

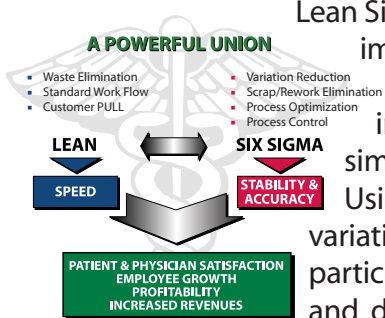
A Hospital-Wide Deployment of Lean Sigma

Project Background

One of the most important competencies for a healthcare organization is that of driving change. You want to move your organization to a new level of performance. It does many things well, but something seems to be missing: productivity isn't where it should be; you're not growing fast enough and competition is overtaking you; margins are declining and revenues are harder to come by. In the heat and pressure of competitive change, you must build an organization that drives change quickly. One facility, Columbus Regional Hospital (CRH), is successfully addressing these issues by deploying Lean Sigma throughout the organization.

Columbus Regional Hospital is a 325-bed hospital providing care to a 10-county service area surrounding Columbus, Indiana. In early 2005, CRH selected Sigma Breakthrough Technologies, Inc. (SBTI) as the consulting group to facilitate the Lean Sigma integration.

Lean Sigma



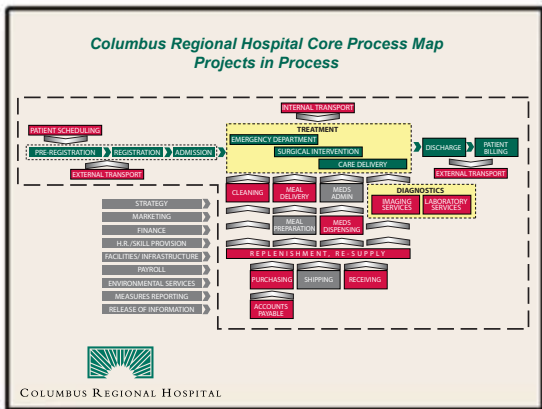
Lean Sigma is the integration of Lean and Six Sigma process improvement methodologies. It approaches sustainable continuous improvement with the goal of improving patient care, safety, and satisfaction while simultaneously reducing costs and increasing revenues. Using Six Sigma, Columbus Regional Hospital analyzes variation and determines root causes. Through Lean, participants eliminate non-value added activities (waste) and design new processes around steps that add value. Lean Sigma puts controls in place to sustain gains and ensure continued success.

Full Deployment vs. Targeted Projects

Often, healthcare organizations elect to start small, implementing Lean Sigma in increments. This may be appropriate for some. CRH leadership determined that the advantages of organization-wide deployment outweighed the risks. Leaders did not want to appear tentative about the decision to deploy Lean Sigma, fearing it could turn into another "program-of-the-month." Leaders were on board and committed to a complete, well-disseminated pre-launch deployment plan.

In 50 Words or Less

This case study describes one hospital's experience in the first two years of Lean Sigma implementation and results in areas of patient safety, satisfaction, and financial benefit. Full deployment engages leadership, enhances project selection tied to hospital strategy and goals, and encourages linkage between projects to augment individual project improvements.



Organization-Wide Core Process Map

The First 90 Days

The first three months were critical. Full deployments rely on the organization knowing what's going on. CRH leadership used that window to link strategy to the operating plan and to Lean Sigma projects simultaneously. With the big picture, informed department heads could energize their staff.

Within the first 90 days, Lean Sigma training began. Eventually, six Black Belts and 18 Green Belts were trained. Executives and Champions were trained prior to launch. During the same period, and as part of training, Lean Sigma projects were selected, chartered, and initiated. Champions were assigned from among hospital leaders, projects were chartered, and teams organized.

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Project Selection

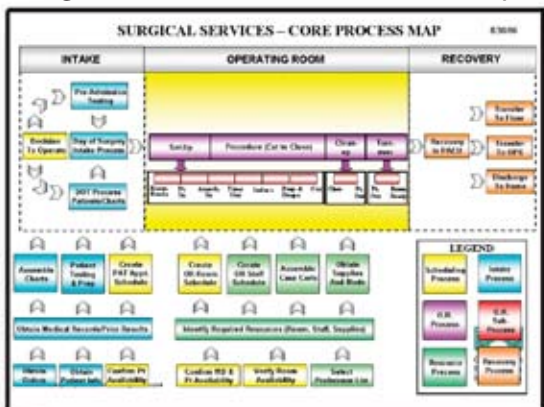
Project selection was important because early success would encourage acceptance and establish the groundwork for future success. Leadership was fully engaged in project selection. A Hospital Core Process Map was used to demonstrate the inter-connectedness of CRH departments and processes. The organization used key business documents to select the initial projects: the hospital's mission statement, strategic plan, operating plan, profit and loss statement, and quality indicators. Leadership selected three project areas to begin: Surgery; Nursing Unit Medication Delivery; and the Emergency Department.

1) Surgery. A Core Process Map was developed for the Surgery Department. CRH leaders elected to apply one of the tools of Lean Sigma, a Kaizen event, to examine and re-design the scheduling and flow of patients and procedures. Kaizen is a focused, accelerated change event in which key staff spend 4½ days focused on mapping the current process, mapping the ideal future process, and implementing the bulk of the changes. Kaizen events achieve sustainable short-term wins that build program momentum and deliver measurable business results within one week.

This was amply demonstrated in the surgery project. Through careful planning and team selection, four kaizen events were launched simultaneously addressing the following processes:

- Set-up, Clean-up, and Turnover
- Scheduling & Intake
- Surgery Procedure Flow
- Outpatient Surgery and Recovery

Surgical Services- Core Process Map



In five days, the CRH Turnover team reduced surgery changeover time for orthopedic procedures from 43 minutes to 14 minutes. This had an immediate effect on the medical staff. Instead of intruding on the way they practiced, surgeons and anesthesiologists experienced a methodology that reduced downtime and increased the number of procedures they could realistically complete. The team went on to roll out the accelerated surgery turnover process across all procedure types.

The Intake Accelerators team streamlined the flow-through for pre-admission testing and intake. The result was a more efficient flow, a 27.6% increase in capacity, and improved accuracy of information to surgery.

The Procedure team standardized roles and eliminated non-value added steps in the process. As a result, there was a 15.5% time savings in orthopedic surgeries.

The fourth team reduced outpatient surgery turnover time and recovery release time by 50%, improving capacity in both areas.

The Surgery Kaizen teams evolved into longer-term Lean Sigma projects, each with its own charter and leadership oversight to assure that inter-dependencies were recognized and considered in project resolution.

2) Nursing. Unit Medication Delivery. Another Lean Sigma project improved medication delivery time, functionally defined as the time from written order to when the nurse is aware the medication is available on the unit. Working with pharmacy, the team centralized order entry, applied 5S and other Lean tools such as visual cues, to standardize the process. As a result, the hospital reduced average medication delivery time by 60% and improved accuracy of the first dispensed dose to one error in 18,329 opportunities (5.37 Sigma).

3) Emergency Department. A third project area addressed the Emergency Department (ED) length of stay. The team standardized the registration and triage processes, revised acuity level assignment, and implemented triggers to accelerate patient flow. In the end, lengths of stay were reduced, by acuity level, between 26% and 38%. In addition, the rate of patients who left the ED without being seen decreased by 75.6%, increasing patient satisfaction. An increase in revenue of over \$800,000 was realized in the first year.

Conclusions and General Results

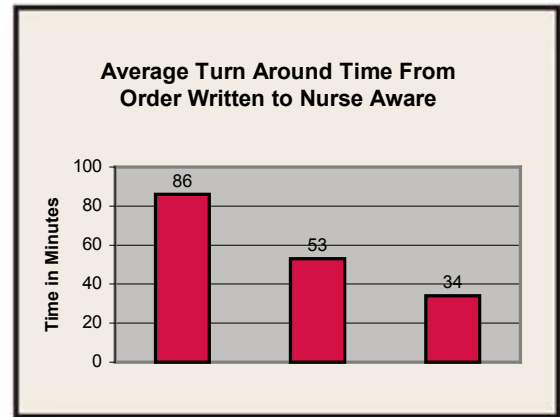
Columbus Regional Hospital is continuing to deploy Lean Sigma throughout. Electing full deployment has allowed CRH to strategically add projects that supplement the improvements seen in the original projects. For example, in the Emergency Department, patient length of stay in the ED is decreased by three additional Lean Sigma projects: improving radiology throughput; reducing the time required for an inpatient service to receive an ED transfer; and decreasing the time necessary to discharge a patient from an inpatient nursing unit.

Other chartered Lean Sigma projects in the hospital include centralized radiology scheduling, meal tray processing, laboratory requisition/reconciliation, and a birthing pre-assessment visit.

In the first years of Lean Sigma integration, the hospital has realized both a financial and cultural return on investment. Staff no longer accept inefficiency and waste as inevitable and are actively engaged in their elimination. There is better communication across the hospital and a shared vision of its future. It can seem overwhelming, but Columbus Regional's aim is to be an excellent hospital and to be excellent requires a lot of hard work from a lot of people.

References:

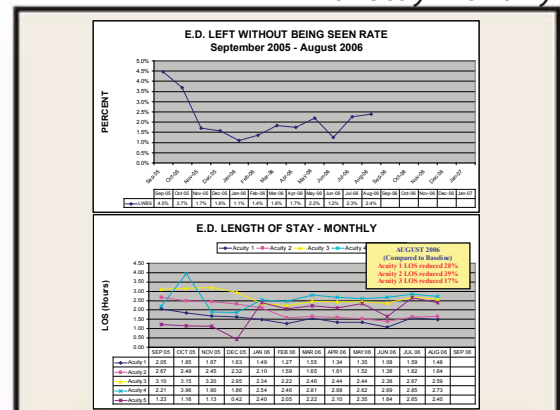
1. Wedgwood, Ian. Lean Sigma: A Practitioner's Guide. Prentice-Hall: Upper Saddle River, NJ, 2006.
2. Zinkgraf, Stephen. Six Sigma: The First 90 Days. Prentice-Hall: Upper Saddle River, NJ, 2006.



Average Turn Around Time From Order Written to Nurse Aware

It can seem overwhelming, but Columbus Regional's aim is to be an excellent hospital and to be excellent requires a lot of hard work from a lot of people.

E.D. Left Without Being Seen Rate & E.D. Length of Stay Monthly





Sigma Breakthrough Technologies Inc[®]



About Sigma Breakthrough Technologies, Inc :

Our History

Dr. Stephen Zinkgraf developed and deployed the Six Sigma methodology while working in various leadership positions at Motorola, Compaq, ABB, and AlliedSignal. Recognizing an opportunity to expand Six Sigma in combination with Lean into every area of a company's business, Dr. Zinkgraf founded SBTI in May 1997. Beginning with 2 corporate clients, SBTI has grown organically through referral to more than 50 global corporate deployments with an additional 50 clients using SBTI methodology. This proven track record of success has made SBTI a global leader in transforming companies.

Our People

SBTI Executive Directors and Master Consultants have a minimum of 10 years industry experience (many have 25 or more years experience). All of our consultants have a common characteristic of having actually led successful initiatives inside a corporation.

Our Services

SBTI defines its core competencies around its support of clients in the rapid deployment of Six Sigma and Lean Enterprise methodologies as business changing improvement initiatives. To accomplish this, SBTI delivers a full range of services. These services include strategic planning and assessments, multi-level leadership workshops and specialized "Belt" training at the tactical level. SBTI's methods and offerings are all based on business results and internalization through highly tailored programs that reflect our client's specific needs.

Our Capabilities

SBTI has offices in the US, Latin America, Europe, China, Hong Kong, and Korea, which offer unmatched experience and capability. These regional offices provide local language and bilingual instructors who are familiar with the SBTI roadmap and materials. These instructors have led multiple waves of training completing projects and mentoring Black Belts. Supporting those experienced MBB's is SBTI's world-class material translated into French, German, Korean, Spanish, Italian, Swedish, Portuguese, Japanese, and Mandarin Chinese.

Our Results

SBTI encourages our clients to internalize the deployment and training as quickly as possible - usually between one to two years. SBTI clients average 30X return on investment within the first 24 months of the engagement. By bringing our clients world-class consultants, materials, and experience, we can guarantee your program is a successful business and culture change.

SBTI has delivered the fastest and highest return on investment in the industry by providing:

- Customized solutions for the client's specific business needs
- Accelerated knowledge transfer of the business process excellence methodologies
- Development of future leaders and process experts
- Truly global solutions (including material translations and home language)

For more information, contact SBTI at: healthcare@sbtimail.com or visit us at www.sbtionline.com
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