



The quality assessment in healthcare organizations

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Abstract—This paper discusses three main approaches to quality assessment, such as: the organizational structure including human, physical and financial resources, necessary to health care; the care process referring to a sequence of actions or activities that transform inputs, provided by the physicians, in output received by patients; and the result denoting the output of the technical process, the benefit arising from the process as assessed by the patient according to its expectations. Health system reforms in recent decades have led to a serious attention of health professionals to improve the quality of health care, as well as to reduce costs.

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Keywords-component; Quality; evaluation; healthcare organizations; costs

I. INTRODUCTION

The quality concept implies the assessment the care quality and the comparison of a result to a objective. The need to systematically evaluate the care quality arises from the need to identify and analyse the causes of the variations observed in many aspects of health care in order to find improvement solutions.

The actions of quality evaluation and cost reduction are based on the comparison between what is done and what should be done and on the implementation of corrective actions (Jars-Guincestre, Durieux, 1998). The main steps of the quality process are the identification of problems, the implementation of appropriate actions, the extent of their impact on the quality of care and the subsequent evaluation of these actions (Saulnier, 1998). The assessment may concern three aspects of the health care system: structure and organization; the processes; and results. These aspects are complementary: the assessment of structures or processes must have impact on the results; if the assessment is based on the measurement of results, the variations observed must have a direct link with the quality of care, with reference to the structure, organization, or procedures (Brook, McGlynn, Cleary, 1996).

The evaluation method is based on some key elements such as:

- Training for operators to identify problems and define behaviors aimed at their solution;
- Setting standards useful to analyze the operations to create the final result;
- Ability to recognize the critical tasks in processes;
- Capability to assess the reliability and effectiveness of the proposed change;

- Empowerment of the operators to cooperate on the basis of shared goals;
- Creating a positive organizational climate (De Simone, 2013);
- Awareness of the importance of the quality role;
- Willingness to share information.

This process collides with the method difficulty to formalize and measure the components of the complex medical act. With increasing of health care costs, funders of health care are interested in using the most appropriate methods to collect information for regular clinical practice. The measure of the quality of health care organizations is a difficult task, especially for the lack of an integrated information system allowing routine measure. Italian health system reforms in recent decades have undoubtedly led to a more serious attention of health professionals to improve the quality of health care, compatibly with the efficient management of health care (De Simone, 2000).

II. BACKGROUND

The problem of quality evaluation in health care dates back to the work of the English nurse Florence Nightingale in 1854 aimed to investigate the hypothesis concerning the problems of hospital care during the Crimean War (Cohen, 1984). Nightingale introduced the outcome indicators to measure mortality rates, check the quality of patient care and demonstrate the need to reduce the spread of infections. During the Crimean War, she gathered some statistics on the British injured soldiers classifying them into two categories: the soldiers who died; and the soldiers who were healed. Nightingale correlated these results to the intensity and the quality of nursing care that the soldiers received and demonstrated that the adequate nursing care resulted in a reduction of mortality rates from 32% to 2%.

In 1914, a surgeon at Massachusetts General Hospital, Ernest A. Codman, following the trend of studies on outcome management, pointed out the result of patient care was an effective indicator to assess the quality of care (Al-Assaf, Schmele, 1993). The analysis of the final clinical outcome allowed to indicate the presence of some problems and identify effective actions to prevent problems in the future. Codman considered the rate of in-hospital mortality as an easily measurable indicator to assess the delivered care and distinguished two types of in-hospital mortality, inevitable mortality and intentional mortality dependent on the medical care and the care provided by other health professionals. The



reflections of Codman, even dated back to a century ago', are of great relevance today (Codman, 1986). Health care organizations must declare their results and performance, analyze the results to identify strengths and weaknesses and compare results with those of other health care organizations. The hospitals had to publish reports to compare the results in terms of efficiency, to measure outcomes effectiveness and reward staff.

The evaluation system shifted from the outcomes measurement to the comparison of the care quality with predefined standards, through the analysis, monitoring and evaluation of existing clinical practices, and therefore from the ex-post control to prevention and planning. It's interesting to consider the commitment of the American College of Surgeons in 1912 to standardize the structure and way of working of hospitals, to ensure that institutions with higher ideals had the right recognition by the professional community and the institutions with lower standards are stimulated to improve the quality of their job. According to the statement of the American College of Surgeons (origin of accreditation in the U.S.A.), the continuous improvement of quality and the attention to patients' needs are key elements to improve the health care system. Although the outcome indicators continued to be used in Europe and in the United States, the trend began to shift towards the structure and process indicators. Health professionals and researchers continued to collect data to measure outcomes and use them to understand and control the quality of care.

The impetus for the study of the structure raised in the 1950 with the establishment of the Joint Commission on Accreditation of Hospitals which published the first International Accreditation Standards for Hospitals, concerning the minimum structural requirements and the skills of health services organizations. This trend continued until 1970 in the United States, with the raise of the Professional Standards Review Organizations which gave emphasis to the process indicators to assess the quality of care provided to patients (Al-Assaf, Schmele, 1993).

The adoption of the control system of the correspondence of healthcare organizations to quality and organizational criteria stems mainly by the widespread of private health care organizations (profit or non profit). These organizations in a regime of absolute liberalism needed tighter controls.

In Italy, differently, the problem to assess the health care quality arises mainly for institutional (the reform of the national health service) and economic reasons. The rationalization process required forms of measurement and comparison of the costs of services in both public and private health care organizations. The most popular approach to evaluate health care organizations is based on the combination of outcome assessment with the evaluation of patient satisfaction based on quality standards.

III. APPROACHES TO QUALITY ASSESSMENT

There is a broad framework to analyse the quality of health care in order to improve it. Referring to the Donabedian model, three approaches to quality assessment can be identified, such as the *structure*, the *process* and the *result*.

III.1 ORGANIZATIONAL STRUCTURE

The term structure refers to "the relatively stable characteristics of administrators and health care workers, available tools and resources, and organizational and physical environments in which they operate" (Donabedian, 1988). The concept of structure includes human, physical and financial resources, necessary to health care. It refers to the number, distribution and qualifications of professionals, equipment, and geographic location of hospitals and other health services. It also includes both formal and informal organizational methods to finance and deliver health services. The organization of the medical and nursing staff, as well as the quality assurance project, are part of the concept of structure.

The use of the structure as indirect measure of the care quality depends on its influence on the provided services. So the structure is linked to the quality because it can increase or reduce the possibility of a satisfactory performance. The relationship between the structure and the care quality is relevant for the planning, design and implementation of systems for the delivery of health services. A good structure, with adequate resources and the appropriate programming system of services, is probably the most important instrument to keep and promote quality. This is not surprising, because a good structure includes a well-designed mechanism to monitor the quality of care and, on the basis of the achieved results, operationally proceed. The utility of the structure as indicator of quality of care is limited by the insufficient knowledge of the relationship between structure and performance. A study in nine intensive care units in the United States didn't find a correlation between the quality assessed by the organizational audit and the quality of care assessed by two results indicators: the ratio comparing actual and theoretical mortality calculated for homogeneous group of patients, and the ratio comparing actual and theoretical duration of stay (Zimmerman, Shortell et al., 1993).

III.2 PROCESS OF CARE

The main object of evaluation is the care process, consisting of a series of activities involving medical staff and patients. The process refers to a sequence of actions or activities that transform inputs, provided by the physicians, in output received by patients. In the case of a patient with a fractured wrist that enters the emergency department of a hospital, the process is what elapses between the request of health service (specifically immobilizing the wrist) and the health service delivery. The health processes are complex and often characterized by waste; so the quality can be improved through the elimination of unnecessary activities in the



execution of processes. The improvement of the care processes requires that medical and nursing staff work together to redesign processes. A study of Lord (1993) describes the results of the redesign of the care plan after a surgical hospitalization, that consist of the decrease of 50% of hospitalization and the increase of the level of patient satisfaction.

The quality of the process can be assessed through the direct observation or the examination of the recorded data to obtain the reconstruction of events. The basis of the evaluation of quality is composed by the knowledge of the relationship between the characteristics of the care process and their consequences for the individual and social health and well-being. With reference to the technical management, the relationship between the characteristics of the care process and its consequences is theoretically determined by the current state of medical and technology knowledge and by the rules of good care. The set of rules governing the management of the interpersonal relations derives, however, from the values of the society, ethical principles and laws governing the relations between health professionals and patients. So the quality of the care process is defined as a normative behavior and the rules come from both medical science and ethical principles and values (Donabedian, 1988).

III.2 OUTCOME

The study of the outcomes is the traditional approach to the evaluation of care quality. The term outcome indicates a change in the status of current and future health of the patient which can be attributed to a previous care, including the improvement of both the social and psychological function and the patient satisfaction. The result is used to denote the output of the technical process, the benefit arising from the process, as assessed by the patient that receives the output according to its expectations. The analysis of the benefits requires the understanding and knowledge of customer needs and expectations. The term customer is used to indicate the role that a person or unit has in the time he receives the service. Health professionals are slowly accepting the important difference between the patient requiring the care, and the customer being attentive to quality and price. The competitive advantage can be based on the manner in which an operator is effective to listen to customers and satisfy their needs.

The orientation to customers needs and expectations is the heart of quality management. Customers refers to both the patient and internal customer having the dual role of producer and user in the production process; for example pharmacy customers, departments of clinical documentation are clients of the nursing unit. With regard to internal customers, in order to implement the quality improvement program a system of relations has to be defined and increased among departments according to effectiveness and efficiency indicators.

The results evaluation, in health sector, is difficult to achieve; Australian Accreditation Council estimates it takes four years

to properly define an indicator of clinical outcome. To assess the impact of the care quality on the results, it's necessary to define specific indicators. Due to the complexity and diversity of some typologies of patients, such as patients in intensive care, the proposed indicators (mortality rates of nosocomial infections, the percentage of unplanned readmissions within 24 or 48 hours, the frequency of iatrogenic diseases) have to be carefully analyzed (Thijs, 1997). Their variations depend on several factors and it's difficult to establish a direct link with the quality of care. It should be considered all of the risk factors involved, depending on differences of the type of patients, the severity of disease and demographic conditions. Clinical practices have to be evaluated by indicators regarding the consumption of resources, such as the length of the stay, the efficiency and activity indicators, as well as clinical indicators based on the evolution of the patient (De Simone, Servillo 1999).

IV. QUALITY AND NON QUALITY COSTS

The aim of quality assessment programs is to reduce costs, as well as to improve the quality and safety of care. The relationship between the quality and costs can be formalized with the use of two concepts of industrial economics: non-quality and quality costs. These concepts can allow the economic evaluation of the impact of a quality program, useful for health care organizations to be competitive on the market.

The costs of quality are often not measurable and not checked. The non-quality is the sum of the consequences of the failures of the production process, that can affect the final customer. In health-care, this concept can be applied to the patient admission mode (not referring to the quality of diagnoses and prescriptions), such as loss of time, redundancy procedures, unrespect of hygiene, difficulty of access to information. The so-called system failures, involving additional costs, include delays in health care, duplication of investigations and treatments, lack of alignment to standard levels of performance, loss of trust of the patients. Failures can occur during the process of care before the patient receives them (*internal failures*) or be directly incurred by the patient (*external failures*).

The costs of operating failures, that can be in theory avoided, are unproductive, and make the services not competitive and not accepted by patients, their relatives and funding institutions. Efforts to make appropriate and correct services from the beginning are minor compared with the repetition of the same diagnostic procedures (eg x-rays). The definition of the quality value includes documentation and periodic analysis of costs referring to the repetition of tests and procedures for insufficient reliability and inadequate service.

The non-quality is a risk factor for the patient, the structure and the society. The patient safety can be compromised by failure; the structure can have a financial limitation for non-compliance with quality standards; the risk can be social for the absences at work of the patient who suffers the consequences of dysfunction. The necessary measures are



often adopted after the check of the consequences of non-quality while it would be better to adopt a prevention policy. Since 1970s in the United States, the Joint Commission on Accreditation of Health Care Organizations has required to hospitals to implement programs of quality assessment based on objective criteria. Hospitals have continued to gather the information with the use of prevention criteria in order to avoid unexpected events and improve quality (Sanazaro, Mills, 1991). Unexpected events are the cause of the prolongation of hospitalization, readmissions, and even deaths (Bates et al., 1995). Some criteria can allow identifying these events, such as the unexpected transfer to the intensive care unit, a transfer surgery during hospitalization, or additional surgery during the same hospital stay. These indicators, however, are of limited value and often show partial results. Indicators of outcome, structure or process must consider the whole functioning of the organization (Hill et al., 1997). Unexpected events, in addition, don't allow identifying relevant aspects of care quality, such as the appropriateness of the diagnosis and the prescription. The identification of such events can be a useful tool to raise awareness among health professionals on the risks of clinical practice but it isn't a direct source of information on the quality or lack of care quality, without the consideration of other elements.

The approach to the relationship between quality and costs with the use of the concept of non quality cost is interesting for its immediate application to the health sector, but it doesn't consider some aspects of quality such as compliance and prevention. The cost of quality investment includes three components as follows (Hill et al., 1997):

1. *Prevention costs* to minimize the cost of failures and assessments (financial resources dedicated to quality management);
2. *Assessment and compliance costs* to introduce clinical audit;

These two types of costs are the cost of quality investing (table 1).

3. *Failures costs and their corrections.* The costs of internal failures are associated with the correction procedures of health care performance. These procedures require the use of additional resources. The costs of external failures refer to legal disputes and the loss of image towards customers. Sometimes it can be required repeated hospitalizations.

The cost of non-quality appears as a component of the cost of obtaining quality (table 1).

How can it be applied to the health care field the cost of obtaining quality? In the hospital, doctors and other health care professionals have the problem to offer the service. The special feature of the hospital is that the patient receives the service in real-time and the service can't be checked before the delivery. That's why the quality control in the hospital must be based on the prevention of errors through a system of training, information and organization. The decrease of the failures, resulting from an increase in costs of prevention, engenders the reduction of the cost to obtain the quality (Warens, Pasternak, Smith, 1994).

Schneiderman (1986) proposed to reconcile the approach of continuous quality improvement with the notion of economic optimization and tried to demonstrate that an increase in investment in prevention and compliance doesn't involve additional costs or, if necessary, to show that these costs remain minimal.

Table 1 Components of the quality investment cost

Dimension	Cost of quality investment		Cost of non-quality	
	Prevention	Conformity	Internal failures	External failures
Definition	To prevent errors and integrate quality into the process	Activities of error detection	Errors detected before service delivery	Errors detected by the final customer
Example	Training of staff involved in the quality control	Clinical audit	Costs of additional work time	Costs of nosocomial infections, re-hospitalization

V. THE IMPACT OF QUALITY PROGRAMS

The introduction of quality programs in health care organizations can involve three levels of change: cultural change, consisting in the active participation of the members of the organization in the improvement process; a change in work processes and way of working that means the preparation and dissemination of the new protocol or procedure; and the improvement of the results that can be observed in the duration of the two previous changes and the extent of the effect of the improvement action (for example, the decrease of the rate of nosocomial infections or the reduction of the number of falls of the old patients in the hospital).

The assessment of the impact of improvement action is critical to the success of quality projects because it reward workers for their efforts. In the quality project, the improvement of the results can be progressively achieved and sometimes lead to a loss of motivation of the involved actors and it can be superficial without the achievement of the first two levels of change.

The process of quality assessment needs the use of existing information and the creation of the information systems in order to measure the economic impact of this process (De Simone, Di Trapani, 2013). The implementation of the assessment quality process can be difficult in hospitals, because there is coexistence of the strong professional logic and administrative logic leading to the care rationalization (De Simone, 2011).

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