THE ANALYSIS OF THE PERFORMANCE INDICATORS IN THE HEALTH SYSTEM

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Abstract

The main objective is to describe in detail the complete process of developing a set of strategic performance indicators to monitor and improve the performance of a tertiary care hospital. The aim is to centralize and standardize performance indicators in order to provide organizational management with information and evidence for making strategic decisions and drawing up a strategic development plan in the coming years of activity. Each of the performance indicators has a specific value, some reflect the effectiveness or efficiency of the provision of medical services, such as the average length of hospitalization, others reflect the activity, such as waiting time for hospitalization or for outpatient or in-room appointments. urgency, and others reflect the quality of services provided, patient safety, such as infection rate and mortality rate.

Keywords: medical services, indicator, efficiency, strategy, management model

JEL Cassification: C10, H75, I10

Introduction

Data and facts can be understood and analyzed by defining basic concepts, which define the relevant facts and differentiate them according to their importance. Many medical institutions have developed key performance indicators specific to their work to monitor, measure and manage the performance of healthcare systems and to ensure the effectiveness, efficiency, equity and quality of medical services provided. Healthcare systems are expected to achieve and manage results in line with these set targets and quality standards. Managers of health care institutions are aware of the effect of using indicators on their work, which aim to monitor and improve performance, but nevertheless do not always use the analysis of indicators as an essential part of their strategies. Some managers of medical institutions have the experience and skills to introduce new strategies and make essential changes, to introduce new business processes to achieve advanced performance, to change the organizational structure of the institution, but continue to use the same indicators that they have been using them for years or not to use them at all. It is very important to develop strategic performance indicators that reflect the real performance of health care institutions.

Literature review

In recent years, performance has become a widely used and well-known term in financing medical services. Performance is the level, the extent to which the goal set is met. The concept of performance in health services is a tool for bringing quality, efficiency and effectiveness together. Subsequently, the problem of health performance was addressed through the prism of a comparison based on changes, namely, performance before change and performance after change. This new approach has led to the development of a variety of methods for assessing performance in health systems (Leggat s.a., 1998). Many of these methods proved unsatisfactory because they used only one variable, a single performance indicator, and in many cases the result was distorted.

According to the theory of organizational leadership there are different models of organizations that generate different models of performance (Cameron s.a., 1983; March and Sutton, 1997), some of them being appropriate to the organizational structure of the hospital or health care provider.

Research methodology, data, results and discussions

Key performance indicators are used by hospitals to monitor and evaluate performance against the value level of their activity or quality standards. Key performance indicators show trends and explain how improvements are made over time. Key performance indicators also help to compare results based on approved standards or by reporting to other similar healthcare organizations; this helps hospitals and medical institutions to improve the services they provide by identifying problems and checking whether or not the level of performance is at the desired level or not, and also identifying areas where improvements are needed. Examples of Performance Indicators used in hospitals are the waiting time of patients in the emergency room, the number of patients in the waiting area and the number of patients waiting to be admitted to a ward. Depending on the three levels of performance management, we can classify key performance indicators in dashboards and operational, tactical and strategic indicators. Each category has its own objectives, measurement methods and expected results. According to the Donabedian conceptual model, which provides a framework for evaluating healthcare services and the quality of healthcare, key performance indicators can be classified differently, being linked to the three components of the health system; structures, processes and outcomes.The structure describes the context in which healthcare is provided, including hospital buildings, staff, funding and equipment, while the processes include all transactions between patients and providers throughout the healthcare provision and the results

relate to the effects of healthcare on the health of patients and populations. And finally, according to studies conducted to measure and improve health care performance and as defined by the Institute of Medicine, the objectives for the high-quality healthcare delivery systems we mentioned above, performance indicators can be also classified according to the different dimensions of measurement in the main six defined elements; safety, efficacy, efficiency, timeliness, patient focus and equity.

Safety indicators should measure the degree to which any medical intervention or procedure is safe or harmful to the patient and / or staff, including sentinel events and infection control. Efficiency indicators should measure the ability of healthcare services to produce the desired results and achieve the proposed and intended objectives, while efficiency indicators should measure the extent to which medical resources, such as time, effort or money is well used for the intended tasks or purposes. Activity indicators should measure the degree to which healthcare is provided the most to the individual, time allocated or necessary or in accordance with the patient's perception of promptness. Activity quality indicators should measure patient satisfaction with health care services and the degree to which systems succeed or fail to meet patient needs, including patient compliance, providing accurate information, relieving unnecessary pain and discomfort, and providing emotional support. Equity indicators should ensure that differences between patient subgroups are reduced and that the healthcare system treats all individuals correctly and provides high-quality healthcare, regardless of patient characteristics, characteristics, such as age, gender, race, ethnicity, education, disability, sexual orientation, income or domicile. A model for classifying performance indicators by system levels, dimensions and components is suggested by the researchers and illustrated below.

The systems of indicators, identified during the search for information on the management of financial resources in medical services, revealed the performance of hospitals abroad and the existence of several main ways and indicators frequently used to measure the performance of hospitals.

Criterion	The content of the performance criterion
Clinical efficiency	Quality of techniques used, medical practice and organization based on exact criteria, improved health and outcomes (both individual and patient-related).
Work efficiency	Resources, financial components (financial systems, continuity, additional resources), more competent staff and the provision of state-of-the-art technology, medical equipment and technology.
Personal	Satisfying the need for human resources, creating motivational systems to stop the migration of specialized human resources (doctors and nurses), ensuring adequate conditions to maintain the satisfaction of hospital staff and also to improve it, ensuring the right ways for continuing medical education.
Social orientation	Community orientation (response to needs and requirements), access to resources, continuity, health promotion, equity, skills to adapt to population demands.
Safety	Patients satisfied with medical services, providers aware of the importance and maintaining a partnership with a hospital, a good functional organizational structure.
Patient	Patient availability: patient focus (prompt attention, politeness,), patient satisfaction and patient experience (dignity, confidentiality, autonomy, communication).

Thus, the measurement of hospital performance is indirectly related to the following dimensions:

- Clinical efficiency through the quality of services and techniques used;
- Efficiency in the use and attraction of resources, with an important component related to the financial management of the hospital;
- Orientation towards continuity together with a positive response to the needs and demands of the community;
- Security ensured by high quality, ensured throughout the flow of relationships with providers, patients and the entire community;
- Orientation towards patients to be fully satisfied.

Comparing these criteria with various theoretical models of performance established in organizational theory led to the conclusion that such criteria cover a large part of performance issues. The relationship between the criteria of a hospital performance and the different theoretical models of performance are presented in the table below.

Criterion	The correspondence in performance theory
Clinical efficiency	Motivation of specialists
Work efficiency	Models of financial resources and acquisitions
Personal	Social structure
Social orientation	Interhuman relationships
Safety	Elimination of medical errors
Patient	Patient satisfaction analysis

Achieving performance inside a hospital based on the implementation of theoretical models has particular dimensions, such as:

- clinical efficiency - a highly competent medical act performed with optimal costs;
- satisfaction and focus on the efficient use of resources (material, human, financial);
- the degree of safety determined by a low degree of malpractice;
- special human relations and intercommunication;
- feedback between the management structure open to doctors.

In this model, performance management is accomplished through a Plan-Do-Check-Act (Deming cycle) in which researchers separated the analysis measurement to further emphasize the role of each criterion clearly. The novelty element proposed by this model is the orientation towards action, offered by the classic system indicators in the PIMAR cycle (Planning-Implementing-Measuring-Analyzing - Readjusting), a cyclical action based on planning, measurement and response, corrective feedback.

The model has at its center the process for setting certain performance objectives measured by appropriate indicators. Axes / dimensions are allocated according to the data to be taken into account and taking into account public health systems (Clinical efficiency, work efficiency, financial efficiency, human resources management, responsibility / receptivity, safety and patient focus). The following table presents the list of relevant indicators for the hospital and performance, the list that includes the indicators on the basis of which the activity of the Romanian hospital management is periodically evaluated.

Criteria	**Processes**	**Indicators**
Clinical efficiency	-adequacy of the care process -observance of the care process -results of the care process	-re-hospitalization rate -mortality rate -complication rate -the average duration of hospitalization
Work efficiency	- use the available equipment with the utmost care -using the resources available for the best care services to the extent possible	-length of stay in the hospital -medium cost -the utilization rate of the endowments -bed occupancy rate
Financial and management resources	- Use of existing financial resources; - Identifying efficient means and allocating resources effectively.	-analysis of the allocated budget compared to the approved budget; - expenses for emergency services - expenses with hospitalization services -staff costs - expenditure on goods and services -drug expenses -the average cost per day of hospitalization
Personal	-work environment -recognizing the needs of the individual -staff promotion activities -adequate pay -development (continuing education) - Staff satisfaction	-the rate of absenteeism - rate of resignations and / or transfers -the average salary per unit -number of specialization courses - the degree of staff satisfaction
Social orientation	-degree of integration in the health system - the degree of integration into the community - patient orientation - access - continuity - promoting health actions - equity	-consulted patients -the percentage of patients with a recommendation from the specialist doctor -the percentage of patients recommended for discharge -the percentage of patients transferred to other health units
Safety	-patient safety - staff safety - environmental safety	- rate of nosocomial infections - rate of work accidents - complication rate
Patient	-respect for the patient -confidențialitate - communication -freedom in choosing the attending physician - patient satisfaction	-waiting time -percent of informed patients -patient perception

The performance of a public health service can be achieved through a dynamic analysis between fulfilling its mission (meeting objectives), acquiring and controlling resources (financial resources, prestige), maintaining and developing human resources (employee welfare and personal development) and integration and predictability. services provided compared to the ability to meet the needs and expectations of service users, ie patients.

The importance of the model is the selection of performance indicators. They were contextually selected, allowing the model to adapt to a wide variety of real forms and situations. In order to complete and predefine the performance management cycle, it is necessary that certain conditions be observed when selecting indicators.

Thus, the selection of indicators must follow the following aspects:

- To allow the creation and implementation of an effective and efficient control system for measuring these indicators within the hospital in question;
- To be adapted to the main strategic objectives, through its own change, in order to adapt to the new strategic imperatives, and, therefore, to introduce improvements inside the hospital;
- to allow useful interpretations and analyzes as a medical or administrative basis as well as decisions, which will regulate the functioning of the system in the hospital.

The main goal is to analyze the performance of a management model. For this validation we selected a set of data collected to verify the assumptions regarding the functionality of the model. The data collected are from a head hospital, with a number of 274 beds. The data refer to the period 2015-2019. For the analysis we selected a number of 5 performance indicators, representative, which involve all the aspects presented above, namely:

- average length of hospital stay (DMS);
- rate of use of appliances (OR);
- number of cases in a calendar year (NC);
- case-mix index (ICM);
- average cost per day of hospitalization (CM).

Performance indicators

Table 1

	2015	2016	2017	2018	2019
DMS	23.04	18.82	20.65	20.64	22.90
RUP	65.16	62.41	63.73	62.44	67.43
NC	2878	3324	3066	3434	2881
ICM	1.3523	1.4639	1.4369	1.5296	1.4976
CM	100.78	150	160.25	280.5	306.12

There is a direct link between the indicators presented above. In 2019, the increase in the average length of hospitalization and, implicitly, the rate of bed use, correlated with the decrease in the number of cases, patients, had as a direct consequence the increase of the average cost per day of hospitalization by 300% compared to 2015, in the context of lying at comparable levels of the other indicators.

Most of the indicators used for the analysis of the activity are interrelated and influence each other. The number of hospital beds, the number of patients, the total number of hospital days, the bed use rate, or the average length of hospital stay, influence each other. The utilization rate of a hospital bed has been proposed as an indicator that can reflect a hospital's ability to provide the necessary services. It can be used to guide the planning and management of hospital operations from the point of view that the hospital can care for patients at a high level of quality. Many studies also analyze the effects of bed occupancy. The number of chronic patients is also very important to monitor, especially in a tertiary hospital. Chronic patients should be transferred to a permanent care unit or home care.

Conclusions

Most of the indicators presented are already used, electronically generated from the hospital's computer system and reported to higher institutions. The use of performance indicators should mainly include the two components: the first component refers to the importance and value of the indicator, its usefulness in setting future objectives and achieving performance improvement and the second component refers to how to calculate this indicator, including formulas, inclusion and exclusion criteria, such as the difference between the total authorized beds and the operational or functional (accessible) beds.

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