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## Continuous Performance Improvement in Health Care: Problem Solving Versus Transformation

Enter any health care facility in the United States, and you will witness the most complex processes known to man. This process complexity, combined with delivering patient care in an environment of declining reimbursement, presents the health care industry with a significant challenge. How should a health care delivery organization maintain patient safety, improve patient care, and maintain a “healthy” bottom line?

Maintaining a “healthy” bottom line has been a significant challenge for health care organizations throughout the past twenty-five years. “U.S. health care expenditures grew from \$250 billion in 1980 to \$1.4 trillion in 2003, and showed no sign of slowing” (Bohmer, 2006). Furthermore, health care spending in the United States increased to nearly \$1.9 trillion by the end of 2004.

The health care industry has been able to identify there is a problem with system and operational performance. Individual entities and the industry as a whole have expended significant problem-solving efforts throughout the nineties and into the first part of the twenty-first century. Those problem-solving efforts netted significant benefits. However, the net result of organizational, as well as industry, problem-solving efforts was one-time savings or cost deferments at best. The worst-case scenario created a culture that was adverse to further performance improvement activities, since the previous efforts failed to be sustainable activities or resulted in fewer staff to complete the work. The industry and many health care organizations failed to transform their operations and business practices to meet the changing requirements of an industry with many stakeholders.

The following approach outlines a path for health care organizations to successfully deploy an organizational transformation strategy to achieve continuous performance improvement.

### Approaches

Process improvement approaches, like the health care industry, have a long history stemmed deep in the industrial revolution. One of the first recognized process improvements was the introduction of the production line by Henry Ford in 1913. Henry Ford was the first individual to capitalize on continuous flow. Continuous flow serves as a starting point for process improve-

ment in health care, rather than an answer. It was not until the 1950s in a rebuilt Japan that it was realized continuous flow is but one element to an overall process improvement approach. Taiichi Ohno and his regarded apprentice Shigeo Shingo pursued an investigative path that ultimately fathered many continuous improvement methodologies that are still being perfected and utilized today, including Lean and Six Sigma. It is these process improvement methodologies that health care professionals are increasingly turning to in an effort to build an improved and sustainable model for the betterment of their organizations.

Lean concepts were formally developed and ultimately documented at Toyota Motor Corporation through the work of Taiichi Ohno. While Lean clearly began and continues to thrive as a manufacturing concept, it has been successfully deployed in every industry, including health care. The success of lean deployments comes from two primary drivers. The first driver is the five principles of Lean as documented by James Womack in *Lean Thinking*.

1. Specify the value desired by the customer
2. Identify the value stream for each product services providing that value, and challenge all of the wasted steps currently necessary to provide that value
3. Make the product (service) flow continuously through the remaining, value-added steps
4. Introduce pull between all steps where continuous flow is possible
5. Manage toward perfection so the number of steps and the amount of time and information needed to serve the customer continually fall

The first principle is often the most challenging principle for health care organizations to grasp. While it is easy for health care organizations to identify the patient as the customer, they must also recognize the internal and affiliated customers when defining value. As a general rule, health care organizations need to recognize not just the patient, but also the physician, care provider, payer organization, ancillary service providers, and others as potential customers. This creates a significant challenge in deploying lean thinking to health care organizations.

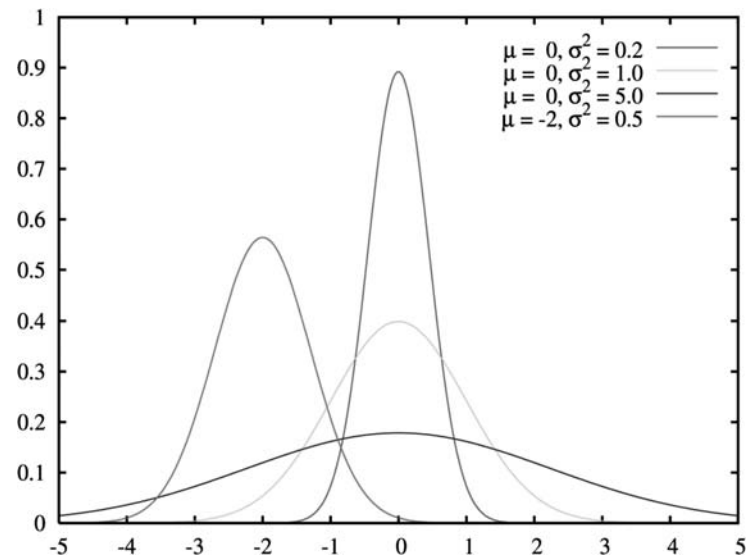
The second primary driver in lean deployments is waste elimina-

tion. Ohno identified seven primary wastes, or “muda,” in his work at Toyota. These wastes, while developed in manufacturing organizations, are clearly applicable to health care, as well. Lean, consequently, focuses on the identification and elimination or reduction of wasteful activities.

Six Sigma is a process improvement approach and analytical tool set utilized by Edward Deming in the rebuilding of the Japanese economy after WWII and was standardized by Motorola, Inc. in the early 1990s. Six Sigma represents the structured methodology associated with identifying root-cause variation and acting upon this information in an effort to improve the overall operational effectiveness of the organization. The Six Sigma approach is built around the assumption that the root cause of a problem may not be known or visible upon initial inspection of an issue. Instead, a detailed analysis is necessary to identify causation and determine the appropriate actions necessary.

As organizations have attempted to deploy the Six Sigma approach to process improvement, clarification has been necessary to better understand and differentiate Six Sigma—the improvement approach—from six sigma—the statistical tool. Sigma represents the number of standard deviations away from the mean or average of a given process or event. Typically, businesses have accepted three or four sigma as an acceptable spread of possible outcomes for a given process. Statistically speaking, a four sigma level of perfection would generate 6,200 errors per million opportunities. The six sigma standard pushes the error rate to 3.4 errors per million opportunities. (It should be noted that the statistical calculation assumes a 1.5 sigma shift because of natural variations.) Looking at the health care industry and specifically at prescribing medications, a three sigma-level prescribing process would result in approximately 54,000 incorrect drug prescriptions per year. At the six sigma level of quality, one wrong drug prescription will occur every 25 years.

The Six Sigma approach provides a structured set of tools to pursue the goal of virtual perfection. Those tools are focused on the reduction of variation in the process being investigated. There are different types of variation that must be considered in the pursuit of virtual perfection. The diagram below displays typical views of variations. The green line represents a normal distribution curve for a particular process. This is what Six Sigma efforts are striving to achieve. The blue distribution curve represents an unpredictable process. The pink line represents an “off center” process, indicating a process that is in statistical control but not performing to expectations. The red line represents a situation where the control limits and, consequently, the sigma ranges are not aligned with the performance of the process.



The importance of variation in health care can be summed up in the following saying: “Patients experience our variations, not our averages.”

Lean and Six Sigma provide valuable tools in the pursuit of quality and process efficiency. However, the adoption of one methodology over the other frequently leads to discontent, especially in health care. Six Sigma efforts will frequently miss the quick-win opportunities or will spend so much time on the structure of the methodology that the cost of the implementation far exceeds the benefit received. Lean initiatives can achieve rapid improvements in efficiency gains and cost reductions through the use of common sense and the elimination of obviously wasteful activities. Lean initiatives will often avoid large or overly complex initiatives because the structure is not present in the methodology to properly support large-scale changes. Michael George states in his book *Lean Six Sigma for Service*, “The fusion of Lean and Six Sigma improvement methods is required because:

- Lean cannot bring a process under statistical control.
- Six Sigma alone cannot dramatically improve process speed or reduce invested capital.
- Both enable the reduction of the cost of complexity.”

The merging of the two approaches, frequently referred to as Lean Six Sigma, has the ability to provide an appropriate tool set for health care organizations to achieve sustainable process improvement. However, the selection of a tool set and approach is only half the battle. For transformation to occur, the organization must be ready to go beyond simple problem solving and be willing to commit to continuous improvement as a culture.

## Change Readiness

The search for real transformation must always begin with the readiness of an organization and its employees to accept and

adapt to the desired change. While simple in concept, this has often proved to be more important in the pursuit of performance improvement than the tool selected (Lean/Six Sigma). D. Miller in the *Journal of Change Management* documented that “change initiatives crucial to organizational success fail 70% of the time.”

This failure rate can be exceptionally alarming to the health care professionals pursuing significant improvement efforts that will inevitably require organizational change. There are means and methods that can and should be deployed to help manage change during the process improvement effort.

McKinsey and Company has developed the 7S model to help organizations recognize the difference between hard tools or the engineered science, of process improvement and the soft tools, or social science, of process improvement. The 7S model can be seen below.



The three Ss across the top of the model (seen in red) are described as the hard Ss, or the *engineered science*, of performance improvement.

- Strategy: The direction of the organization over time
- Structure: The basic organization of the

process improvement effort, including the selected process improvement approach

- Systems: The specific tools selected to achieve the desired performance improvement outcome

The four Ss across the bottom of the model (seen in beige) are described as the soft Ss, or the *social science* aspect, of performance improvement.

- Skills: The capabilities and competencies that exist within the organization
- Shared Values: The values and beliefs embedded within the organization
- Staff: The personnel resources within an organization; how the employees are developed, trained, and motivated
- Style: The leadership approach of top management

Organizations have a tendency to focus on the hard Ss, or the engineered science, when pursuing performance improvement. The hard Ss tend to be more tangible and easily pursued. This is clearly seen in the failure rate of change initiatives and the lack of sustainability in various Lean and Six Sigma deployments. The fact is the organizations pursuing change did not get it wrong. They simply failed to consider all seven elements of the McKinsey model.

The social science aspect of performance improvement (soft Ss) represents an opportunity for the performance improvement sponsors to better understand the organizational dynamics that may prove to aid or hinder the improvement effort. This is accomplished through the application of various organizational development tools. The tools selected will vary, depending on the size and structure of the organization. A typical approach may include:

- Structured surveys to highlight trends in opinions
- Focus-group meetings to flush out survey results
- Individual interviews to gain more in-depth understanding of strengths and weaknesses
- Predictive Indexing of employees to establish likely behavioral relationships

Performance improvement initiatives will rarely achieve sustained transformation within an organization without paying appropriate attention to the soft Ss, or social science aspect, of performance improvement. Consequently, the importance of the social science activities cannot be underscored enough.

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