

## Quality Assessment in Hospital: A Case Study

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### Article Info

Article history:

Received 8 January 2015

Received in revised form

15 January 2015

Accepted 22 January 2015

Available online 31 January 2015

### Keywords

### Abstract

Health sector has become very important in present context of globalised markets. Many hospitals have come in market but most of them lack sufficient quality standards. As it is highly service sensitive sector, quality issues are very important. Most of frameworks used for hospital quality management exhibits shortcomings, terminology barriers and too much complexity. This study propose a simple and rigorous study specific to hospital, based on four entities (patients, activities, resources and effects) in order to measure the quality management systems with the help of a case study. The proposed study is compatible with other substantiated model, robust in coping and it provides flexibility to avoid a too unilateral approach. The evaluation study is based on responses from patients and visits to hospitals. The specific goals of this study were to reduce inappropriate hospital activities by fine-tuning patient logistics, increasing efficiency and providing more comfortable surroundings.

Overall while limitations and implementations challenges exist, the preliminary results suggest that hospital can also use these findings to their advantage, yielding sustainable improvement in patient satisfaction and better inter-departmental communication.

## 1. Introduction

In the last few decades, a variety of approaches have been introduced to help hospitals to improve the quality of medical care. Some focus on professional competence through clinical guidelines, continuing medical education (Accreditation Council for Continuing Medical Education 1997) and clinical peer review, others on external control through public performance reporting (Department of Health, 1998); organizational approaches based on experiences from industry have become more and more popular to implement quality improvement strategies in hospitals.

Many hospital managers use Donabedian's conceptual framework (Donabedian, 1980) [1], based on the triad of structure-process-outcomes entities. In our opinion, major conceptual shortcomings render this model inappropriate for organizing hospital quality management.

To assess quality of care, in some hospitals a manager has been appointed with responsibility with quality improvement, which may raise the question for best approach. Choice of what to do should be guided by comprehensive framework enabling regular analysis of needs. The health care crisis of today actually began to surface as a national concern in the early 1980s. At that time, rapidly rising costs were not only jeopardizing the financial viability of hospitals but also inflating the cost of the country's goods and services. Despite best efforts to contain costs, the crisis continued into the 1990s.

Presently, patient questionnaires and customer complaint systems are widely applied for user orientation in health care systems and hospitals respectively (Castle et al., 2005) [2]. In contrast, surveying referral physician perspectives is not yet extensively established in the hospital care sector. Nevertheless, hospital clinicians should know exactly how the services they provide are perceived

by referring physicians. Understanding factors that drive referral rates can help identify improvement areas and to anticipate future demands for hospital services.

Several patient-specific characteristics, such as disease severity (Chan and Austin, 2003)[3] or individual insurance coverage (Shea et al., 1999)[4], and community-specific characteristics, such as socioeconomic status (Carr-Hill et al., 1996)[5] or urban location (Chan and Austin, 2003)[3], were shown to predetermine referrals from primary care physicians to specialists, but with a lack of consensus and with, to some extent, controversial results. Moreover, physician-specific influences on the referral process were investigated equally, suggesting that referral patterns are related more strongly to the type of community than the supply of specialists (Chan and Austin, 2003)[4]. Variability in physician referral decisions is observable, but most remains unexplained (Franks et al., 1999; Starfield et al., 2002)[6]. Overall, satisfaction with services provided by health care institutions like hospitals is subject to referring physicians' expectations and is a key factor for referrals (Piterman and Koritsas, 2005) [7].

Under the ever-increasing pressure to contain costs while maintaining or improving quality of care, the marketplace has become an increasingly unfamiliar, uncertain and unfriendly environment for hospitals many are turning to different sources for help. Most searchers have distorted by substituting resources for structures and activities for processes, although these concepts are by no means interchangeable: both resources and activities can be viewed as processes or structures. Resources transaction are actual processes, where as quantity and type of resources used (buildings, salary, goods, services) are structural. The successions of hospital activities are natural processes; but if one highlights regular flow of activities, they should reflect the structure of activity.

Appropriate hospital stay should be effective, efficient and tailored to patient needs. Previous studies have found that on average 20 per cent of hospital stay is inappropriate.

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Within obstetrics, inappropriate hospital stay consists mostly of delays in hospital discharge. The specific goals of this study were to reduce inappropriate hospital stay by fine-tuning patient logistics, increasing efficiency and providing more comfortable surroundings. New policies using strict discharge criteria were implemented. Total inappropriate hospital stay decreased from 13.3 to 7.2 per cent. The delay in discharge procedures halved. Pcharts showed a decrease in inappropriate hospital stay, indicating the current process to be stable. Concludes that a significant reduction in inappropriate hospital stay was found following the implementation of innovative hospital discharge policies, indicating greater efficiency and accessibility of hospital services.

### 2. Case Study

To analyze quality issues a case study of private hospital based in Delhi has been conducted. The hospital is a 170 bed multi-super specialty hospital located in North-West Delhi, operating since 1997. The state of the art hospital is accredited with NABL, ISO 9001:2000 & 14001:2004 certification and is on the panel of more than 100 prestigious organizations, insurance companies and TPAs.

### 3. Departments in the Hospital

Major departments and their functions are discussed in following sections.

#### 3.1 Emergency and Critical Care

The hospital is known for providing advanced emergency services for any kind of treatment. The Emergency department at the hospital is growing rapidly to become a dependable centre capable of handling all type of emergencies. The department handles anywhere between 1500-2000 patients per month. Nearly 60% of the hospital admissions are from the department of emergency.

The hospital provides round the clock emergency services, with facilities that are fully equipped and managed by a dedicated team of quality emergency care professions who are ACLS and BLS trained.

The department has state of the art equipments and advanced monitoring systems to respond to any medical emergency.

#### Their aim is to provide

- Quality systems of medical care
- To ensure that patients are treated in accordance with their needs
- To provide timely treatments
- To give the most important assessments and treatment care
- Provide pre-hospital care, following the golden hour concept

Patients who come in for emergency treatments are assessed by a Casualty Medical Officer at the time of registration and determines the severity of illness or injury; this is known as "triage process". However, should the patient's condition appear life threatening, they are immediately directed to higher treatment area for stabilization. They have a team of skilled doctors available round the clock to treat all type of emergencies.

The hospital has a fleet of ambulance to handle emergency situations. These are air conditioned and

equipped with ventilators. The rescue team of ambulance consists of critical care professionals who are available 24 hours via phone in case of any accident or emergency.

#### 3.2 Medicine

This Department has been serving the society for the last 15 years i.e. from 1997. Our team of senior consultants dedicatedly serves and manages all types of serious patients in all medical departments with excellent results.

#### 3.3 Infrastructure

- One of the best intensive care units to take care of patients that need serious attention. It is a 32 bedded unit with round the clock availability of resident doctors and anaesthetists.
- The Hospital has the best of wards that range from centrally air-conditioned Economy Wards, Semi Private Wards, Private Rooms to Deluxe and Luxury Rooms.
- The hospital has one of the best OPD complexes in the city.

#### 3.4 ENT

- The E.N.T. department at the Hospital is a combination of excellent human expertise with world-class infrastructure and equipments. We have a team of seven experienced doctors coordinated by Dr. Hitesh Aggarwal.
- We run daily OPDs in various slots from 09:00 A.M. to 11:00 A.M., 11:00 A.M. to 01:00 P.M., 02:00 P.M. to 04:00 P.M. and 04.00 P.M. to 06:00 P.M. to provide outdoor patient care. Round the clock emergency services are provided to treat patients who cannot come during OPD hours.
- All E.N.T. procedures and surgeries are performed at our hospital with excellent post operative results.
- All basic and advanced E.N.T. surgeries are performed in state-of-the-art modular operation theatres with standard operating procedures followed according to the guidelines set by the 'National Accreditation Board of Hospitals'.
- We also offer audiology services along with a facility for hearing tests that are offered thrice a week.

#### 3.5 Blood Bank

The Blood Bank Services of Hospital have been upgraded to a Blood Component Facility and Platelet Aphaeresis. Preparation of blood components is a sophisticated process requiring special equipment. The Hospital is one of the hospitals in Delhi where blood components are available. The blood and blood products are available only against replacement and voluntary donation. However, each unit is charged for cross match and processing of blood. Blood issued is tested for HIV I & II, HCV, HBS AG & VDRL & MALARIA.

Whole Blood & all components high quality are available in our blood bank and is open for 24 hours.

- All components are prepared from voluntarily & replacement donated blood, hence availability depends on stock.
- Patient's relatives/friends and voluntary donors have to donate to replace the stock.

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- Donors will be accepted only if they are found medically fit to donate the blood and full fill the criteria for blood donation.
- Anyone between 18 to 60 years of age in good health can donate blood and help in saving someone's life.

### 3.6 Donor selection criteria

Age: 18 - 60 years

Weight: > 45 Kgs.

Hemoglobin: 12.5 gram % or more

Systolic B.P: 100 -150 mmhg

Diastolic B.P: 60 - 90 mmhg

Pulse: Between 60 - 100 beats / min

Temperature: Not exceed to 37.5o C

### 3.7 Radiology

The Department of Radiology is one of the most advanced and prestigious departments of hospital. It helps in accurate diagnosis of patients and is open round the clock. Facilities available are:

- Highly advanced CT Machine
- Ultrasound
- Digital X-Rays

### 3.8 CT Scan

Multi-slice CT machine has the ability to scan at very high resolutions and in a very short span of time.

Facilities

- CT Head, Chest & Abdomen
- Musculoskeletal CT
- HR CT Chest
- Multislice CT for pulmonary embolism
- Various other patient centric customized scans
- CT Angiography
- CT Guided FNAC and biopsies

### 3.9 Ultrasound

The departmental work load includes routine abdominal ultra sonography, antenatal sonography for abnormalities in developing babies, ovulation monitoring, paediatric and neonatal sonography, neurosonography, mammosonography, musculoskeletal sonography, transvaginal and transrectal sonography, sonography of small parts such as thyroid, parathyroid, and scrotum. Doppler sonography for abdomen, pregnancy, carotid and peripheral vascular diseases & transplant kidney are performed routinely. A number of invasive procedures like aspiration of liver abscess, pleural & ascetic tapping under USG guidance are carried out. Ultrasound guided surgical and gynecological procedures in operation theatres & portable bedside ultrasonography machines.

### 3.10 Digital X-ray

The Radiology department is equipped with a number of conventional X-ray machines and two other machines with image intensifiers for procedures to be done under fluoroscopic control. The department treats an average of about 100 patients per day. Of this, the bulk of the work comprises of routine radiological examination of chest, abdomen, spine and extremities. The procedures done under fluoroscopy control include Barium investigations for the Gastrointestinal tract, Hysterosalpingograms for the female genital tract and a number of procedures for diagnostic and therapeutic intervention for Hepatobiliary system. The

department also does urological investigations such as Intravenous urogram and Micturating cystourethrogram. Portable radiography units are kept on each floor of the hospital ward blocks for patients who are too sick to come to the main department.

The department also has a state-of-the-art mammography machine with Stereotactic biopsy attachments for diagnostic interventional procedures.

The newest addition is the procurement of the Digital radiography Fluoroscopy system with an angiography facility (CR system).

Performance indices of hospital- Major indices for evaluating performance are as follows.

1. Information technology
2. Customer satisfaction
3. Research and development
4. Infrastructure
5. Logistics
6. Top management commitment
7. Responsiveness
8. Use of resources
9. Safety

## 4. Information Technology

Health information technology (HIT) is information technology applied to health care. It provides the umbrella framework to describe the comprehensive management of health information across computerized systems and its secure exchange between consumers, providers, government and quality entities, and insurers. Health information technology (HIT) is in general increasingly viewed as the most promising tool for improving the overall quality, safety and efficiency of the health delivery system. With changing technology there is a scope of delivering smarter information to deliver enhanced administration, superior patient care, and streamlined operations and improved profitability.

### 4.1 Infrastructure

Different aspects of infrastructure in a hospital are:

1. Quantity and quality of doctors
2. Location of hospital
3. Area
4. Maximum no of patients that can be handled
5. Administrative staff, human resource
6. Use of resources

### 4.2 Top management commitment

Managers in healthcare have a legal and moral obligation to ensure a high quality of patient care and to strive to improve care. These managers are in a prime position to mandate policy, systems, procedures and organizational climates. Accordingly, many have argued that it is evident that healthcare manager possesses an important and obvious role in quality of care and patient safety and that it is one of the highest priorities of healthcare managers. In line with this, there have been calls for Boards to take responsibility for quality and safety outcomes .One article warned hospital leaders of the dangers of following in the path of bankers falling into recession, constrained by their lack of risk awareness and reluctance to take responsibility. To add to the momentum are some high profile publicity of hospital management failures affecting

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quality and safety, eliciting strong instruction for managerial leadership for quality at the national level in some countries.

### 4.3 Logistics in Hospitals

Logistics as useful instrument for efficiency, quality increase and cost decrease are focused more and more in hospitals. Now it is important to accommodate current changes in health care sector, to make use of the prospects, to be aware of one's qualities and to take the right way to success. The development and realisation of an optimal integrated logistics system is a great challenge for hospitals.

### 4.4 Customer Satisfaction

Patient satisfaction is an important and commonly used indicator for measuring the quality in health care. Patient satisfaction affects clinical outcomes, patient retention, and medical malpractice claims. It affects the timely, efficient, and patient-centered delivery of quality health care. Patient satisfaction is thus a proxy but a very effective indicator to measure the success of doctors and hospitals. The host and guest relationship is further characterized by hospitableness typically extended by the hosts to the guest or the patients.

## 5. Quality Measures for Different Departments

### 1. Emergency and Critical Care

According to the advanced emergency services provided in the hospital, considering the time taken to provide the necessary services along with other important factors, quality assessment factors indicated in this department are:

- Infrastructure
- Customer satisfaction
- Logistics
- Safety

### 2. Medicine

Based on the medicinal facilities available and those provided to the patients, the important quality assessment factors indicated in "medicine" department of the hospital are:

- Customer satisfaction
- Top management commitment
- Responsiveness
- Infrastructure
- Safety

### 3. Infrastructure

Infrastructure of the hospital has been examined based on the requirements and the available resources, we can indicate that the factors derived for the quality assessment of the hospital are:

- Quantity of doctors
- Quality of doctors
- Area
- Admin staff
- Maximum no. Of patients
- Use of resources

These parts are considered under a broad factor namely "INFRASTRUCTURE".

### 4. ENT

This important department of the hospital which stands for "EAR NOSE AND THROAT" has been assessed according to the services required by the patients and the facilities available within the hospital to cater to the needs of the patients. The factors indicated are:

- Quality of doctors (infrastructure)
- Customer satisfaction
- Responsiveness

### 5. Blood bank

The term "blood bank" typically refers to a division of a hospital where the storage of blood product occurs and where proper testing is performed (to reduce the risk of transfusion related adverse events). So the important collection center of this hospital has been assessed for various quality factors and the results are:

- Responsiveness
- It applications
- Top management commitment
- Logistics
- Infrastructure
- Safety

### 6. Radiology

This important department which contains facilities like

- CT scan
- Ultrasound
- Digital xray
- Dialysis unit

Which forms the backbone of a hospital can be assessed for quality on the basis of the factors:

- Top management commitment
- It application
- Research and development
- Infrastructure

To evaluate quality assessment, we tried to take response of 50 patients. Response was taken in scale of 1-5 (1-Very low, 5- very high). Results are shown in following table 1 Overall quality score for this hospital was 3.5 in scale of 5. Findings imply that there is scope for improvement in different functions of Hospital.

**Table: 1.** Quality Score for Case Hospital

Departments with sub factors	Quality Score	Overall
<b>Emergency</b>		
1.Infastructure	3.5	3.5
2.Customer satisfaction	4	
3.Logistics	3	
4.Safety	3.5	

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<b>Medicine</b>	1. Customer satisfaction 2. Top management commitment 3. Responsiveness 4. Infrastructure 5. Safety	4 4.5 4 3 3.5	4
<b>Infrastructure</b>	1. Quantity of doctors 2. Quality of doctors 3. Area 4. Admin staff 5. Maximum no. Of patients 6. Use of resources	3 4 2.5 3 2.5 3.5	3
<b>ENT</b>	1. Quality of doctors 2. Customer satisfaction 3. Responsiveness	3.5 4 3.5	3.5
<b>Blood bank</b>	1. Responsiveness 2. It applications 3. Top management commitment 4. Logistics 5. Infrastructure 6. Safety	3.5 4.5 4 3 3 3.5	3.5
<b>Radiology</b>	1.Top management commitment 2.It application 3.Research and development 4.Infrastructure	4 4.5 2.5 3	3.5

Overall Score- 3.5

## 7. Conclusion

This study has tried to analyze different functions in context to a hospital and suggested different measures for quality in its operations. Usually it is observed that most of the hospitals are not very good in all parameters and they are not following holistic approach for performance

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improvement. Further a framework can be developed to quantify quality index of different hospitals and gaps in services can be also analyzed. This approach can be also used to compare different hospitals based on these measures. Findings will help management in framing different strategies for further improvement.