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# SIX sigma raising *the* bar

**Six Sigma relies  
on the voice  
of the consumer  
to set the standard  
of acceptable  
performance**

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## FAST FACT



### Six Sigma, defined

A SYSTEMATIC AND statistically-based process to reveal defects in performance, driven by customer specifications. Six Sigma methodologies aim to reduce the variation in clinical and business process which give rise to long cycle times, high cost and poor outcomes. A process that operates at true six sigma levels is producing acceptable quality levels over 99.99% of the time.

**I**F NUMBERS DON'T LIE, why don't we use more of them to manage? This is the question being asked by healthcare executives exposed to the emerging promise of Six Sigma management methodologies. Granted, finding reliable data and avoiding the deluge of useless data are legitimate roadblocks to effective management, but Six Sigma has a response to that dilemma as well: a systematic approach to both validate data and to focus on the critical few inputs that will have the greatest potential to effect meaningful improvement.

Since Six Sigma first appeared on the healthcare landscape just a short time ago, it has appeared on the cover of nearly every healthcare journal (and in several prior issues of MHE, see Oct 2001 and Jan 2002), joined the curriculum of healthcare conferences everywhere, and now healthcare seminars and training programs on Six Sigma are beginning to emerge. The growth trajectory of this new movement would have one think Six Sigma to be a mysterious new cult. One enthusiast suggests "with something as powerful as this, why wouldn't we use this everywhere?"

## OLD WINE, NEW BOTTLES

**S**What exactly is so different about Six Sigma when compared with traditional efforts at performance improvement? Six Sigma focuses on reduc-

ing defects in management and clinical process; it uses statistical analysis to find the most defective part of the process, and rigorous control procedures to sustain improvement. Six Sigma calls on "the Voice of the Customer" to define acceptable performance, with a focus on quality, delivery and price as those key attributes of customer satisfaction that will drive profits. One cannot ignore the correlation between Six Sigma and healthcare's traditional pillars of quality, access and cost.

The need for Six Sigma in the healthcare industry is abundantly apparent, and there are reminders of its potential nearly everywhere you look. Three years after the Institute of Medicine released their sober assessment of quality within our healthcare system (concluding that 98,000 die each year as a result of medical errors), the *Annals of Internal Medicine* reported that 19% of medications dispensed in hospitals are still erroneous on one or more criteria. That translates into a "Sigma Level" of 2.4 (A "6 sigma" process, by comparison, is defective only .00034% of the time). Sigma levels indicate the predictability of a process by measuring the number of standard deviations between the average performance of the process and what is deemed as acceptable limits of performance.

Critics charge that Six Sigma, which originated in manufacturing industry, is

## FAST FACTS



## Key differences between traditional Total Quality Management (TQM) and Six Sigma

### TQM

Typically grass roots driven

Incremental improvement, ie 10-15%

Focus is ongoing

Goal is "more with more" (ie inspection)

Consensus driven

### Six Sigma

Top down implementation

Breakthrough improvement, 50-100%

Focus is short-term projects

Goal is "more with less"

Data driven; statistical analysis

MHE GRAPHIC

MHE Source: Creative Healthcare

not adaptable to healthcare, which is more dependent on transactions than manufacturing. But most of the applications of Six Sigma within manufacturing were fundamentally transaction-oriented. Healthcare, on the other hand, can adapt Six Sigma not only to back office transactions, but to the development of best demonstrated clinical practices. Furthermore, Six Sigma has given a whole new language to the culture of healthcare, one that will inevitably benefit consumers. While the prevailing mentality among some healthcare organizations with respect to performance has been "do the best you can do, and even better next year," Six Sigma requires the identification of Specification Limits that define acceptable performance. "Spec Limits" are an important contribution to healthcare and serve as a compass for improvement that enables an organization to focus "like a laser beam" on meeting customer requirements.

**"We aim to create the gold standard of care in our community... and Six Sigma will help us set the standard."**

### THE PAINFUL TRUTH

When you launch a Six Sigma initiative, you learn some things about your organization that you don't necessarily want to know," cautions John Desmarais, Chief Executive Officer at Commonwealth Health Corporation (Bowling Green, Ky.), one of the pioneers of Six Sigma in the healthcare industry. No one could agree more than Ken Tomlin, Chief Executive at Good Samaritan Health Systems in Kearney, Neb. When consultants were retained to improve patient throughput in the 287-bed regional medical center, their attention was immediately drawn to the operating room, where initial analysis revealed a high number of canceled and delayed surgeries. Further data collection revealed that while many surgeries are rescheduled or canceled before they occur, the majority are cancelled within only 48 hours, and most often the same day of surgery, creating frustration among patients and physicians alike. That proj-

ect, now underway, is focused on the critical few underlying causes of both delays and cancellations. "We aim to create the gold standard of care in our community and region," notes Tomlin, "and Six Sigma will help us set the standard."

The Good Samaritan experience reveals one of the ironies of Six Sigma. Data used to both validate the problem and to reveal its root cause has always been available within the scheduling systems used in the department. Hospital staff, however, subject to work shortages like everywhere else in the industry, has been unable to leverage the data to undertake needed improvements in the scheduling process. One employee sums up the situation: "we have been collecting this (cancellation) data for years. I knew someday, someone would finally ask us for it."

### TAKING CHARGE OF CHANGE

Charleston Area Medical Center (CAMC) is West Virginia's largest medical center, employing over 4,300 employees, the third largest private employer in the state, with an annual payroll of \$145 million and with 692 affiliated physicians. CAMC's past efforts to develop a continuous quality improvement culture stopped short at training, yielding incremental results, which depended on managers that were highly motivated to improve existing conditions.

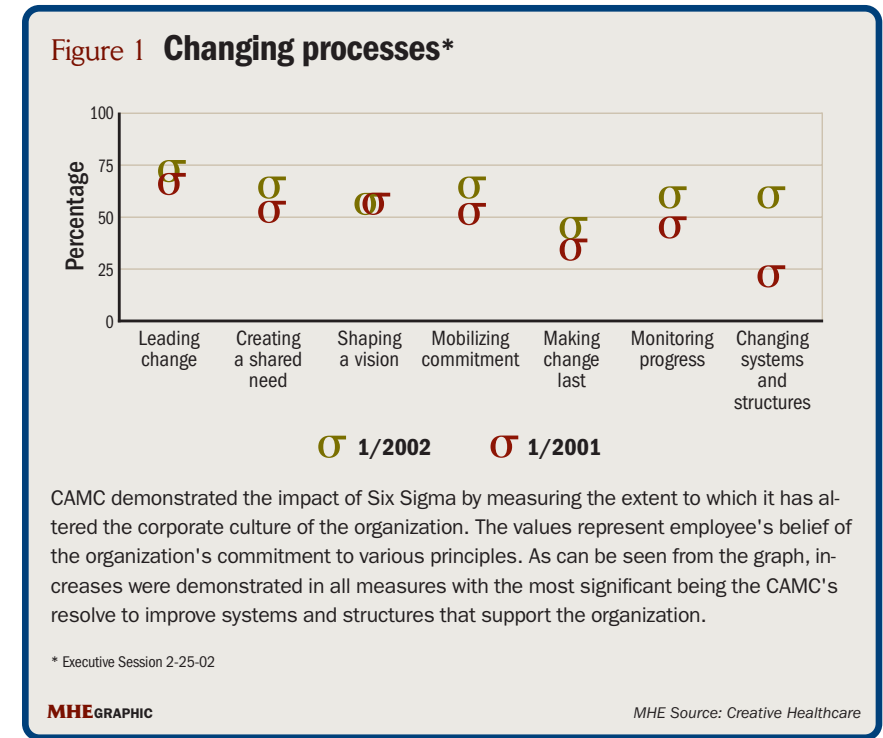
In 1999, CAMC developed a non-traditional organizational structure to drive further improvement. A "System Improvement Division" was created and charged with the goal to develop a competency in the organization for performance improvement that could achieve breakthrough results. This competency was deemed the "Performance Improvement Capability" of the organization and a baseline measure was taken to measure to what extent performance improvement was integrated into the work ethic of the organization. The score was just above average in all domains: strategic planning, leadership, management of improvement,

customer service commitment and availability and use of data to drive change.

Organizational resources were then redeployed to support the Improvement Division. Physicians were recruited and paid to become champions and to lead teams. Some results were achieved from the first six teams using a quality process called PDSA (“Plan, Do, Study, Act”). Analysis of the effort, however, revealed the hospital’s inability to reduce cycle times and effectively change processes. Following this first year, the Performance Improvement Capability of the organization improved but not to a statistically significant degree. A more robust strategy was needed.

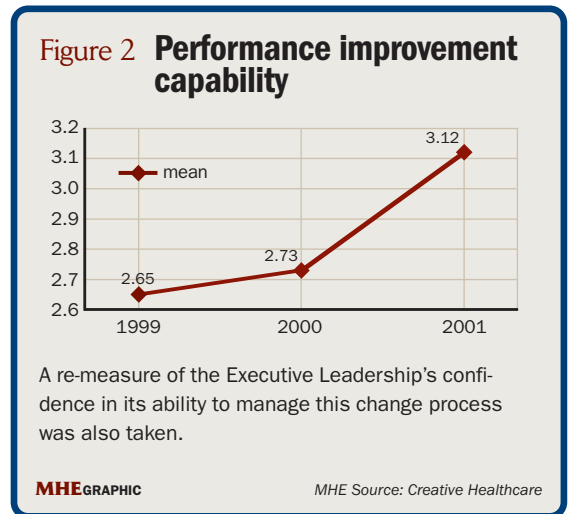
CAMC turned its attention to manufacturing. Don Berwick, CEO of the Institute for Health Improvement, argued that “healthcare had been uniquely untouched by the transforming principles of quality management that revolutionized manufacturing and service industries in the 1980’s.” This suggested to CAMC management that improvement goals must be elevated to the strategic realm. In addition to the Performance Improvement Capability measure, a second measure was taken of CAMC executives to determine how well the executive leadership believed in the organization’s ability to create an organizational commitment to performance improvement and to lead the cultural change required. The executive team scored itself highest in its ability to lead change but scored itself just above average in creating a shared need, shaping vision and mobilizing commitment. Lower scores were given for the ability to alter systems and structures to support lasting change. The emergence of Six Sigma came at the right place and right time for CAMC.

Early planning focused on analyzing the resistance that would emerge with as dramatic a concept as Six Sigma. Resistance emerged in many forms, the most prevalent were competition for resources,



and a belief by managers, who had seen programs come and go, that this too would pass. Resistance analysis of key stakeholders assisted management to develop strategies that leveraged those with positive momentum to influence those most resistant. Engaging the executives in the selection of the first projects helped to mitigate the competition around resources. Data was used to show the gap that existed in what might be considered Six Sigma performance.

Eight new resources were hired to become the organization’s first “black belts” (a black belt is fully certified in Six Sigma techniques; a “greenbelt” is certified to lead projects under the supervision of the black belt). With the majority of any workforce falling into the category of “wait and see,” identification of those who enjoy innovation was critical to



build the energy around the change. Key players were identified as teams developed and training began. Training and project work became the two primary initiatives to develop the Six Sigma culture at the manager level. The third key strategy was to set the expectation in the organization that competency applying Six Sigma was required for all managers within the next five years.

Within the first year over 80% of CAMC's managers were trained in the principles of Six Sigma, in addition to several complementary methodologies. Each executive sponsored at least one project and 59 employees were trained as black belts, foundation team members or change management coaches. Twenty-seven teams completed first projects and thirty-seven small projects were facilitated. The portfolio of projects yielded impressive results in medication safety, coordination of care, recruitment of new employees, reduction in denials of payment, and reduction of inventory. The Performance Improvement Capability of the organization rose dramatically. The accompanying chart indicates the increase in employee scores from baseline in 1999 to 2001, which was one year into the Six Sigma implementation.

At CAMC, the organizational belief system now includes performance improvement as one of its most critical processes. Through the vision of its executive staff, the creation of its Improve-

ment Division to plan and facilitate change, and the adoption of Six Sigma as its core methodology, "Performance Improvement...The Six Sigma Way" is being integrated into the fabric of the organization's culture

#### IN SEARCH OF "6"

**S** At this juncture it seems clear that Six Sigma is here to stay. Training options range from traditional classroom settings, computer-based training, or a combination of consulting and training. Many healthcare organizations find it most effective to start with a small scale project led by a consulting firm certified in the techniques, and then to institutionalize the knowledge through a combination of training initiatives and consulting support.

In the healthcare industry, Six Sigma will not be limited to healthcare providers and payers. Indeed, healthcare suppliers like GE, McKesson and Standard Register Corporation had been using Six Sigma for years. The Leapfrog Group has adapted the principles to create an envi-

ronment in which employers and providers can set realistic goals for improvement. Even blood centers like Blood Systems, an organization that is already beyond "99% good," has acknowledged that 99% is not good enough, and is in the process of implementing Six Sigma methodologies. "As caretakers of the blood supply we have a moral imperative to adopt the most demanding methodologies for quality improvement," notes Sally Caglioti, Vice President, Blood Systems Laboratories. "It just does not get any simpler than that." **MHE**

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