

# Analyzing Case Studies in Hospital Performance Measurement

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## To cite this article:

Moh'd Mahmoud Ajlouni, Rasha K. Sibakhi, Manar Marzouq. Analyzing Case Studies in Hospital Performance Measurement. *International Journal of Health Economics and Policy*. Vol. 2, No. 3, 2017, pp. 104-110. doi: 10.11648/j.hep.20170203.13

**Received:** January 10, 2017; **Accepted:** February 14, 2017; **Published:** March 3, 2017

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**Abstract:** Hospital Performance may be defined according to the achievement of specialized targets, either clinical or administrative. It might include elements of community care and public health, as well as social and employment functions. These may be seen as clusters of values and aims behind performance measurement in such areas as research, service improvement, referrer and patient choice, resource management and accountability. The methods used for performance measurement and quality improvement include, but not limited to, regulatory inspection, surveys of consumers' experience, third-party assessment, statistical indicators and internal assessment. This study was carried out to examine and analyze case studies related to each of these measures. The study employed a qualitative approach in analyzing these measures. The result of the analysis shows that hospital performance should be based on professional competences in application of present knowledge, available technologies and resources, efficiency in use of resources, minimal risk to the patient, satisfaction of the patient, and health outcomes. High hospital performance should address the responsive to community needs and demands, the integration of services in the delivery system, and the commitment to health promotion, and should be assessed in relation to the availability of hospitals' services to all patients irrespective of physical, cultural, social, demographic and economic barriers.

**Keywords:** Hospital, Performance, Measures, Case Studies

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## 1. Introduction

Health care organizations should provide optimal health services for its stakeholders. Thus, there should be an emphasis put on the development of measures monitoring and regulating their performance. In such perspective, hospitals deserve special attention, as they are an important part of any health system. They provide complex curative care that acts as a first referral, secondary or last referral level facility. Also, they provide emergency care for the severely injured or the critically ill, they are centers for the transfer of knowledge and skills, and they constitute an essential source of information and power.

In many countries, hospitals account for not less than 50% of health care expenditure [1 and 2] or more [3]. Therefore, it is important to use such funds effectively and efficiently [4]. However, hospitals differ from other organizations due to their limited access to external funds and human

responsibility for providing high quality services. So, one way to control their activities is to relate them to performance measures [5].

Hospital performance includes quality, efficiency and effectiveness. Hospitals need to know how well they are performing and to have effective means of assessing and improving the quality of care they are providing [6]. This requires measures that are meaningful, interpretable, and of demonstrable value in helping to improve performance [7]. Performance indicators for hospitals are required for internal management to evaluate and improve various hospital activities [8 and 9] and for external stakeholders like financiers, insurers, patients and the general public [6]. Hospital performance measures can help in better results because measuring health service is a direct guide to better outcomes, and because the measures are indicators of other components of quality [8].

## 2. Definition of Hospital Performance

In order to define hospital performance, explicit goals reflecting the value of various stakeholders, such as patients, professions, insurers, regulators, must be defined first. In reality, very few performance measurement systems focus on health outcomes valued by customers. However, measurement implies objective assessment but does not include judgment of values or quality.

World Health Organization defines hospital as a provider of specialized medical cure and health care services by health professionals utilizing technologies and facilities [10].

The current definition of the term 'assessment' is the process by which the characteristics and needs of clients, groups or situations are evaluated or determined so that they can be addressed. Assessment forms the basis of a plan for services or action. A distinction was made between assessment (putting a value on the measurement of performance) and measurement (act of measuring, without putting any value on the 'observation'). The purpose of the performance measurement is to help organizations to understand internally and improve their practices rather than to provide accountability externally [11].

## 3. Hospital Performance Measurement

Organizational performance has become an important subject in many public entities, including hospitals. As health care costs increase, governments are unable to fund such levels of spending. Therefore, they start to look for ways to maintain the current level of expenditures, while improving quality of health care and provide these services effectively and efficiency. One mechanism to achieve such goals is by relating services to performance. Performance measurement is a "formal, information-based routines and procedures ... used to maintain or alter patterns in organizational activities" [12].

There are many theories behind hospital performance assessment. Some literatures designed a conceptual framework for health care organizational performance based on social system action theory [13]. Other, based on the human factor in the organizational environment [14].

Hospital performance assessment dated back to 1859, when Florence Nightingale calculating infection and mortality rates [15]. Performance is assessed based on clinical and economical indicators. However, there are many models for measuring hospital performance. The most common models are based on ratio analysis and Pabon-Lasso diagram, accounting methods, and frontier approaches [16]. Among these are (1) Data Envelopment Analysis (DEA) as a managerial model, measure how efficient is the hospital's input in producing the output [6, 17 and 18] (2) Balanced Scorecard (BSC) integrates four performance dimensions: financial dimension, customer dimension, internal business process and learning and growth. This model is adopted by Canadian hospitals [19, 20 and 21]. (3) Pabon Lasso model relies on three indicators: bed turnover rate, bed occupancy

and average length of stay [6, 22 and 23]. (4) Analytic Hierarchy Process (AHP) is a technique that prioritizes performance indicators, such as quality-effectiveness, efficiency-funding and accessibility-equity [24 and 15].

Since hospital performance is a multi-dimensional, literature and practitioners in different countries have adopted different methodologies and models. Among these are : (1) The Danish Model which focuses on (a) a clinical perspective, (b) the patient's perspective and (c) organizational perspective [10]; and (2) CHKS Top Hospitals Program in 2001 and National Health Services (NHS) Choices Hospital Scorecard adopted in 2008 in the UK [25], (3) Health Consumer Powerhouse designed by the European Union in 2005 [25], (4) HealthInsight National Rankings for Hospitals in 2004, Hospital Compare in 2003, Leapfrog Group in 2001 and Thomson & Reuters Top 100 Hospitals in 1994 in the USA [25] and (5) Quality Indicator Project (Maryland Hospital Quality Indicator Project (MHA QI Project®), which is a clinical, outcomes-based research project and incorporates hundreds of measures making it the largest performance quality analysis program available [10]. However, there is no consensus about the appropriate performance measurement approach in the health services [26].

Different dimensions of hospital performance and their classification were adopted by different countries. However, the performance is contingent, so are the various models adopted, see for example [13, 27 and 28]. The sub-dimensions are proposed in order to analyze the relevance and feasibility of gathering reliable data for selected sub-dimensions. The key dimensions of hospital performance and the sub-dimensions branched from each dimension of hospital performance include:

- (1) Clinical Effectiveness: Rationale of professionals.
- (2) Patient Centeredness: Rationale of patient experience and satisfaction.
- (3) Production Efficiency: Internal resources and resource acquisition models.
- (4) Safety: Fault-driven model.
- (5) Staff: Human relations model.
- (6) Responsiveness: Strategic constituencies and social legitimacy models.
- (7) The integration in the overall delivery system.

For instance, organizational culture, although not a dimension, it is considered as a determinant of hospital performance. Nevertheless, relevant indicators dealing with organizational culture could be included in the future frame of hospital performance measurement.

The key dimensions are compared to the different theoretical models of performance in organization theory. It led to conclude that the key dimensions selected captured most of the aspects of performance.

## 4. The Analysis

Standardized surveys can be tailored to measure specific domains of experience and satisfaction. Standard surveys of

patients and relatives can reliably measure hospital performance against explicit standards at a national level [10].

#### **4.1. Case Study on Consumers Surveys: Princess Raya Hospital in Northern Jordan**

Spotting the light on how performance of hospitals can be pronounced through consumers' surveys has been concluded by a national study done in Jordan. Al-Shaqran study [29] aimed at identifying the level of satisfaction about the health services of Princess Raya Hospital in Northern Jordan, from both the patients' and the employees' points of view, regarding the employees as a second-line consumers. The study stemmed on two types of variables:

1. Independent variables: gender, age, qualification, insurance, job title, and salary.

2. Dependent variables: Internal milieu, external milieu, the relation with physicians and nurses, procedures, safety measures, research and development systems, motivation and participating in decision making.

The study concluded that the satisfaction level generally was high, reflecting relatively high performance of the hospital. From patients' point of view, the satisfaction level reached 75.82% (3.79/5 points), while that from employees' point of view reached 74.3% (3.72/5 points). The study recommended keeping that level and improving it, as well as concentrating on continuous training, and motivating the providers as performance improvement tools [30].

#### **4.2. Baldrige Principle of Excellence as a Third-Party Assessment**

Third-party assessment is a systematic approach linking national or international standards to local practices of private or public hospitals. These approaches have been compared in a number of studies of standards and methods used by industry-based programs, such as International Organization for Standardization (ISO) and Baldrige Principle of Excellence, and health-care-based programs, such as peer review and accreditation program, detailed below.

With the national emphasis on improving the quality and safety of patient care today, health care institutions continue to promote systems of evaluation that will identify and improve organizational performance practices, capabilities, and results. The Malcolm Baldrige Healthcare Criteria for Performance Excellence (BCPE) [31] are designed to help organizations use an integrated approach to organizational performance management that results in:

1. Delivery of ever-improving value to patients and other customers, contributing to improved health care quality.
2. Improvement of overall organizational effectiveness and capabilities as a health care provider.
3. Organizational and personal learning.

The application of BCPE has a valuable focus on quality and performance improvement whether or not the organization applies for the prestigious national quality

award. The Baldrige categories are:

1. Leadership: Organizational leadership, organizational reviews, and social responsibility.
2. Strategic Planning: Strategy development, strategy deployment, and performance projections.
3. Patient/Customer and Market Focus: Market knowledge, relationships and satisfaction.
4. Measurement, Analysis and Knowledge Management: Organizational-wide and unit Level.
5. Staff Focus: Work systems, learning and motivation, well-being and satisfaction.
6. Process Management: Patient care delivery and support.
7. Results: Clinical, patient and other customer satisfaction, financial/market, staff and work systems, operational and administrative, governance, and social responsibility.

#### **4.3. Case Study on Third-Party Assessment: Saint Luke's Hospital (SLH)**

Hospital performance can be improved or measured by following the third-party method through standardization. Saint Luke's Hospital of Kansas City, USA, provides an example for this [32].

Saint Luke's Hospital (SLH) is a 582-bed teaching and referral organization in Kansas. It is the tertiary care referral center of the Saint Luke's Health System (SLHS), which employs 6,333 individuals. Approximately 51% of these employees are located at SLH. It sounds like an ordinary hospital, but the matter is that SLH committed itself to excellence and became a recipient of the 2003 Malcolm Baldrige National Quality Award in healthcare category. SLH applied the BCPE in terms of the main categories as follows:

(a) Leadership: SLH's senior leaders actively participate by addressing values, direction and performance expectations, they take a systematic approach to ensure the hospital stays focused on providing value for patients and employees. They have done it through (1) Leadership retreats: give leaders the time to evaluate patient and customer needs. (2) Administrator on call: allows customer concerns to be addressed 24 hours, 7 days a week by a number of the hospital's executive council, and (3) Open door policy: ensures patients and physicians have immediate access to senior leaders.

(b) Strategic Planning: SLH has a well-defined Strategic Planning Process (SPP) centered on a series of leadership retreats, conducted at specific times throughout the year, to focus on data analysis and give direction to the SPP. The process consists of three phases. These are (1) develop, (2) manage, (3) deploy and review progress. As well as seven steps that integrates direction setting, strategy development, financial planning and plan management.

(c) Focus on Patients, Customers and Market: SLH's three key patient satisfiers are: (1) waiting time, (2) outcome of care and (3) responsiveness to complaints. Also, SLH keeps its patients satisfied through its standards of performance as guidelines for employees as to how to deal with patients. In addition, SLH developed a formal listening and learning

process to gauge customer requirements.

(d) Measurement, Analysis and Knowledge Management: SLH has a specific IT systems architecture that acts as the foundation of access to data by staff, suppliers, partners, patients and customers.

(e) Staff Focus: Each employee at SLH has a Performance Management Process (PMP). Also, primary customers at all levels are identified in the employee job description. SLH has a program of education and development focusing on: (1) technological change, (2) management / leadership development, (3) new staff orientation, (4) safety and (5) performance improvement.

(f) Process Management: SLH uses its services, design, management and improvement model to design its processes, focus on management and improvement and achieve high levels of patient and stakeholder satisfaction.

(g) Organizational Performance Results: SLH has remarkable improvements in the 2003 business results. Such successful results include (1) Inpatient satisfaction exceeded 90%, (2) Outpatient satisfaction exceeded 95%, (3) Inpatients recommend SLH at a rate exceeding 94%, and (4) SLH was ranked 35th out of 4500 hospitals in USA in 2002.

In a study conducted by the National Research Corporation, SLH has been shown to deliver the best quality healthcare and to have the best doctors and nurses in its market area. SLH is viewed to deliver the best heart and orthopedic care and has the best neurology services. SLH has made dramatic improvements in financial performance. Since 1999, it has increased its total margin by 15% and operating margin by 14% and ranked among the top of comparison hospitals in 2002. Finally, SLH exceeds the national average in each of the rated areas [32].

#### 4.4. Peer Review

Peer review is a closed system for professional self-assessment and development. Reciprocal visiting is driven by professional (often single-discipline) organizations, especially for the recognition of training posts. It is endorsed by clinical professions as a mean of self-regulation and clinical improvement, and is integrated with undergraduate, specialty and continuing professional development. Reciprocal visiting has also been applied to service development, such as in the hospital specialties programs.

Peer review schemes could provide a source of standards and assessments to harmonize professional and human resource management within and between countries with reciprocal recognition of training [10].

#### 4.5. Statistical Indicators

Performance measurements from individual hospitals may be submitted as calculated indicators, or as raw data to be processed, aggregated, analyzed and presented by a central agency.

However, there are many cautions associated with their use. These include (1) Interpretation of raw data on hospital performance, even after adjustment for case-mix and

severity, is dependent on many social or economic variables beyond the hospital's control, (2) Hospitals might modify internal data collection in order to meet external targets, or deny interventions to high-risk individuals in order to improve outcomes, (3) Composite measurements of heterogeneous activity obscure the contribution of their individual elements, (4) Many hospitals do not have adequate data to compile standard indicators, (5) The cost of data collection may exceed their value, (6) The time and investment required to develop and validate national indicators are underestimated, and (7) Some experts suggest that some indicators like reducing the average length of stay and episode costs may not be a detriment to clinical outcome.

Nevertheless, the publication of performance statistics aims at encouraging improvement, empowering patient choice and demonstrating a commitment to transparency. Evidence reported in WHO Health Evidence Network (HEN) Report [10] suggests that this increases public interest and management attention to data quality, but it does not appear to have much effect on performance.

According to Thompson [33], "much of the current evidence on the effectiveness of performance indicators is based on observational or experimental data". Below we might conclude that Thompson study is correct. Through experimental data and vital statistics introduced in the Country Cooperation Strategy for WHO and Jordan Report 2003–2007, the whole healthcare services performance in Jordan can be observed [34].

## 5. Financial View of Hospital Performance

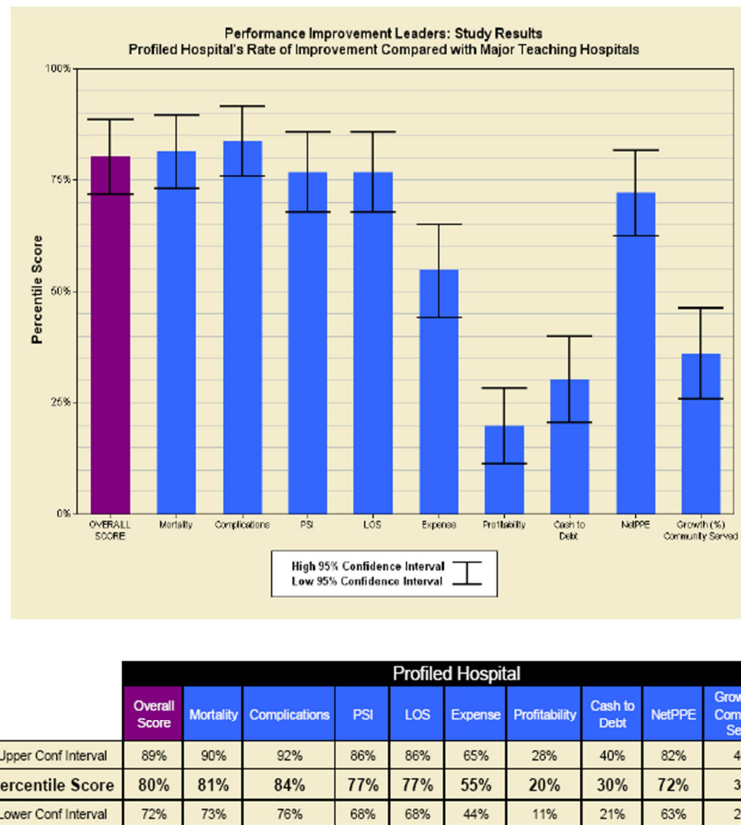
The improvement in hospital performance can be measured and assessed through many financial ratios, together with some statistical concepts, see, for example, [35]. Moreover, the performance improvement would be basis of motivation and incentive plans. An important incentive plan is the performance shares, which are shares of stock given to executives on the basis of performance, as measured by earnings per share, return on assets and return on equity. Such plans are designed to motivate executives to act on those factors under their control in a manner that contributes to stock price maximization. Also, incentive plan are intended to force the hospitals or healthcare organization to retain top-level executives. This is extremely true in the private sector [36].

An example of hospital performance is a program called Solucient 100 Top Hospitals® [37]. It is a performance improvement leaders program developed by Solucient Information Product Company serving the healthcare organizations to improve the performance. By integrating, standardizing and enhancing healthcare information, Solucient provides comparative measurements of cost, quality and market performance. For instance, Solucient provides comparisons for overall rate and consistency of improvement over five-year. It uses a bar graph and data

table to illustrate the profiled hospital's five-year improvement on the study's scorecard of nine performance measures compared with its peer group. The percentile score is the approximate ranking of the profiled hospital in the study, and is an indicator of the hospital's relative standing among its peers on the ability to improve over time.

In the following figure (1), higher percentile scores are better for all of the performance measures on this graph, indicating a faster improvement rate in the correct direction

compared with the other hospitals in the peer group. For example, a score of 95.0 in the first column (magenta) is a rank in the 95th percentile, thereby indicating that the hospital improved more consistently and faster than 95% of its peers. In addition, it shows the alignment of performance improvement of the hospital in comparison with a national benchmark and peer median improvement slopes. Permanent organizational improvement requires interdisciplinary effort.



Source: Solucient 100 Top Hospitals®

**Figure 1.** An Example of Solucient 100 Top Hospitals® Overall Results of Profiled Hospital's Rate of Improvement Compared with Peer Group

Moreover, Solucient shows the hospital-specific five-year scores for rate and direction of improvement in comparison with the rate and direction of improvement of peers across the United States. For the first time, it is possible to determine whether the profiled hospital's rate of improvement is keeping up with change in performance across the industry, a crucial factor in projecting success under pay for performance schemes [37].

## 6. Conclusions

Performance is the achievement of the desired goals. High hospital performance should be based on professional competences in application of present knowledge, available technologies and resources, efficiency in use of resources, minimal risk to the patient, satisfaction of the patient, and health outcomes.

High hospital performance should address the responsive

to community needs and demands, the integration of services in the delivery system, and the commitment to health promotion.

High hospital performance should be assessed in relation to the availability of hospitals' services to all patients irrespective of physical, cultural, social, demographic and economic barriers.

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