

Improving Quality in Health Care While Reducing Costs

By Ronald J.M.M. Does, Jaap van den Heuvel, Jeroen de Mast, and Gerard C. Neimeijer

Cost and quality are two critical issues facing the health care industry throughout the world. Finding ways to improve quality and reduce costs is one of the most important issues facing the medical profession as well as the public in general. Leaving it to health care administrators to worry about costs and the clinical staff to worry about quality is *not* a recommended approach. The two sides need to collaborate closely to obtain better quality while containing the spiraling costs of health care.

In this article we discuss the three definitions of quality promoted by quality management pioneer Dr. Joseph M. Juran. Conceptually, these definitions may help health care professionals—clinicians and administrators—clarify the relationship between cost and quality and explain the seemingly paradoxical idea that we can indeed enhance quality while reducing cost of health care.

The term *quality* has several interpretations. Confusing these may cause problems, some of which may confuse policy discussions, create conflicts between patients, health care professionals and hospital management, and impede progress in solving problems with the health care system. If the prevailing paradigm is that reducing cost inevitably will compromise the quality of care, the very mindset becomes an obstacle to dealing with some of the industry's most vexing problems.

The majority of activities in professional organizations are done as routines, and “routinization” (that is, turning something into a process) of activities constitutes the most important form of storage of an organization's specific operational knowledge. Process management has an analogy with financial management. The latter is carried out through three managerial processes: financial planning (budgeting), financial control (budget), and financial improvement (cost reduction). It was Juran (1989) who first explored this analogy for managing quality. It may seem logical to implement process planning before engaging in process control and process improvement. However, Juran suggested that it is more pragmatic to start with process improvement (Bisgaard, 2007).

Perhaps the first association people that make with the topic of health care improvement is innovation in medical science, including innovations in treatment protocols, medical equipment, and pharmaceuticals. This article, however, focuses on the improvement of health care by improving its delivery. Health care delivery concerns the routines in hospitals, including primary patient processes, medical support processes, and nonmedical support processes. Characteristics of these processes, such as their capacity, efficiency, and reliability, determine

important performance dimensions of health care, such as throughput, patient safety, and waiting times. Ultimately, they have a substantial impact on patient satisfaction, cost, and the quality and timeliness of medical care.

Quality as Fitness for Use

Juran's primary definition of quality is “fitness for use” (1989). This somewhat peculiar definition implies that more is not necessarily better. Instead, the paramount focus should be patient needs and expectations. Quality as “fitness for use” provides a conceptual guide for caregivers to focus attention on what is “fit” for the patient in his or her current circumstances and helps clinicians clarify what is needed to prevent “overuse,” “underuse,” or “misuse” (Becher and Chassin, 2001). For example, patients do not want to undergo large or risky surgical procedures or diagnostic tests unless there is a reasonable probability of benefit to their health care condition. It is the health care workers' professional responsibility to judiciously apply the fruits of medical science to that end. Most patients are realistic and do not expect miracles. However, it has been observed that health care professionals—possibly out of fear—sometimes prescribe tests, procedures, and medications regardless of cost and without sufficient consideration of relevance and effectiveness (Chassin and Galvin, 1998; Schuster, McGlynn and Brook, 1998; *Crossing the Quality Chasm*, 2001, Chapter 8). On the other hand, situations also occur wherein health care administrators or funding agencies try to ration tests, procedures, and medications. By establishing actual needs, clinicians can stay true to the principle that the only tests and medical procedures that should be administered are those that contribute to satisfying these needs.

Juran's definition of quality as “fitness for use” may offer clinicians a conceptual framework for thinking through how to provide better quality while reducing costs. As an example, more costly procedures do not necessarily imply better quality of life: one cancer patient may desire to live as long as possible and endure the hardships of chemotherapy, radiation therapy, and operative procedures; another cancer patient may wish to receive palliative care and spend the available time at home with the family. Obviously, the cost implications differ significantly. Every possible therapy within medical and ethical standards should be made available, but the final choice should be based on the principle of “fitness for use” for the particular patient.

Although “fitness for use” is his predominant definition of quality, Juran realized a need for subsidiary definitions, chiefly for economic reasons, and we will cover these in the next two sections.

Quality as Features

Juran further quantifies “fitness for use” in two different categories: quality as “features” and quality as “freedom from deficiencies” (1989). Both have important implications for conceptualizing the quality of health care and helping to clarify the relationship between quality and cost. Quality as “features of a product or service” implies that more features lead to better quality. However, more features typically cost more. There are, or at least should be, two reasons to add features in health care. The first is the patient’s justifiable needs, the likelihood of improved health, and—ultimately—improved quality of life. The second reason is the state of the art of medical knowledge and technology. For example, in the past, coronary artery obstruction was treated with balloon dilatation. Today this procedure usually requires specially coated stents to be implanted as well, which adds significantly to the cost.

In the upper portion of Figure 1, we have sketched out the economic relationship between quality interpreted as features, cost, and revenues. In a fee-for-service system (*Crossing the Quality Chasm*, 2001, Chapter 8) and certain other pay systems, added features may have the following financial benefits to the provider: Better health care attracts more patients and produces more revenues, provided that the additional features are paid for, and typically, that margins are higher for more expensive features.

The definition of quality as “features of a product or service” forces us to make tradeoffs between quality and costs. Unfortunately, improved quality as “more features” often is the only definition people have in mind when they talk about health care quality. Such a mindset causes many health care professionals, administrators, politicians, pundits, and the general public to assume that reducing costs inevitably will force us to compromise quality. However, as we will discuss in the next section, that is not necessarily so.

Quality as Freedom from Deficiencies

Juran’s second subsidiary definition of quality as “freedom from deficiencies” has the opposite cost implication (1989). Fewer deficiencies cost less! Costs are reduced if we succeed in lowering the number of deficiencies—medication errors, rejected products, lost paperwork, missing X-rays, rework, delays, hospital acquired infections, and lost materials due to failures and mistakes. The focus of this definition is typically not on the “product or service” as in the “features” definition, but is related primarily to processes, either clinical or administrative. As indicated in the lower portion of Figure 1, the reduction of deficiencies in health care and administrative processes results in many cost reductions at all levels of the organization.

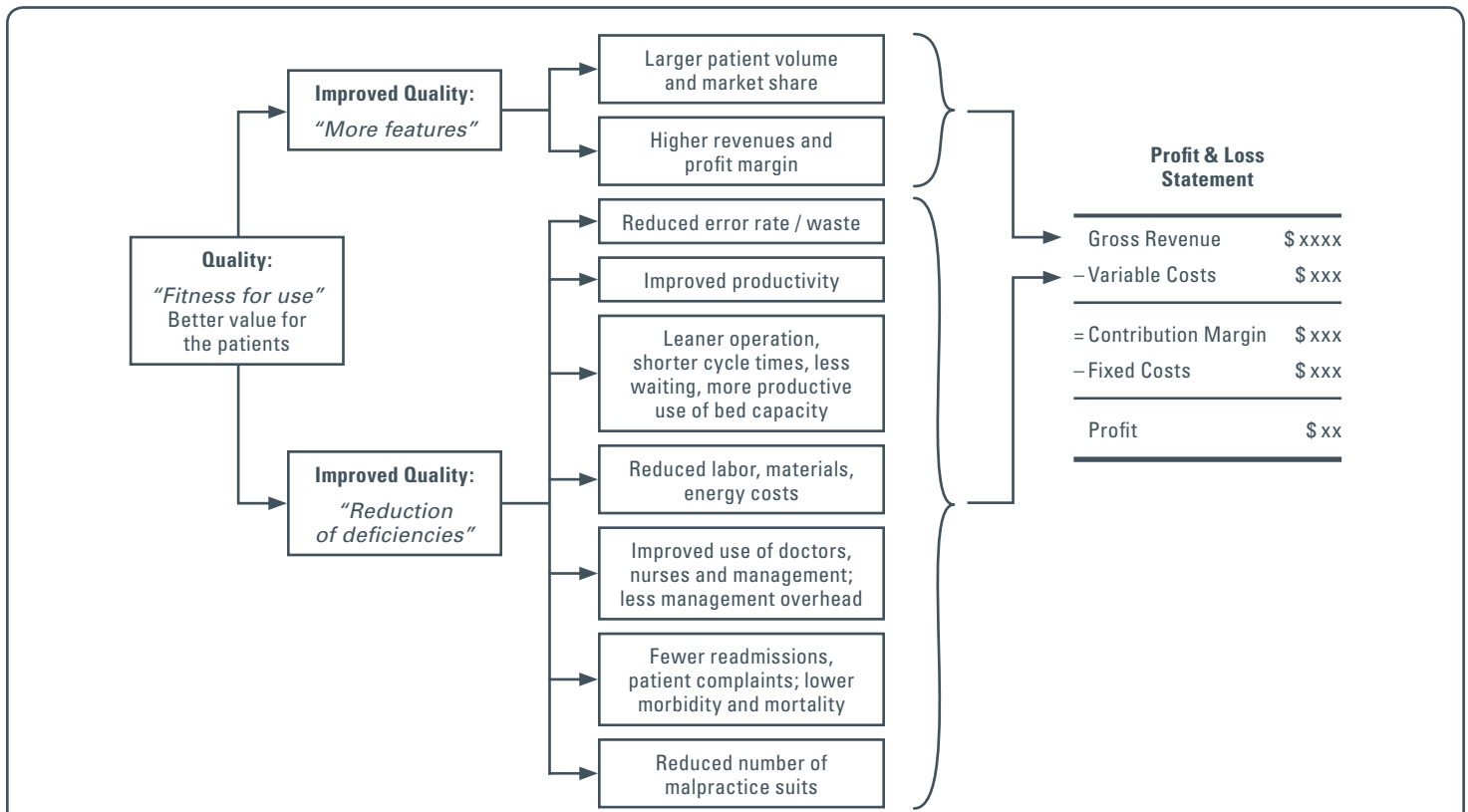


Figure 1: Graphical Summary of the Main Economic Relations of Quality Defined as “Features” and “Freedom from Deficiencies”

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As in manufacturing, efforts intended to improve the “production” process of health care services (that is, health care delivery) invariably lead to lower costs for the provider. But there is also a crucial difference between manufacturing and health care that has further cost implications. For instance, if the number of rejected cars at the end of a production line is reduced from 20% to 2%, costs related to rework will be significantly reduced. However, with effective outgoing inspection, the customer will experience only cars that meet given quality standards. In health care, if 20% of the operations in a hospital are not successful, it directly affects the patients. Failures, defects, and rework in health care processes are synonymous with complications, inconvenience, waiting and delays, morbidity, and mortality rates.

Thus in health care, deficiencies not only increase costs but also reduce the quality of care and always impact the patients adversely. For example, postoperative wound infections result in costly lengthened hospital stays and the risk of death. In health care, the patient and the product are one and the same; the customer (the patient) is intimately involved in the delivery process (Van den Heuvel et al., 2006). Consequently, in health care there is a direct loop from improved process quality to improved health care product quality.

Examples of Improving Quality While Reducing Costs

So how do we improve quality of health care while reducing cost? In this section we provide a few concrete examples of the use of (Lean) Six Sigma, a data-driven scientific approach to quality improvement that has been popular in industry for some time. Its main focus is on improving quality while reducing cost. Lately, Lean Six Sigma has also been used with success in health care (De Koning et al., 2006). Its main strength is the application of a scientific and data-driven approach to problem solving and its use of a broad spectrum of quality improvement tools and techniques, many of which are statistical. Improvements are achieved by a team-based, project-by-project approach involving hospital employees trained in the Lean Six Sigma methodology. A few examples will illustrate how quality can be improved while costs are reduced. A Dutch multidisciplinary team has implemented Lean Six Sigma in eight medium or large hospitals in the Netherlands. So far more than 300 successful projects have been completed. The main focus has been on improving processes, clinical as well as administrative, either by reducing the number of deficiencies or by reducing non-value adding activities. Each project has produced savings of at least €20,000, and some projects have saved more than a million euros.

Some examples are:

1. Reducing the length of stay for COPD patients from 10 days to 7.5 days (Bisgaard and Does, 2009)

2. Reducing the number of errors in invoices from 10% to less than 1% (Van den Heuvel et al., 2005)
3. Optimizing the utilization of operating rooms by reducing the delay in start-time by 50% (Does et al., 2009)
4. Increasing the availability of infusion pumps in a hospital to 100% after reducing the total number of infusion pumps by 20% (Kemper et al., 2009)
5. Improved staffing of nurses in the maternity ward by aligning the right people to the right job and reducing the number of temporary workers (Wijma et al., 2009)

Money saved in these projects was used to reduce budget shortfalls or was reinvested in quality features, innovations, or new equipment.

Conclusion

In the current debate about escalating health care costs, it is typically assumed that there must be a trade-off between quality and cost of health care. This misconception is rooted partly in confusion about the definition of quality. Such misconceptions may impede progress in improving the management of health care and paralyze leadership. In this article we have discussed quality management concepts and strategies for improving quality while halting the escalating costs of health care.

In particular, we have discussed how defining quality as “fitness for use” with the two subsidiary definitions of quality as “features” and quality as “freedom from deficiencies” conceptually help us understand the relationship between quality and costs. The “freedom from deficiencies” definition offers an opportunity for clinicians to redirect the focus to initiatives that will increase quality while reducing costs. Agreements on reinvestment priorities can be made before initiating a given project. Doing so will enhance the participation and facilitate input from clinicians, which is essential for success of any project related to health care delivery.

Dedicated to the memory of Søren Bisgaard (1951–2009)

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