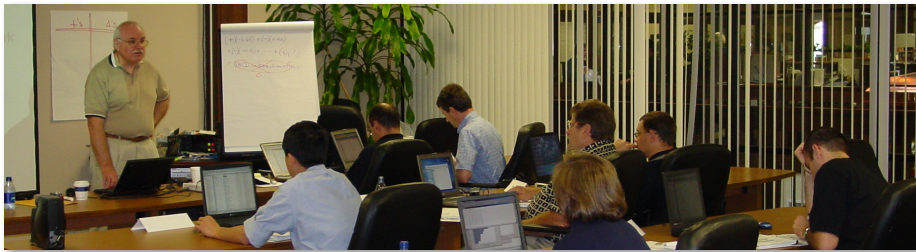


ABOUT SBTI



Value Proposition	Recognized as thought leaders and innovators in business process improvements, Sigma Breakthrough Technologies Inc. (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.

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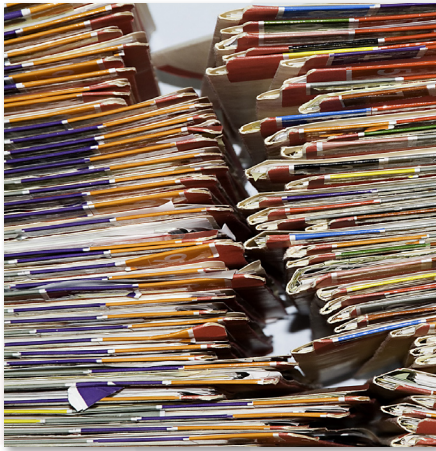
CASE STUDY

Industry:	Healthcare
Client:	Columbus Regional Hospital
Event:	Lean Sigma

50 Words or Less

Hospitals need to aggressively pursue payments in order to deliver the highest-quality care to their patients. This study illustrates a project which used Lean Sigma to reduce the time between discharge and final bill from 11 days to less than five days, resulting in a one-time cash increase exceeding \$2 million.

Reducing Discharged Not Final Billed Resulting in One-Time Cash Exceeding \$2 Million.



Columbus Regional Hospital (CRH) is a 325-bed hospital providing care to a 10-county service area surrounding Columbus, Indiana. Since 2005, CRH leadership has been integrating Lean Sigma performance improvement into the way they do business. A CRH Black Belt managed the project following the DMAIC (Define, Measure, Analyze, Improve, Control) roadmap. A cross-functional team supported the efforts. Sigma Breakthrough Technologies, Inc. (SBTI) provided classroom training and project mentoring.

Measure Phase

To reduce days in Accounts Receivable and increase cash flow, CRH leadership chartered a Lean Sigma project to improve the efficiency of the billing process. In addition to the Black Belt, the team included representatives from Billing, Coding, Document Imaging, DAPS and a Unit Secretary.

One key measure of billing efficiency is “Discharged Not Final Billed”, or DNFB. This is the time between the patient’s discharge and the chart coded and final screen completed. Initial measurements confirmed that the process was taking too long. During baseline, DNFB averaged about 11 days, as shown in Figure 1, with a target of five and a stretch goal of four days.

The team created a high-level Value Stream Map of the current process flow and identified three major process steps:

- **Document Retrieval:** the period from patient discharge to when the chart was available for scanning
- **Document Imaging:** the time for Health Information to get the chart, scan the documents and upload them for coding
- **Coding & Abstracting:** the period from document upload to coders completing coding entry and abstracting the chart and uploading it for finance to drop the bill

Using a cause and effect matrix, the team elected to focus on the latter two steps. The final two steps strongly affected the first step, discharge to chart available.

For example, nursing units were unwilling to release charts quickly because delays in document imaging and coding often meant difficulty retrieving the charts when necessary.

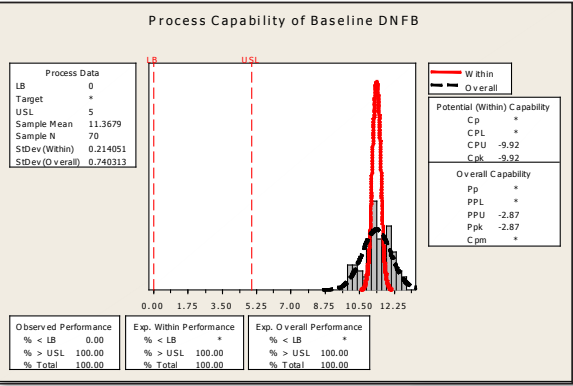


Figure 1 - Initial Process Capability

Analyze Phase

The team further studied the process using a Failure Modes and Effects Analysis. This helped to identify areas of risk in the process and to find possible root causes of failure.

For the Document Imaging step, in some cases, document scanning was 12 to 17 days behind. The team reviewed the volume of charts by day of week and time of day. It quickly became clear that staffing patterns did not match chart ebb and flow. A detailed process map also revealed that charts were being managed using an inefficient batch process rather than single-piece flow.

For Coding & Abstracting, a review of staffing patterns also revealed a mismatch with chart volume. There was no backfill. If anyone was absent, the work was left undone. A second opportunity was workplace ergonomics. The coding and abstracting room was not designed to promote efficient work practices. In particular, the noise level was too high to support the kind of focus necessary for coding decision-making. Finally, the team identified computer run-time errors as impediments.

In both the Imaging and Coding steps, a large backlog of cases interfered with the staff catching up.

Improve Phase

Based on the findings listed above, the team pursued the following improvements:

A. Document Imaging

Instead of segmenting the imaging process by activity and working with batches of charts at each phase, the team organized a single-piece flow. The project team instituted two methods of chart flow: either a single person or a pair of staff managed each chart through the entire process as it presented itself.

With input from the coders, the project team established workstations and work patterns. The hospital purchased three tables and installed them in the office. Staff arranged and re-arranged the tables until they met their physical needs. The supervisor changed staffing patterns to match chart volume. The department organized a Weekend Chart Party and “burned down” all outstanding charts.

With the introduction of single-piece flow, improved staffing and other changes, results were dramatic. As displayed in Figure 2, the time required to prepare, scan and review a chart declined from an average of nearly 12 hours to less than one. Equally important to the staff, however, it is rare when one shift leaves work for the next shift. When work is left, it is quickly completed.

Figure 2 - Time reduced dramatically

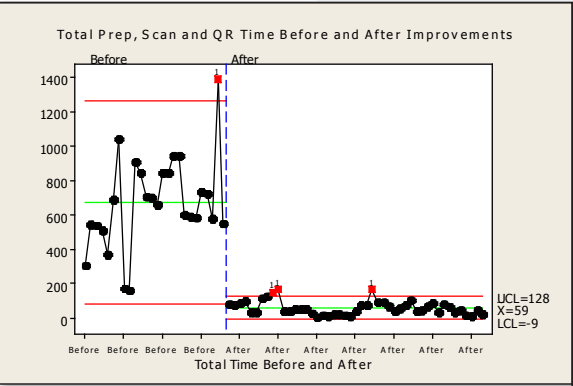
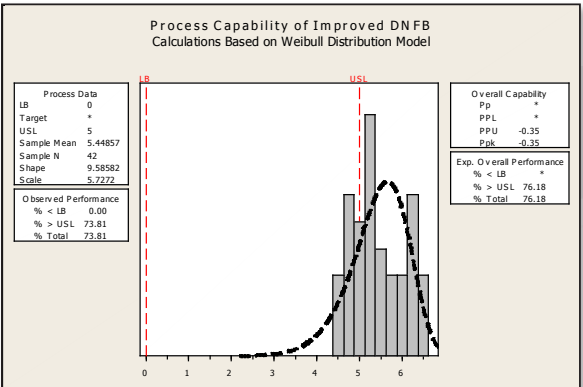


Figure 3 - Reduction in DNFB



The department set rules for noise abatement: no music (headphones only); no hands-free phone calls; no cross-cubicle conversations; etc. Additionally, sit/stand tables were purchased for staff who were more productive working in a standing position.

The Information Services department made system modifications to reduce run time errors. The department hired two contract coders for six weeks to eliminate the chart backlog.

As seen in Document Imaging, the changes implemented produced dramatic changes in Coding & Abstracting. This resulted in a significant reduction in total DNFB, from an average of 11 days to a post-intervention of 5.4 days as displayed in Figure 3.

Control Phase

The project team put a control plan in place to ensure that these improvements would continue in the future. They implemented control charting to monitor ongoing performance for DNFB. With a highly people-dependent process, a control chart can be an essential tool to verify compliance. As demonstrated in the control chart in Figure 4, in the latter half of the “After Improvements” phase, the project team saw a sustained performance measuring approximately 4.5 days.

Conclusions and General Results

Using Lean Sigma methodology and the DMAIC roadmap, the project team greatly decreased delays in patient billing. DNFB days dropped from an average of 11 days to a sustained rate averaging less than 5 days. In doing so, the hospital brought a one-time increase of nearly \$2.5 million in cash to balance sheets, as verified by the Chief Financial Officer. Annual interest earnings on this revenue approached \$100,000 annually. Additionally, attention to standard work and workflow improved productivity in two departments. Finally, the team enabled staff to improve the time when charts are available for clinical and operational reviews, updates or readmissions.

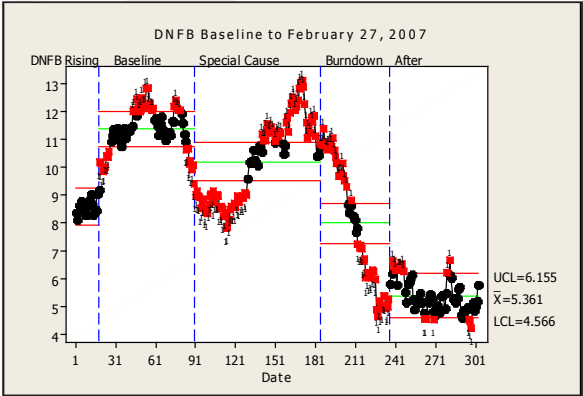


Figure 4 - Control chart shows that without Lean Sigma, improvements were not sustained. With Lean Sigma, not only were improvements dramatically better, they remained at breakthrough levels.