Proving Six Sigma for Healthcare

by Noel Wilson, ASQ Staff Writer

When a technician in a pharmacy asks for help reducing medication errors, Arvind Salvekar could offer example after example of Six Sigma projects that dramatically reduced defects on an automotive production line.

When emergency room staff ask about process improvements to help them treat patients faster, Salvekar could explain how Six Sigma sped up the processing time at a credit card payment center.

When nurses ask for help reducing the rework in their daily routines, Salvekar could cite statistics showing how Six Sigma reduced warranty claims for a line of household appliances.

All of these responses would be appropriate, even instructive with further explanation. But from more than thirty-five years' experience training and coaching in the healthcare industry, Salvekar knows that examples from manufacturing and finance can be less than engaging for healthcare workers. "What happens at Ford, Motorola, and GE doesn't much interest physicians and hospital administrators," he says. "They want to hear about real solutions for the specific healthcare problems they're facing right now."

To meet this need, Salvekar designed a Six Sigma training program with a healthcare focus. Using examples from real applications in healthcare, the program shows care providers how their counterparts at other organizations use the methodology in their daily work, from improving patient capacity and throughput, to managing pharmacy inventory, to reducing medication errors.

The material in Salvekar's curriculum is tailored to the needs and interests of healthcare workers, but the methodology and techniques he teaches are still very much the same as those publicized by widely known Six Sigma corporations like Motorola, GE, and Honeywell. The statistical and analytical tools are just as powerful, the DMAIC (define, measure, analyze, improve, control) methodology just as rigorous. When asked if the healthcare setting involves any special circumstances requiring adaptation of the methodology, Salvekar replies, "Adaptation really means proving the Six Sigma technology. I take the tools and methodology and show how they apply to healthcare processes."

Healthcare's Financial Crisis

A significant part of proving Six Sigma is showing the financial return to be worth the investment. What makes Six Sigma different from previous process improvement initiatives, Salvekar explains, is that it addresses an organization's financial needs:

> Nobody in healthcare disagrees that care has to be safe, that it must deliver total quality. But many times process improvement does not help the bottom line. That's why other initiatives have come and gone. Six Sigma focuses on reducing errors and unsafe conditions, but at the same time the requirement is to improve the bottom-line focus.

The financial side of healthcare delivery has created a sense of urgency surpassing crisis for administrators. "Companies will hire consultants or new CEOs to do nothing but financial turnarounds," Salvekar says, "and achieving a turnaround is much harder than recovering from a simple crisis."

When implemented strategically, Six Sigma seeks and can achieve tenfold improvement, which makes it ideal for turnarounds. Salvekar cites the example of a hospital that deployed Six Sigma specifically to save the failing insurance division associated with its community health plan:

- Pre-Six Sigma, 7% of the company's health insurance claims were adjudicated by computer; 93% of claims required review by individuals.
- Six Sigma solutions improved automated adjudications from 7% to 69%.
- Increased automation resulted in dollar savings of $750,000.

Real results like these illustrate for administrators and healthcare executives how using Six Sigma to improve processes can have the added value of improving the bottom line. The company is now stable and working diligently on continuous process improvement.

Lasting Solutions

Convincing staff of the value of Six Sigma extends beyond highlighting bottom-line results to enhancing the value of the work they do on a daily basis. Salvekar points out that rework accounts for at least one third of the effort invested in the delivery of care. On any typical day, for example, a nurse might set out to administer a medication, discover that it's not stocked in the medication cabinet, and have to call the pharmacy to determine what went wrong and obtain the medication.

"There is no productive output to rework like this," says Salvekar. "The resources used could be freed to go to something that is productive, to improving patient safety or building savings for the hospital." From the perspective of staff who continually wonder why they must solve the same problems every day, lasting Six Sigma solutions that eliminate rework make their jobs easier and their duties less repetitive.

Often, the power of Six Sigma to solve such persistent problems surfaces during training. Along with using examples from other healthcare applications to illustrate Six Sigma tools and concepts, Salvekar encourages his students to bring in examples of the problems they currently face in their own jobs: "Course participants bring in the data they've collected, and we work the problem in class together."

Salvekar tells of one case manager who had been trying to improve a problem area of the ER (emergency room) for more than three years:

- The hospital's compliance for this area had always remained well below the industry average of 70%.
- Salvekar's class analyzed the data using Six Sigma tools and arrived at a solution within three hours.
- The case manager returned to the hospital and applied the Six Sigma methodology to increase her hospital's compliance to 95%.

"In the beginning, when I didn't have this program specializing in healthcare, physicians and nurses could not identify with Six Sigma," Salvekar says. The problem wasn't that the methodology and tools were too foreign to healthcare but that the context was still too grounded in manufacturing. The ability to work on actual problems confronting them with a classroom full of participants and an instructor who have experience with the same problems makes the difference.

Where Do We Start?

As well as providing a practical introduction to the value of Six Sigma, the problems class participants bring often turn into effective starting points for a formal implementation. Although staff should never allow preconceptions to dictate the direction of a Six Sigma initiative, they can let common sense tell them where to look for improvement opportunities. Problems that tend to be the most noticeable, Salvekar finds, often do turn out to be the best choices for new implementations.

Salvekar recommends the following steps for selecting early projects:

1. Identify a problem area. Which processes seem to generate the most complaints? What results seem out of the ordinary?

2. Measure your performance. Verify that a problem does exist by quantifying it. How long does the process take? What is your accuracy? How much does the process cost?
3. Compare your performance to the industry standard. Does your performance differ widely from the industry standard? How do you compare to your competitors?

One of the hospitals Salvekar worked with wanted to address one of the most noticeable measures in healthcare delivery: the time to treat patients in the ER. Examining cycle times related to ER throughput, the hospital discovered that its laboratory test results for ER treatment required sixty-five minutes, while the desired maximum was only thirty-seven minutes. Having confirmed the opportunity, hospital staff used Six Sigma to bring their own cycle time in line with the desired performance.

In addition to savings in time and money, successful early projects addressing noticeable problems can also increase internal interest in and acceptance of Six Sigma. “Wins like this bring a sense of security,” says Salvekar. “They prove Six Sigma is powerful enough to make a difference.”

Use Six Sigma for the Right Projects

Of course, not every opportunity calls for a Six Sigma solution. Strategically deploying Six Sigma can be crucial to proving the success of the methodology. Salvekar advises reserving Six Sigma resources for situations like the following:

- Potential for big results: Six Sigma is capable of delivering tenfold improvement and returns of more than $250,000. Many projects go after half-million-dollar results. For projects on a smaller scale, with anticipated results up to about $150,000, Salvekar usually finds the plan-do-check-act (PDCA) cycle capable of faster continuous improvement gains.
- Stubborn problems: Six Sigma often succeeds where other attempts have failed. Problems that have escaped previous efforts present good Six Sigma opportunities.
- Genuine process problems: Six Sigma may not be the right tool for the job if the problem does not genuinely trace back to process. For instance, if the problem persists because of lack of necessary training but the process, itself, is sound, then a Six Sigma solution may not make an impact. In some cases, Six Sigma analysis may uncover a hidden root cause with an obvious solution, but implementing the solution may not require the full methodology.

For those problems for which Six Sigma turns out not to be the ideal approach, Salvekar maintains, a Six Sigma mindset still offers the general benefit of helping

workers think better—that is, more systematically and rigorously—about their projects. And when the full methodology does prove to be the appropriate solution to a problem, a single project can improve not only quality of care and patient satisfaction, but also staff satisfaction, productivity, and the bottom line.

About Arvind Salvekar

Arvind Salvekar, Ph. D., is president of the healthcare consultancy System Consulting Services, Inc. Having more than thirty-five years of healthcare experience in cost reduction, productivity improvement, operational and quality improvement, and Six Sigma tools, he has developed Six Sigma training programs for Top 100 award–winning hospitals and helped establish Operations Improvement Departments in four hospitals.

Dr. Salvekar has a bachelor's degree in mechanical engineering from the University of Pune, India; a master's in Industrial Engineering from the University of Wisconsin; a master's of business administration from St. Cloud State University; and a Ph. D. from the University of Cincinnati. An HIMSS (Healthcare Information and Management Systems Society) Fellow, an IIE (Institute of Industrial Engineers) Senior, and past president of the Cincinnati Chapter of IIE, he has taught statistics and analysis to MBA students for thirteen years and has published and presented papers on quality improvement.