

CASE STUDY

Industry: Healthcare

Client: Columbus Regional Hospital

Event: Lean Sigma

50 Words or Less

At Columbus Regional Hospital, patient flow in the Radiology Department was enhanced through a succession of Lean Sigma projects that improved procedure cycle time, increased capacity and accelerated flow through four areas: CT, MRI, Ultrasound, and Diagnostic Imaging. Significant operational improvements were followed by increased volume and revenue for the hospital.

Radiology Improved Processes, Reduced Procedure Time and Increased Volume and Revenue

Columbus Regional Hospital (CRH) is a 325-bed medical center providing care to a 10-county service area surrounding Columbus, Indiana. CRH offers comprehensive services including acute care, emergency care, surgery, cancer care, birthing center, cardiac, rehabilitation, a wide range of outpatient programs, psychiatric and wellness services.

Since 2005, CRH leadership has been integrating Lean Sigma performance improvement into the way they do business. Understanding the hospital as an interdependent network of departments and functions, the program concentrates on linking and sequencing Lean Sigma projects across the organization.

Project Background

With a goal of improving patient flow in the Radiology Department, CRH leadership chartered a succession of Lean Sigma projects in CT, MRI, Ultrasound, and Diagnostic Imaging. Successful completion would be measured by improvements in procedure cycle time, waiting time (from request to exam scheduled), and capacity. Although each radiology function was addressed individually with its own project team, there was a common approach.

Using the framework of the DMAIC roadmap (Define-Measure-Analyze-Improve-Control), teams followed similar paths to sustained improvement:

Define – Understand current state by soliciting the Voice of the Customer (patients and physicians); map the process; identify risks of failure.

Measure – Understand the process through reliable metrics and detailed mapping; identify steps in the process that add value and that do not; understand the pace of demand.

Analyze – Select the critical few factors that most impact performance; understand work content; identify waste using Lean tools: Value Analysis,



Overall Equipment Effectiveness (OEE), Spaghetti Mapping, and Set-up Reduction Analysis (sometimes referred to as SMED).

Improve – Choose the best solution for improvement; remove unnecessary steps in the process; staff to demand; create standard work so the same task is done the same way every time; train and cross-train staff; organize the workplace.

Control – Communicate changes; create a performance report; make changes the new way of working; follow up and verify.

CT Project Improvements

- Moved non-imaging work out of CT room, leaving machine room for procedure only
- Admission packets providing directions to patients for completing registration
- Phone registration magnets for patients
- Improved coordination between Central Scheduling and Phone Registration
- Expanded hours of coverage

Figure 1: 38% Reduction in Exam Time and 85% Reduction in Exam Time Variation

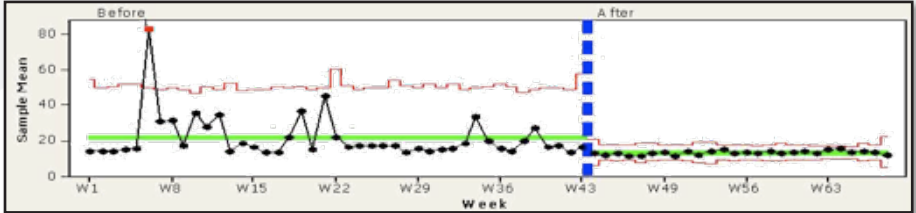


Figure 2: 21% Increase in Volume

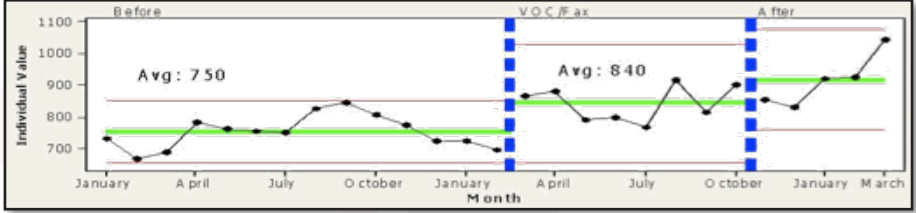
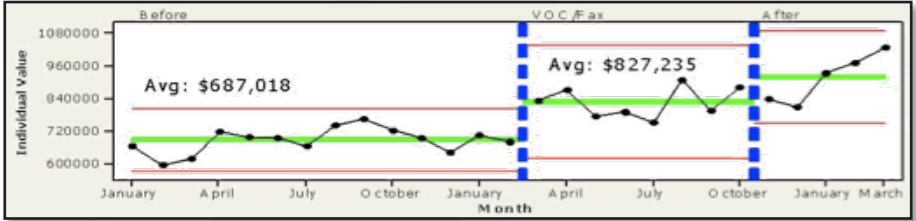


Figure 3: 33.8% Increase in Revenue



Ultrasound Improvements

- Cross-trained all techs for both Ultrasound and Vascular exams
- Changed exam scheduling browser to schedule exams to rooms instead of to tech
- Added to and updated list of frequently asked scheduling questions
- Implemented procedure kits for exams and restocked using a pull system
- Scripted pre-procedure call to remind scheduled patients of exam time, preps, labs, etc.
- Expanded hours of coverage

Figure 4: 29.6% Increase in RVU's per Hour and 10.1% Increase in Revenue

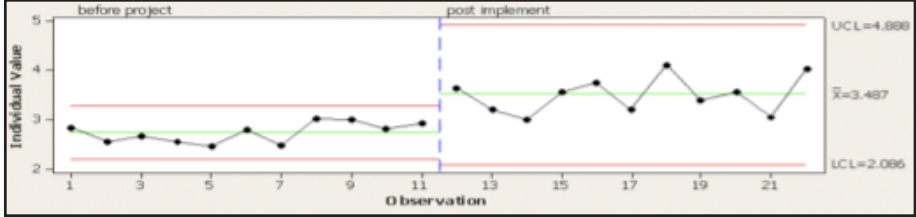


Figure 5: 14.3% Increase in Revenue

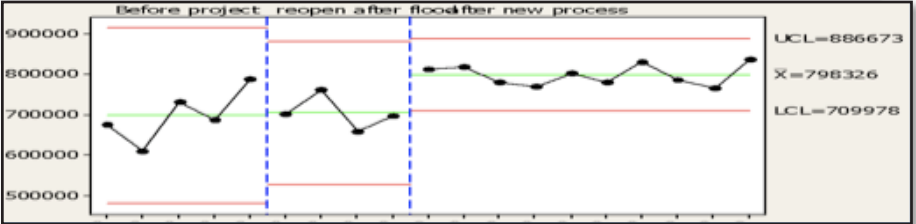
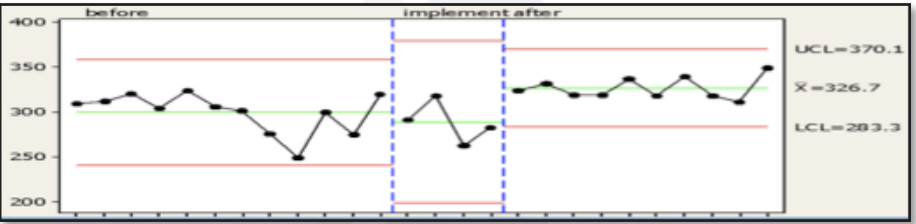


Figure 6: 10.1% Increase in Volume



Diagnostic Radiology Project Improvements

- Voice/messaging communication phone for tech doing portable exams
- Pre-procedure patient call script
- Clipboard on C-arms for tech to sign verifying cleaned after procedure
- Orders faxed to diagnostic radiology for inpatients and emergency patients
- Staffing matrix redefined to address demand profile

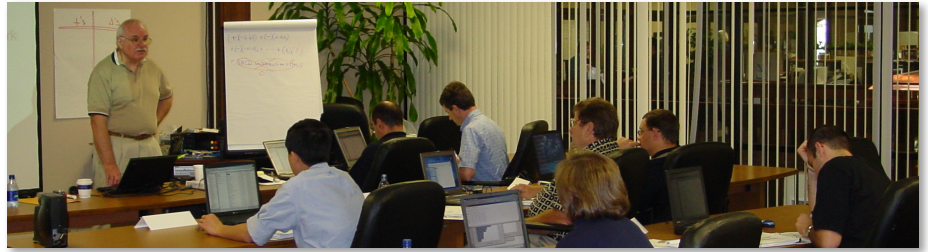
At the time of this writing, the Diagnostic Radiology department was implementing the last few improvements.

Conclusion

Using the disciplined, standardized approach of Lean Sigma, the Radiology Department at Columbus Regional Hospital was able to improve processes, reduce procedure time, and increase volume and revenue. A significant factor in these was the increased capacity that allows the departments to flex up and down, depending upon demand.

References:

1. Wedgwood, Ian. *Lean Sigma: A Practitioner's Guide*. Prentice-Hall: Upper Saddle River, NJ, 2006.
2. Zinkgraf, Stephen. *Six Sigma: The First 90 Days*. Prentice-Hall: Upper Saddle River, NJ, 2006.

**Value Proposition**

Recognized as thought leaders and innovators in business process improvements, SBTI is a global management consulting firm specializing in the deployment of Six Sigma and Lean methodologies. SBTI delivers innovative and sustainable business process excellence solutions by developing future leaders with core competencies to drive superior top and bottom line results. We advance our clients with best-in-class results in revenue growth, cost reduction, new product development and process improvement.

Focused on Healthcare

SBTI brings its considerable deployment history to bear on the healthcare industry. We've taken our experience with 70+ major deployments across various industries and modeled a program specifically for Healthcare. By executing dozens of projects and enlisting the expertise of healthcare professionals, SBTI has created the first complete portfolio of tailored process improvement solutions for Healthcare.

What We Provide

SBTI offers a full range of programs and services. These offerings include leadership workshops, asset maximization, strategic planning and assessments, multilevel managerial workshops and specialized "belt" training at the tactical level.

Results. Guaranteed.

SBTI delivers the fastest and highest return on investment in the industry. Always incorporating a measurement benchmark, most of our clients experience an average of 30X return on investment (ROI) within the first 24 months of engagement.

Global Resources

Throughout our history, SBTI has demonstrated a track record of quickly responding to clients' global needs. Our international offerings are handled through regional offices in Latin America, Europe and Asia. Materials are available in English, Spanish, Italian, French, German, Mandarin, Korean and Japanese. Others in process of being translated.

Our History

Dr. Stephen Zinkgraf, one of the original Six Sigma developers, founded SBTI in 1997. Beginning with two corporate clients, SBTI has grown to more than 70 global corporate deployments and more than 220 clients using SBTI methodology.

SBTI Executive Directors and Master Consultants have a minimum of 10 years industry experience – some 25 or more. Our international offices provide the same unmatched experience and capabilities as in the states, while offering local language and bilingual instructors. All of SBTI's consultants have lead multiple waves of training, completed numerous projects and continually mentor Black Belts.