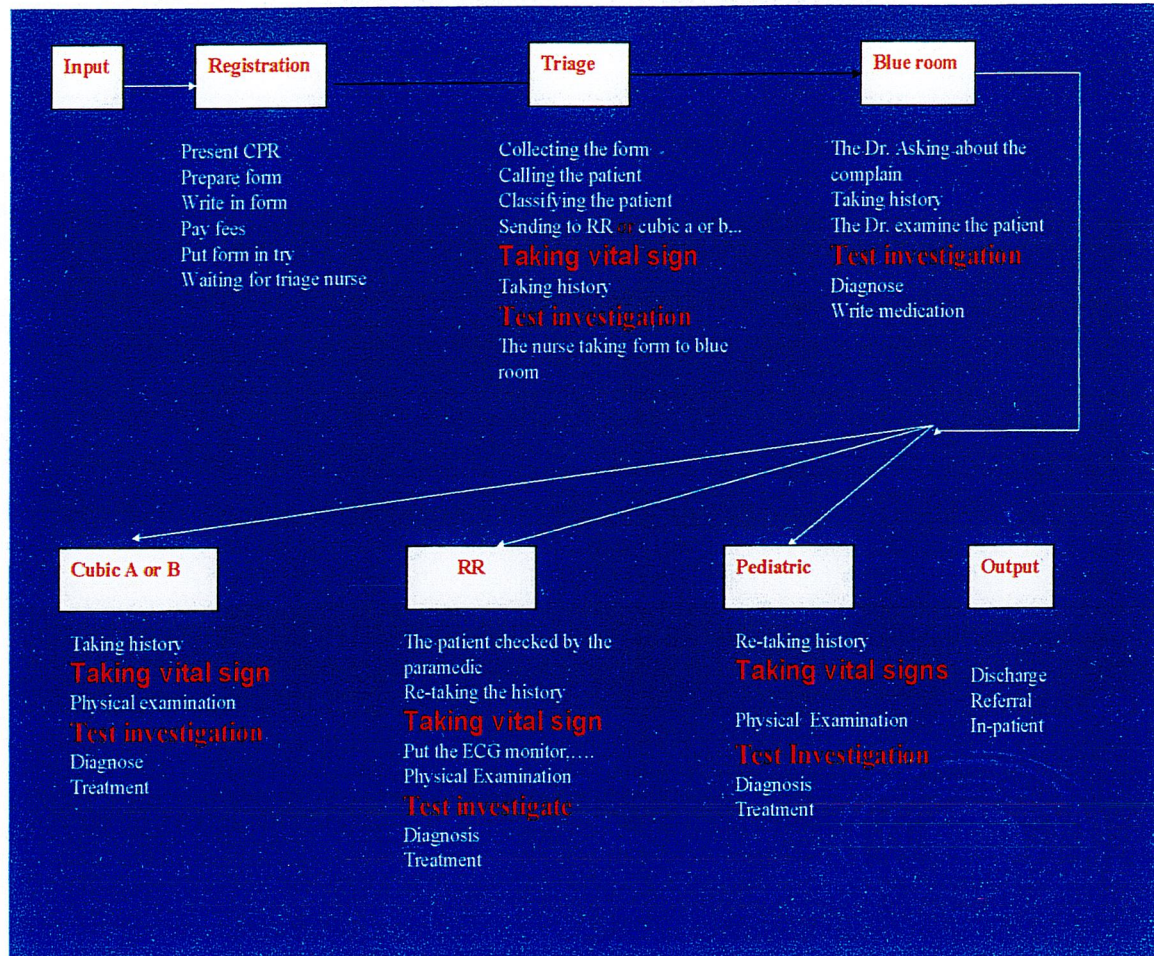


Figure 4.8 The lack and condition of the equipment.

1. Not enough number of equipment

(1-A) The Status

Questionnaires have shown that **not enough** number of equipments in the emergency department.

(1-B) Analysis of the problem

If there is not enough number of equipment the patient has to **wait** (sometimes to the second day). Sometimes some equipment not available, so they have to bring them from other wards or sections in which this process **takes time**. The problem of **availability of equipment** results, too, in wasting the time of both doctors and nurses.

2. Condition of equipment:

(2-A) The Status:

Investigations have shown that some technologically old equipment is still in use

(2-B) Analysis of the problem:

The old equipment may give wrong readings and, hence, wrong indication to the doctor regarding the patient condition, which might threaten the life of the patient.

3. Test facilities operation:

(3-A) the status

The emergency Doctors are not allowed to operate some of the testing facilities. The specialist technicians are only allowed to do so. Examples are: CT scan, MRI,.

(3-B) Analysis of the problem

It has been noticed that the specialists, sometimes, are not available in due time for different reasons. Therefore, the urgent and emergent cases sometimes have to wait for specialists' availability. This leads to delays in diagnosis and , hence, treatment. The result may be dangerous on the patient, which will affect the result of the treatment and the satisfaction of the patient.

(C) Analysis

The analysis is shown below making use of the value chain presentation as follows.

The value chain Technique for Equipment & investigation test problem (see Figure 4.9).

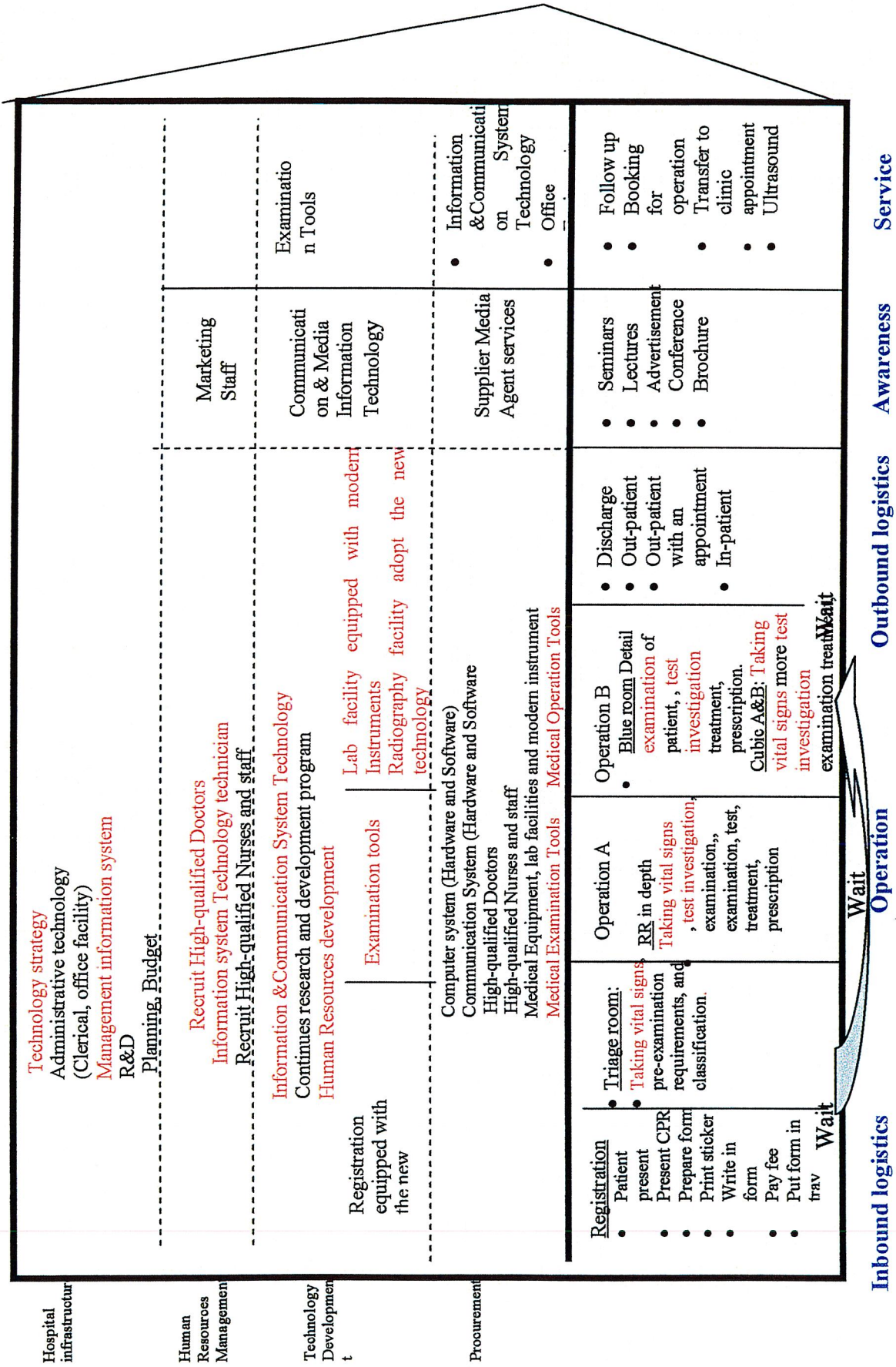


Figure 4.9 The Value Chain Technique of Medical Equipment

In the value chain presentation, improving the highlighted support activities will improve the activities concerned within the inbound logistic, operation and the outbound logistic. This includes: setting a technology strategy having management information system, hiring high qualified doctors and Information system technician, developing the Information & Communication System, giving training to doctors to use some testing facilities as appropriate (i.e. human resource development), procuring modern examination Tools and equipments

4.6.5 Problem 5: Medical Record (Including History)

The process:

The analysis revealed that receiving the medical record late will affect the processes of: examination, investigation and diagnosis of the patient's case. (see Figure 4.10)

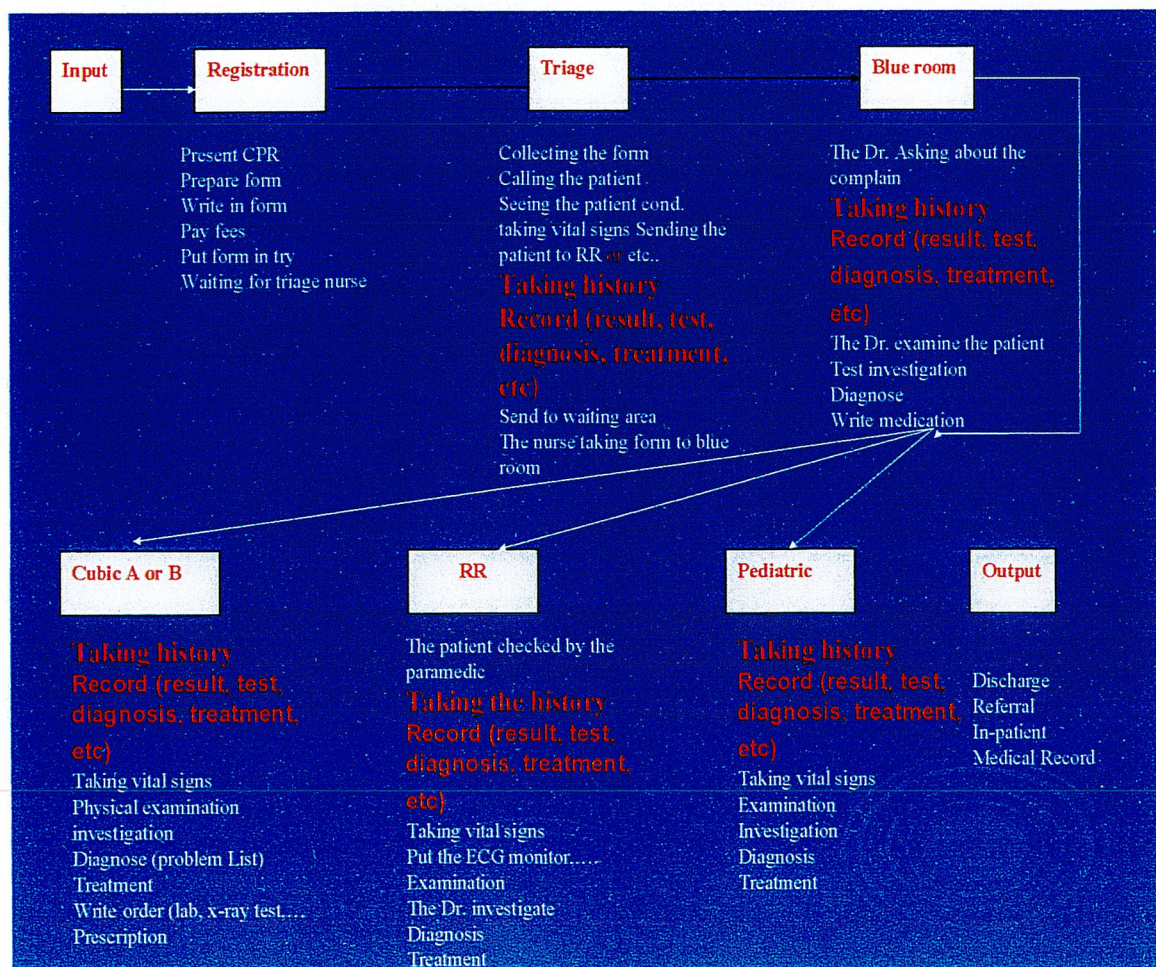


Figure 4. 10 The medical record.

(A) The status

The difficulty and time consuming action to bring the old file of the patient, the inaccurate and incomplete information given by the patients, patient's relative sometime do not know the problem history of the patient, medical status after treatment was not known; all of these are seen to lead to a vital problem of getting the patient previous history.

(B) Analysis of the problem

Without having the medical record in the right time will give wrong classification of the patient condition and might, seriously, affect his/her health (dissatisfaction). In addition, for urgent and emergent cases, time is critical in getting the accurate medical history in order to provide the appropriate type of services that is needed and requests the specific test investigation for diagnosis. All information about the patient status, treatment, investigation, etc. should be readily and easily accessible during the patients' stay in emergency department.

(C) Analysis

The analysis is shown below making use of the value chain presentation as follows.

The value chain technique for Medical history problem (see Figure 4.11)

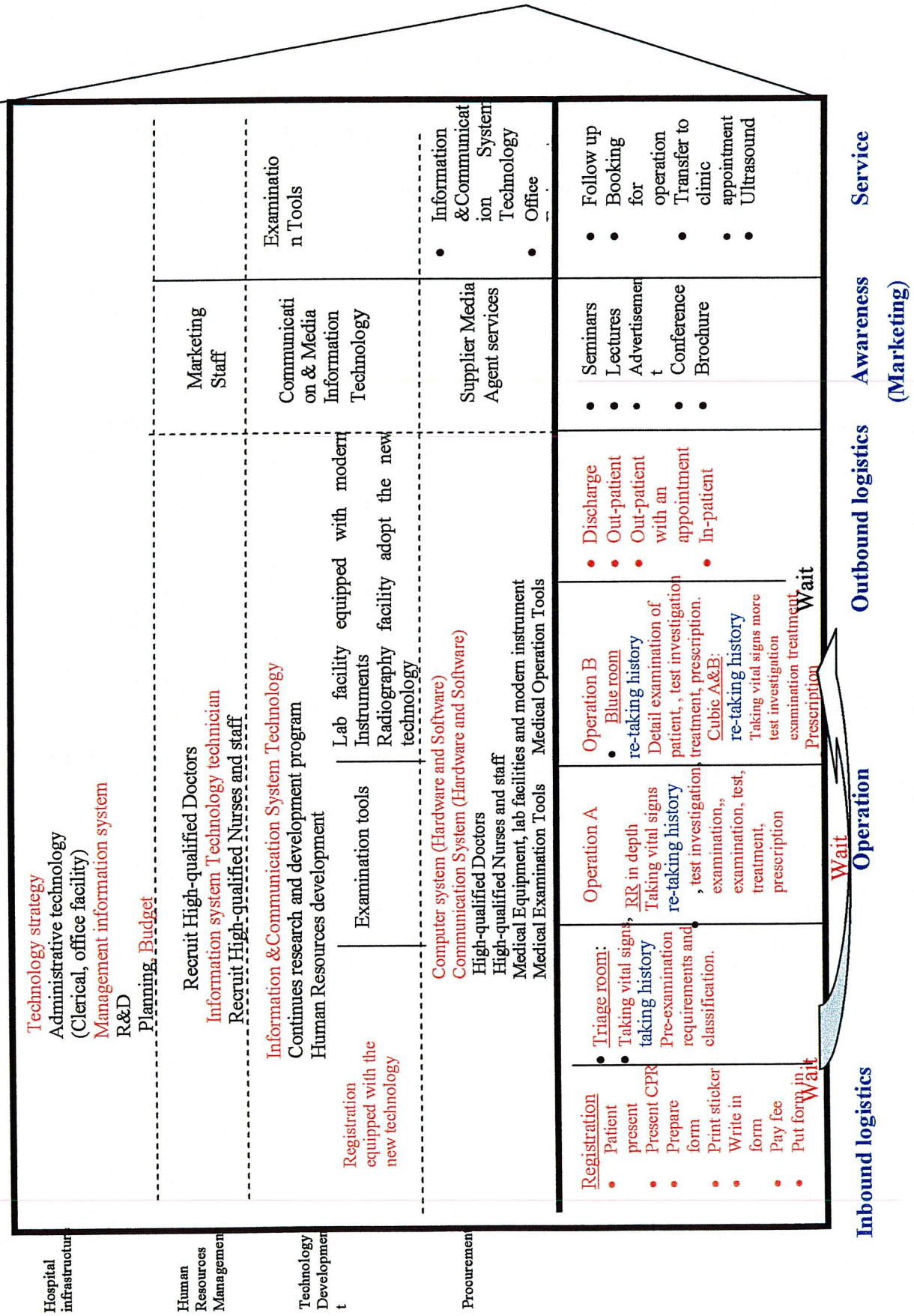


Figure 4.11 The Value Chain Technique of a Medical history

CHAPTER 5

(Conclusion & Recommendations)

5. CHAPTER5: CONCLUSION AND RECOMMENDATION

In this research work the processes and activities within the emergency department have been identified and analyzed in depth. Different Tools have been utilized for information gathering, viz; field observation, free answer structure method by individual interviews, questionnaires, and informal discussions. Among persons seen and interviewed were: management (at different levels), staff (doctors, nurses, technicians, and clerks), as well as patients.

The Value Chain Analysis Techniques was utilized to break the processes in the emergency department into a set of causes and conditions that repeatedly come together in a series of steps taken within each sub activity starting from the INPUT, i.e. the entry of patient to the department (registration), till the OUTPUT, i.e. the discharge of patient (leave the department). The added value in each step has thus been analyzed and gaps of possible improvements have been identified.

The performance of the chosen healthcare provider, i.e. the Department of Emergency, was assumed to be evaluated through a number of evaluating parameters (performance indices). These parameters characterize the healthcare services. The evaluating parameters are: Reliability, Responsiveness, Empathy, Assurance, Cost, and Satisfaction. Factors that affect these evaluating parameters have been defined after consultation with practitioners and management as well as reviewing similar studies and researches worldwide. Possible deficiency of any of these factors has then been measured through predefined indicators.

The analyses of the measured indicators have enabled the researcher to identify a number of problems. Each problem has been discussed and the value chain technique has been utilized to identify those support activities that need to be considered in order to improve the primary activities of the healthcare services.

In the following, we conclude by proposing the possible actions to be taken to mitigate each problem.

Recommendation (1): An Automated Healthcare Information System:

Problem #1 (document preparation at registration desk), problem #2 (document movement), and problem #5 (Medical record including History), will be improved

through setting an information technology strategy. This strategy is to aim at the introduction of an automated healthcare information system. The system is to include:

- i. The availability of computer terminal at each site (room or area) in the emergency department.
- ii. Train of staff (doctors and nurses) to use the system.
- iii. Recruit computer and data entry staff.
- iv. The setting up of a local area network between computer terminals and computer servers.
- v. Additional accessories connected to the computer system, such as bar code reader, ..etc.
- vi. The acquisition (or development) of a healthcare software package (including Management Information System).

The proposed system should enable:

1. The creations of an exhaustive historical patient file recording system.
2. On-line update of patient status, result of investigations, diagnosis, and treatment, in real time.
3. Quick tracking of the patient while in the Emergency Department.
4. Quick and accurate review of the patient history when attended at the emergency department.

Recommendation (2): Staff

Problem #2 (document movement), and Problem#3 (staff), identify the need to:

- i. Increase the number of doctors, clerks and nurses.
- ii. Continuous upgrading of the knowledge and skills of staff (human development).
- iii. Train staff basic computer skills
- iv. Expose staff (doctors, nurses, and technicians) to the latest technology in medical examinations, investigation, and treatments (seminars, conferences, journals, and periodicals).

Recommendation (3): Medical Equipment

Problem #4 (Medical equipment), identify the need to:

1. Upgrade technological old equipments.
2. Avail adequate number of tools and equipment
3. Have Regular preventive maintenance.

Recommendation (4): Treatment of Non-urgent Cases

Problem #6 indicates the need to have a firm action with the patients who would visit the emergency department knowing that their cases are not of the type. This includes:

- i. Redirect the patients to the health center.
- ii. Improve the medical services (waiting time, technical capabilities ...etc) of the health centers.
- iii. Open health center near the emergency dept. to cover these non-urgent cases.

Recommendation (5): Awareness and knowledge

To increase the awareness and knowledge of the patients, the researcher proposes the following actions:

1. Health education to public in school and on T.V, on the major role of Emergency department.
2. Advertise in telephone directory about treatment and actions taken in cases of emergency health disorder.
3. Display in the hospital (waiting rooms) attractive brochures and leaflets medical information for the increase of the awareness of the public (patients and companions). Such brochures have to be renewed from time to time to attract their attention.
4. Display attractive health education recorded TV programs in the waiting areas.

FUTURE WORK

Major trends towards better quality care are now underway in health care services all over the world. Better information about the performance of health care organizations are being transparent. Consumers (patients), are beginning to make their choice about where to receive the health care services, based on technical and service quality characteristics. This research work suggests that some future work should focus on the following:

1. To obtain norms for different parameters that measure the efficiency and effectiveness of the medical care delivery services.
 2. Studying the possibility of setting standard benchmark norms for the waiting time related to Emergency Department.
 3. Compare between the performance of the Emergency Department in Salmaniya Medical Complex and the norm of the performance of the Emergency Department in the other countries.
 4. Study ways and means to apply the “See And Treat” model for the non-urgent cases.
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APPENDIX A

Questionnaire (Patients)

APPENDICES

APPENDIX A

6.1.1 Type1: Patient after Registration Process

1- Clerk:

Yes

No

Knowledge:

1. Did the clerk request your CPR? _____
2. Did you pay any fees? _____
3. How long did the registration process take?
 3min 3-5mins more than 5mins

Skills

4. Did the clerk issuing the same form more than once? _____
5. Did the clerk apply the sticker on the form? _____
6. Did the clerk ask for help in entering the information? _____

Attitudes

7. Was the clerk disturbed by any other employee while
 he was registering you? _____
8. Did the clerk respond to any private phone call or talk
 with other people while he was registering you? _____
9. Did the clerk use expressions like good morning, good
 evening...etc.? _____
10. Did the clerk call you by your name? _____
11. Did the clerk show any friendly facial expression? _____

6.1.2 Type2: Patient after Triage:

Yes

No

Knowledge

12. Did the Nurse call you by your name?

13. Did the Nurse accompanied or send you to the
specific area?

14. Did the Nurse take the vital signs?

15. Did the Nurse take your history?

16. Did the Nurse repeat the vital signs again and
how frequently?

Skills:18. Did the Nurse inform you about any
investigations needed?

19. Did you receive from the Nurse any future instructions? ___

Attitudes24. Was the nurse disturbed by other employee while
s/he was attending you?

25. Did the nurse respond to any private phone call while
s/he was attending you?

28. Did the nurse use expressions like good morning,
good evening...etc.?

29. Did the nurse call you by your name?

30. Did the nurse show any friendly facial expressions?

6.1.3 Type3: Patient after Blue Room:**Doctor:**

Yes

No

Knowledge:

31. Did the Doctor call you by your name? _____

32. Did the Doctor ask about your problem? _____

33. Did the Doctor ask you how your problem developed? _____

34. Did the Doctor request any tests? If yes, did the Doctor _____

explain what these tests are and

how it will help your care? _____

35. Did the Doctor explain what is the nature _____

of your problem? _____

36. Did you receive any medication? If yes, did the Doctor _____

explain how to use it and the side effects of it? _____

37. Did the Doctor ask for a specialist? _____

Skills

38. Did the Doctor examine the area of the problem? _____

39. Did the Doctor use his stethoscope to listen to your _____

heart and your breathing? _____

40. Did you receive from the Doctor any instruction _____

for future awareness? _____

Attitudes

43. Was the doctor disturbed by other doctor _____

while s/he was interviewing you? _____

44. Did the doctor respond to any phone call _____

while s/he was interviewing you? _____

47. Did the doctor use expressions like _____

good morning, good evening...etc.? _____

48. Did the doctor call you by your name? _____

49. Did the doctor show any friendly facial expressions? _____

6.1.4 Type4: Patient after Cubic a or b:**Nurse:****Yes****No*****Knowledge***

12. Did the Nurse call you by your name?

—

—

13. Did the Nurse accompanied or send you to the specific area?

—

—

14. Did the Nurse take the vital signs?

—

—

15. Did the Nurse take your history?

—

—

16. Did the Nurse repeat the vital signs again and how frequently?

—

—

Skills

16. Did the Nurse measure the vital signs?

—

—

17. Did the Nurse repeat the vital signs again and how frequently?

—

—

18. Did the Nurse collect blood and start an IV Line. If yes, _____ were the sample and the IV successfully done from the 1st attempt?

—

20. Did the Nurse administer any medicine to you?

—

—

21. Was the bed sheet clean and properly placed?

—

—

22. Did the Nurse inform you about any investigations needed?

—

—

23. Did you receive from the Nurse any future instructions?

—

—

Attitudes

24. Was the nurse disturbed by other employee while s/he was attending you?

—

—

25. Did the nurse respond to any private phone call while s/he was attending you?

—

—

28. Did the nurse use expressions like good morning, good evening...etc.?

—

—

29. Did the nurse call you by your name?

—

—

30. Did the nurse show any friendly facial expressions?

—

—

Doctor:

Yes

No

Knowledge:

31. Did the Doctor call you by your name?

32. Did the Doctor ask about your problem?

33. Did the Doctor ask you how your problem developed?

34. Did the Doctor request any tests? If yes, did the Doctor

explain what these tests are and how it will help your care?

35. Did the Doctor explain what is the nature of your problem?

36. Did you receive any medication? If yes, did the Doctor

explain how to use it and the side effects of it?

37. Did the Doctor ask for a specialist?

Skills

38. Did the Doctor examine the area of the problem?

39. Did the Doctor use his stethoscope to listen to your

heart and your breathing?

42. Did you receive from the Doctor any instruction

for future awareness?

Attitudes

43. Was the doctor disturbed by other doctor

while s/he was interviewing you?

44. Did the doctor respond to any phone call

while s/he was interviewing you?

47. Did the doctor use expressions like

good morning, good evening...etc.?

48. Did the doctor call you by your name?

49. Did the doctor show any friendly facial expressions?

6.1.5 Type5: Patient after RR:**Nurse:*****Knowledge***

Yes

No

13. Did the Nurse accompanied or send you to the specific area?

14. Did the Nurse take the vital signs?

15. Did the Nurse take your history?

16. Did the Nurse repeat the vital signs again and how frequently?

Skills

16. Did the Nurse measure the vital signs?

17. Did the Nurse repeat the vital signs again and how frequently?

18. Did the Nurse collect blood and start an IV Line. If yes, were the sample and the IV successfully done from the 1st attempt?

20. Did the Nurse administer any medicine to you?

21. Was the bed sheet clean and properly placed?

22. Did the Nurse inform you about any investigations needed?

23. Did you receive from the Nurse any future instructions?

Attitudes

24. Was the nurse disturbed by other employee while s/he was attending you?

25. Did the nurse respond to any private phone call while s/he was attending you?

28. Did the nurse use expressions like good morning, good evening...etc.?

29. Did the nurse call you by your name?

30. Did the nurse show any friendly facial expressions?

Doctor:

Yes

No

Knowledge:

31. Did the Doctor call you by your name? _____
32. Did the Doctor ask about your problem? _____
33. Did the Doctor ask you how your problem developed? _____
34. Did the Doctor request any tests? If yes, did the Doctor
explain what these tests are and how it will help your care? _____
35. Did the Doctor explain what is the nature of your problem? _____
36. Did you receive any medication? If yes, did the Doctor
explain how to use it and the side effects of it? _____
37. Did the Doctor ask for a specialist? _____

Skills

38. Did the Doctor examine the area of the problem? _____
39. Did the Doctor use his stethoscope to listen to your
heart and your breathing? _____
42. Did you receive from the Doctor any instruction
for future awareness? _____

Attitudes

43. Was the doctor disturbed by other doctor
while s/he was interviewing you? _____
44. Did the doctor respond to any phone call
while s/he was interviewing you? _____
47. Did the doctor use expressions like
good morning, good evening...etc.? _____
48. Did the doctor call you by your name? _____
49. Did the doctor show any friendly facial expressions? _____

6.1.6 Type6: Patient After Paediatric:**Nurse:****Yes****No*****Knowledge***

12. Did the Nurse call you by your name?

—

—

13. Did the Nurse accompanied or send you to the specific area?

—

—

14. Did the Nurse take the vital signs?

—

—

15. Did the Nurse take your history?

—

—

16. Did the Nurse repeat the vital signs again and how frequently?

—

—

Skills

16. Did the Nurse measure the vital signs?

—

—

17. Did the Nurse repeat the vital signs again and how frequently?

—

—

18. Did the Nurse collect blood and start an IV Line. If yes, were the sample and the IV successfully done from the 1st attempt?

—

—

20. Did the Nurse administer any medicine to you?

—

—

21. Was the bed sheet clean and properly placed?

—

—

22. Did the Nurse inform you about any investigations needed?

—

—

23. Did you receive from the Nurse any future instructions?

—

—

Attitudes

24. Was the nurse disturbed by other employee while s/he was attending you?

—

—

25. Did the nurse respond to any private phone call while s/he was attending you?

—

—

28. Did the nurse use expressions like good morning, good evening...etc.?

—

—

29. Did the nurse call you by your name?

—

—

30. Did the nurse show any friendly facial expressions?

—

—

Doctor:

Yes

No

Knowledge:

- | | | |
|--|-------|-------|
| 31. Did the Doctor call you by your name? | _____ | _____ |
| 32. Did the Doctor ask about your problem? | _____ | _____ |
| 33. Did the Doctor ask you how your problem developed? | _____ | _____ |
| 34. Did the Doctor request any tests? If yes, did the Doctor
explain what these tests are and how it will help your care? | _____ | _____ |
| 35. Did the Doctor explain what is the nature of your problem? | _____ | _____ |
| 36. Did you receive any medication? If yes, did the Doctor
explain how to use it and the side effects of it? | _____ | _____ |
| 37. Did the Doctor ask for a specialist? | _____ | _____ |

Skills

- | | | |
|---|-------|-------|
| 38. Did the Doctor examine the area of the problem? | _____ | _____ |
| 39. Did the Doctor use his stethoscope to listen to your
heart and your breathing? | _____ | _____ |
| 42. Did you receive from the Doctor any instruction
for future awareness? | _____ | _____ |

Attitudes

- | | | |
|--|-------|-------|
| 43. Was the doctor disturbed by other doctor
while s/he was interviewing you? | _____ | _____ |
| 44. Did the doctor respond to any phone call
while s/he was interviewing you? | _____ | _____ |
| 47. Did the doctor use expressions like
good morning, good evening...etc.? | _____ | _____ |
| 48. Did the doctor call you by your name? | _____ | _____ |
| 49. Did the doctor show any friendly facial expressions? | _____ | _____ |

APPENDIX B

Questionnaire (Staff)

APPENDIX B**6.2.1 Clerk:**

1. How long did the registration process take?

3min

3-5mins

more than 5 mins

2. Was there any problem in issuing the form?

Yes

No

3. If Yes, Specify,

4. Did you face problem, sometimes, regarding entering the information?

Yes

No

5. If Yes, Specify,

6. Was there any technical problem postpone the registration process?

Yes

No

7. If Yes, specify

8. Who transfer the form?

9. How long does it take to physically transfer forms to Triage?

6.2.2 Nurse: Triage, Cubic A or B, RR, Paediatric

1. Was there any problem in taking vital signs?
 - From the patient side:
 - Or
 - From the equipment side:
2. Do you have problem in getting previous history?
 - From the patient side:
 - Or
 - From the computer side:
3. Average number of attempt in collecting the blood samples?
4. How long does the patient wait? _____, why?
5. Number of training courses you have attended? _____.
6. Year of experience? _____.
7. Was there any technical problem that delays the examination process?

Yes

NO

8. If yes , specify,

9. Was it easy to communicate with doctors?

Yes

NO

Comments:

6.2.3 Doctor:

2. How did you get information about previous history?
3. Was it easy?
4. Do you sometime need tests not available in the hospital?
Yes No
5. If yes, Like what?
6. What you do?
7. Do you always, explain to the patient what these tests for?
Yes No
8. Do patient understand and appreciate it?
Yes No
9. When do you ask for specialist?
10. Do you find them easily, in due time?
Yes No
11. Do you have sometimes, problem in communicating with nurses?
Yes No
12. If yes, Why?
13. Do you recommend any new equipment or Tools?
Yes No
14. If yes, why?

15. Are you satisfied with level of technologies available?

Yes

No

16. If No, suggest any technologies?

17. Do you, sometimes, face problem, in operating with patient?

➤ Technical

➤ Skills

➤ Staff

➤ Theatre

18. Do you have , sometimes, problem in communicating with other doctors?(Juniors, Seniors)

Yes

No

Comments:

6.2.4 Technician:

1. What kind of technologies available in the different area in Emergency Department?

Registration area:

Triage area:

Blue Room:

Cubic A or B:

RR:

Paediatric area:

Laboratory:

X-ray:

2. Are you satisfied with level of technologies available?

Yes

No

3. If No, suggest any technologies?

4. Do you recommend any new equipment or Tools?

Yes

No

5. If yes, where & why?

APPENDIX C

Tables

APPENDIX C

Table 1.1 _Numbers of patients attended (8) hospitals in Bahrain

hospitals	inpatient	outpatient	emergency	Total
Salmaniya Medical Complex	41,598 (7.9%) (55.7%)	213,452 (40.8%) (27.4%)	268,578 (51.3%) (76.5%)	523,628 (100%) (43.5%)
Bahrain defense force hospital	26,308 (6.4%) (35.2%)	304,710 (37.7%) (39.2%)	82,376 (19.9%) (23.5%)	413,234 (100%) (34.3%)
International hospital of Bahrain	1,831 (3.8%) (2.4%)	46,904 (96.2%) (6.0%)	0	48,735 (100%) (4.0%)
American mission hospital	2,152 (1.6%) (2.9%)	135,896 (98.4%) (17.5%)	0	138,048 (100%) (11.5%)
Ibn Al-Nafees hospital	1,092 (3.2%) (1.5%)	33,571 (96.8%) (4.3%)	0	34,663 (100%) (2.9%)
Awali hospital	1,525 (4.1%) (2.0%)	35,566 (95.9%) (4.6%)	0	37,091 (100%) (3.1%)
Gulf Dental special hospital	11 (0.2%) (0%)	6,820 (99.8%) (0.9%)	0	6,831 (100%) (.6%)
Bahrain Specialist hospital	227 (15.1%) (0.30%)	1,272 (84.9%) (0.2%)	0	1,499 (100%) (.1%)
total	74,744 (6.2%) (100%)	778,191 (64.6%) (100%)	350,954 (29.2%) (100%)	1,203,389

Table 1.2 The number of patients attending the different departments of the Salmaniya Complex

Description	2002	%	2001	%
Out-patients	213,452	40.8%	313,502	36.5%
In-patients	41,598	7.9%	39,646	4.6%
Accident& Emergency	268,578	51.3 %	252,878	29.4%
Total	523,628	100%	858,904	100%

In 2002, out of 523,628 representing the total number of patients attended the Salmaniya Hospital; 268,578 patients 51.3% were treated in its emergency department. On the other hand, at the Defence Force Hospital; only 19.9% (see table 1.1) of the patients attended the emergency department.

الخلاصة

في مقدمة الرسالة تم استعراض نظم الرعاية الصحية ومدى أهمية تطبيق المنهج العلمي كوسيلة للنهوض بنظام الرعاية ومن خلال ذلك تم التطرق لأهمية موضوع الرسالة المقدمة و كذلك أهداف البحث.

وقد تم استعراض أدبيات الموضوع وما تم نشره من بحوث علمية متعلقة بالموضوع و التطبيقات المختلفة في العالم لتحسين الخدمة الطبية ، كما تم استعراض الخبرات المختلفة في هذا المجال مع دراسة لمكونات الخدمات الصحية وتطبيق استخدام تحليل سلسلة القيمة (Value Chain Analysis Technique) كوسيلة لدراسة خطوات الخدمة الصحية مع إبراز النقاط التي يمكن تحسينها وذلك بدوره يؤدي إلي الارتقاء بالخدمة الصحية ككل.

كذلك تم تحديد أهداف البحث وهي تطوير و تحسين الخدمات الصحية بقسم الطوارئ بمجمع السلمانية الطبي، تلخصت في تحديد المقاييس التي يمكن عن طريقها تقويم الخدمة الصحية وكذلك العوامل التي تؤثر في هذه المقاييس ومن ثم تحديد المؤشرات الخاصة بهذه العوامل وذلك عن طريق الملاحظة الميدانية و طرح الأسئلة على الفرق المختلفة العاملة بقسم الطوارئ من إداريين وأطباء و ممرضات وكذلك المرضى بصفتهم متلقي الخدمات الطبية.

وقد تم تحليل نتائج الأسئلة المختلفة وكذلك تحديد المداخل المختلفة لتحسين الخدمة في قسم الطوارئ بمستشفى السلمانية الطبي مع الأخذ في الاعتبار الظروف المختلفة بالمستشفى والمنطقة. ومنها ازدياد عدد المرضى المترددين وخاصة المرضى ذوي الحالات غير المستعجلة.

وأهم التوصيات بهذه الرسالة هي :

- إدارة نظام الرعاية الصحية الشامل باستخدام الحاسب الآلي
- عدد العاملين وتدريبهم
- الأجهزة الطبية
- علاج الحالات غير الطارئة

ويفتح هذا البحث الباب أمام عدة بحوث مستقبلية لتحديد المقاييس المختلفة لعناصر أداء الخدمة الطبية التي يمكن عن طريقها الحكم على مدى كفاءته و فعاليته وتحديد نقاط الضعف والقوة به.

بسم الله الرحمن الرحيم

”وَلَا تَقُولَنَّ لشيءٍ إِنِّي فَاعِلٌ ذَلِكَ غَدًا (23) إِلَّا أَنْ يَشَاءَ اللَّهُ
وَإِذْ كُرِّرْتُ رَبَّكَ إِذَا نَسِيتَ وَقُلْ عَسَى أَنْ يَهْدِيَنِي رَبِّي لِأَقْرَبَ مِنْ
هَذَا رَشَدًا (24)“

صدق الله العظيم

(سورة الكهف)

بسم الله الرحمن الرحيم
جامعة الخليج العربي
كلية الدراسات العليا

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مملكة البحرين

مايو ٢٠٠٤م

ربيع الثاني ١٤٢٥هـ