



**IGNITED MINDS**  
Journals

*International Journal of  
Information Technology  
and Management*

*Vol. VII, Issue No. IX,  
August-2014, ISSN 2249-  
4510*

**IMPROVING PROCESS QUALITY IN  
HEALTHCARE OPERATIONS MANAGEMENT**

AN  
INTERNATIONALLY  
INDEXED PEER  
REVIEWED &  
REFEREED JOURNAL

# Improving Process Quality in Healthcare Operations Management

Rashmi Kanta Tripathy

Research Scholar, Bundelkhand University, Jhansi, UP

**Abstract – The purpose of this article is to examine applications for operations management practices in the healthcare industry. The discussion begins with some of the healthcare quality problem areas and root causes of operating issues. The balance of the article presents a systems approach and a discussion of the usefulness of operations management in the healthcare field. The conclusion provides some comments on the implementation of managerial innovations.**

**Keywords: Healthcare, Approach, Organization, Operational**

## INTRODUCTION

Operational efficiency in any organization is critical to accomplishment. Healthcare organizations face an increased challenge to properly utilize resources, improve care and lower costs. By reducing bottlenecks and implementing solutions that will drive effective solutions to common problems, any business can thrive.

As any healthcare leader can attest, especially hospital leadership, this is often easier said than done. Effective operations management is not a “one time” task; it requires proper decision making. Capturing, assessing and optimizing data is the first step down the pathway of success. If you are tasked with improving care, civilizing clinical operations and maximizing financial outcomes, how do you utilize the data at hand to do so?

Hospitals are large and complex organizations, yet they function largely without sophistication and technology inherent in other large businesses. In a time when well over half of all hospitals report negative operating limits, driving down costs by achieving operational excellence is one of the most important yet overlooked areas.

Healthcare operations management is the emerging discipline that integrates quantitative and qualitative aspects of management to determine the most efficient and optimal methods of supporting patient care relief. Operations management helps hospitals and health systems understand and improve labor productivity, reduce waiting lines, shorten cycle times, and generally improve the patient’s overall experience—all of which helps to improve the organization’s financial health.

## Spiraling Costs:

The concern with process improvement is explained by the escalating pressures to simultaneously increase service efficiency and effectiveness while decreasing associated costs. Productivity development reduces budgetary pressures but it is a challenge. Medical service needs to be continuously maintained and depends on the availability of highly trained professionals (Devries et al. 1999). The requirement for continuous service means that, healthcare productivity is not achieved by cost cutting. It is organizing available resources, e.g. physicians’ and nurses’ working hours, to produce better health outcomes, such as survival rates (Karvonen et al. 2004).

## Quality Concerns:

A useful framework for analysis is clinical quality and process quality (Gronroos 1990). Clinical quality is defined as the ability of hospitals to achieve high standards of patient healthcare through medical diagnosis, events and treatment, and ultimately creating physical or physiological effects on patients; it is determined by medical outcomes and “what” is delivered. Process quality results from patients’ perception of “how” the service was created and delivered (Marley et al. 2004). It includes making the patient’s experience in the hospital proceed efficiently and effectively. Examples of process quality include the level of personalization and patient-service provider interaction, the delivery of medication and food to the patient, the efficiency of admission and checkout, and the timeliness and accuracy of hospital bills (Marley et al. 2004).

## Continuous Quality Improvement (CQI) in healthcare

Continuous Quality Improvement (CQI) has been applied in the healthcare industry since the late 1980s. CQI can be defined as a customer-driven leadership approach based on continual improvement of the processes associated with providing goods or services. When properly implemented, CQI can diminish waste in processes, as well as increase the quality of outcomes. Effective service recovery is an aspect of process quality that involves development of a strategy to resolve customer complaints and dissatisfaction, with the ultimate goal of motivating the customer to continue to use the service (Schweikhart et al. 1993). Involving patients' preferences and values in making improvements in the level of care delivered is an essential element to increased process quality as well as a more empathic, honest, and sensitive interaction between patients and staff (Giangrande, 1998). Very few case studies in healthcare offer empirical findings to support the value of CQI.

## Total Quality Management in healthcare

Total Quality Management (TQM) was first used in manufacturing firms. In the late 1980s and 1990s, the healthcare industry adopted total quality management (Larson and Muller 2002).

Implementing TQM is an essential condition to decrease medication errors, but it is not a sufficient condition. For more than a decade, U.S. hospitals have been adopting and implementing various TQM programs that have the potential for reducing medication errors. In fact, 89 percent of hospital organizations claim to have organization wide efforts for improving the medication-use process (ISMP 2002). Despite such efforts, medication errors continue to be a serious and costly problem for hospitals and have become a leading area of concern in ongoing dialogs about healthcare safety. The reason many medical-error reduction initiatives fall short may be the focus of TQM programs. Although TQM encourages data collection and analysis, it is often not implemented to produce the level of detail required to understand process variation.

## Statistical Process Control and Six-Sigma in healthcare

Statistical Process Control (SPC) is a popular method of tracking performance (Ganley and Moxey 2000). It is useful in measuring patient satisfaction because it examines the performance of dynamic processes over time (Bell et al. 1997). Six-Sigma is a management philosophy that seeks a nonexistent error rate. It is ripe for healthcare because many healthcare processes require a near-zero tolerance for mistakes. Practicing Six-Sigma helps eliminating such problems as long cycle times, high cost, and poor outcomes (Lazarus and Neely 2003). Six-Sigma has the potential to achieve exponential quality of improvement through

the reduction of variation in system processes. A focus on the customer aids in the acceptance on new processes (Thompson and Lewis 2002). The Six-Sigma methodology reduces errors and thereby improves quality through its distinctive metric approach. Kaplan and Norton (1992) suggest that process improvement is more attainable if managers can expand metrics that are influenced by employee activities. An effective quality management program requires locating the root cause of system defects, not just the symptoms (James 2005). In this way, prevention mechanisms can be enacted in early stages, not after defects are already manifested in the outcome (Gummesson 2001). Appropriate monitoring and measurement tools must be in place to analyze and interpret performance data. Many medical quality improvement programs rely on outcome figures obtained through summary statistics. Performance indicator reporting systems, such as the "balanced scorecard" used by Mayo Clinic (Curtright et al. 2000) are part of a trend toward outcome-focus only. Benneyan and Kaminsky (1995) are critical of these methods of healthcare quality assurance. A great deal of information about the performance of the underlying systems and subsystems disappears because outcome measurements are computed with aggregated data (James 2005). Combining many random variables into a single random variable inhibits the ability to identify and reduce process variability (Benneyan and Kaminsky 1995). James (2005) explains that using SPC and Six-Sigma tools for problem-solving and decision making calls for an organizational culture that values statistical data. This requires that the technical and administrative systems are well integrated and mutually supporting.

Patient treatment processes are currently typically sub-divided into function-centered and organization-centered views, and optimization efforts stop at the doors of these organizations. Patients have to wait because resources (e.g., physicians, rooms, or technical equipment) are not available. No integrated view is available on the various medical procedures involving person patients. Medical procedures cannot be performed because information is missing or required procedures have been postponed or cancelled. An unnecessary long duration of a treatment process can increase the invasiveness of the treatment and therefore the discomfort for the patient and the costs for the healthcare organization. These trends will accelerate because healthcare increasingly involves many different organizations in healthcare chains, making overall process awareness more difficult.

To counter the trend towards longer treatment processes, unnecessarily increased costs, unsatisfactory insight into patient statuses and patient discomfort, a change is needed in the way healthcare is delivered. The key in this change is process optimization, where the healthcare process of a patient is treated as an integrated whole, even if it involves many medical disciplines and autonomous organizations. This requires a close alignment

between the healthcare process, healthcare organizations and information about the patient. However, current organizational structures and information systems offer only sub-optimal support. Emphasis needs to shift from a physician-oriented, intra-departmental view towards a patient-oriented, end-to-end health chain view. The departmental and chain views must be jointly considered and optimized. Internal layout and control must be redesigned such that both the interests of the patient and of the organization are addressed. A wide variety of complex strategic and operational decisions have to be made that donate to the simultaneous optimization of quality of care, costs, and patient lead-time. Development of an adequate information infrastructure will be an essential element in obtaining an end-to-end health chain view. This information infrastructure will need to support electronic patient dossiers.

Addressing the complexity of the developments sketched above requires an operations management approach that is both multi-disciplinary and model-driven – two of the main characteristics of the Beta Research School. The Beta Healthcare program started with the official kick-off that took place at a healthcare symposium in October 2007. The program addresses problems in the healthcare domain in a science-based and practice-relevant way. In the program, research topics have been defined on the basis of five aspects of operational processes in healthcare that each require substantial improvement: process structure, flexibility, efficiency, effectiveness, and trust. The topics are based on the strengths of the research groups in Beta.

**Procedure structure in healthcare:** Support for business processes that span multiple autonomous organizational entities is required in order to manage medical supply chains, intramural distributed healthcare and transmurial healthcare. Coupling process management to the service-oriented computing paradigm is investigated to obtain networks of loosely-coupled, encapsulated collaborative healthcare functions. In the healthcare domain, explicit process specifications are often missing or not followed in practice. Research in process mining shows how specifications can be constructed from historic logs and conformance of practice to specifications can be analyzed. Process patterns play a role as abstract building blocks for processes, including the role of human performance aspects in process execution.

**Litheness to healthcare:** Automated support for flexibility aspects plays an important role at process design time and run time, including attention for explicit exception management, to deal with the many unforeseen (or uncommon) circumstances in medical processes. The advent of new (information) technologies changes the way healthcare professionals perform clinical processes (e.g. using

clinical guidelines). This requires research into human performance management in medical contexts, e.g., changing generalist/specialist trade-offs, and job quality management in the context of technological developments. In healthcare networks, geographically sparse resources (such as costly machines or highly qualified specialists) must be allocated such that usage characteristics can be optimized over the healthcare network and logistics sub-processes (e.g., the transport of a patient) can be flexibly interwoven in healthcare processes.

**Resource competence in healthcare:** Improvement of the utilization of scarce resources is required by the development and use of master schedules for mono-resources (e.g., operating theatres) and multi-resources. The research in this area considers flexibility of resources, the use of advance demand information and the coordination of planning problems over the various stages within the hospital process chain. The complex interplay between actors providing resources and actors requiring resources (typically patients) goes beyond capabilities of traditional scheduling strategies. A promising approach is the agent-oriented paradigm, where autonomous software agents negotiate on behalf of their owners on market places in a goal-oriented fashion. Many processes in healthcare are inherently of a non-routine nature. It is an as yet unresolved issue whether traditional performance management principles can also be effectively applied in these non-routine work processes. Work is often organized in self-managing teams, who are facing increased pressure to optimize both efficiency of their work processes and quality of the service they provide to clients. Projects linking team performance management and psychological well-being of team members, service quality and client satisfaction can assist healthcare organizations in optimizing individual and team contributions to organizational performance.

**Efficiency in healthcare:** Modern job demands imposed on healthcare employees imply renewed investigation of available, often limited, job resources (such as job control, emotional support and ergonomic aides). Allocation of matching job resources is an important avenue for further research in this area. An example would be to increase emotional support from supervisors and colleagues to combat emotional demands by irate patients.

**Conviction in healthcare:** Safety management in today's healthcare is still in its infancy. Detailed specifications of the analytic heart of a safety management system – i.e. predictive risk analysis and retrospective incident analysis – and the accompanying implementation process are badly needed. Transaction management is important in complex, dynamic healthcare processes to guarantee dependable process semantics, e.g., to ensure that

all steps in a process are indeed performed or to ensure that the right medical information is available only to the right people at the right time.

## CONCLUSION:

Healthcare systems across the globe are plagued by spiraling costs, quality concerns, inordinately long waiting times, increasing customer/patient dissatisfaction, and critical shortages of doctors, nurses, staff, space, and other resources (Umble and Umble, 2006).

The healthcare systems of industrialized countries are under pressure to manage the growing healthcare costs better (Karvonen et al. 2004). Healthcare provider organizations are frustrated with their inability to show measurable improvements in the areas of quality, safety, service, and satisfaction.

## REFERENCES:

- Prof.dr.ir. P.W.P.J. Grefen, dr.ir. E.W Hans
- <http://beta.ieis.tue.nl/research/hc>
- Devries, G., Bertrand, J., Vissers, J. 1999. Design requirements for health care production control systems, *Production Planning & Control*, 10 (6): 559-569.
- Karvonen, S., Ramo, J., Leijala, M., Holmstrom, J. 2004. "Productivity improvement in heart surgery – a case study on care process development", *Production Planning & Control* (April), 35 (3): 238-246.
- Grootroos, C. 1990. A service quality model and its marketing implications. In G.
- Clark (ed.), *Managing service quality*, an IFS Executive Briefing. Kempston, Bedford, UK: IFS Publications: 13-18.
- Marley, K.A., Collier, D.A., Goldstein, S.M. 2004. "The Role of Clinical And Process Quality in Achieving Patient Satisfaction in Hospitals", *Decision Sciences* (Summer), 35(3): 349-369.
- Schweikhart, S.B., Strasser, S., Kennedy, M.R. 1993. "Service recovery in health care organizations", *Hospital and Health Services Administration*, 38 (1): 3-21.
- Giangrande, A. 1998. "Quality of healthcare: The responsibility of health care professionals in delivering high quality services", *The International Journal of Artificial Organs*, 21 (11): 721-725.
- Larson, J.S., Muller, A. 2002. "Managing the Quality of Healthcare", *Journal of Health & Human Services Administration* (Winter): 261-280.
- Ganley, H., Moxey, J. 2000. "Making informed decisions in the face of uncertainty", *Quality Progress*, 33 (10): 76-78.
- Bell, R., Krivich, M., Boyd, M. 1997. "Charting patient satisfaction", *Marketing Health Services*, 17 (2): 22-29.
- Lazarus, I., Neely, C. 2003. "Six sigma raising the bar", *Managed Healthcare Executive*, 13 (1): 31-33.
- Thompson, P., Lewis, M. 2002. "Uva Compliance Department Uses Six Sigma Model to Improve Performance", *Journal of Health Care Compliance*, 4 (5): 19-24.
- Gummesson, E. 2001. "Are you looking forward to your surgery?" *Managing Service Quality*, 11 (1): 7-9.
- Curtright, J., Stolp-Smith, S., Edell, E. 2000. "Strategic performance management: development of a performance measurement at the Mayo Clinic", *Journal of Healthcare Management*, 45: 58-68.
- Benneyan, J., Kaminsky, F. 1995. "Another view on how to measure healthcare quality", *Quality Progress*, 28 (2): 120-124.
- James, C. 2005. "Manufacturing's Prescription for Improving Healthcare Quality", *Hospital Topics: Research and Perspectives on Healthcare* (Winter), 83 (1): 2-8.