

Reducing Discharged Not Final Billed (DNFB) - A Lean Six Sigma

Project Background

The primary goal of a hospital is to deliver high quality care to patients in need. To realize quality goals tomorrow, hospitals must aggressively pursue payment for care today. This case study describes the efforts of Columbus Regional Hospital to streamline the process between care delivery and reimbursement.

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, the time from discharge to final bill averaged about 11 days, as shown in Figure 1, with a target of five and a stretch goal of four days.

The team then 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 entry coding and abstracting of the chart and uploading the chart to for finance to drop the bill.

In 50 Words or Less

- A hospital Lean Sigma project sought to decrease the time between patient discharge and billing
- Goal: Reduce time from patient discharge to final bill to less than 5 days
- Results: Cycle time was reduced to less than 5 days, resulting in a one-time revenue exceeding \$2 million

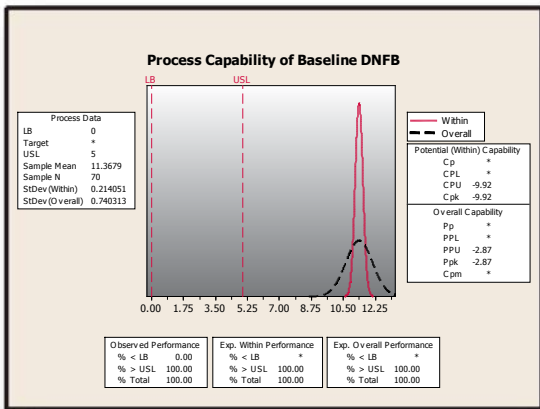


Figure 1

Project Background

Using a cause and effect matrix, the team elected to focus on the latter two steps. The second two steps strongly affected the first step, discharge to chart available. Nursing units were unwilling to release charts quickly because delays in document imaging and coding meant difficulty retrieving the charts when necessary.

Analyze Phase

The team further studied the process using a Failure Modes and Effects table. 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 ever catching up.

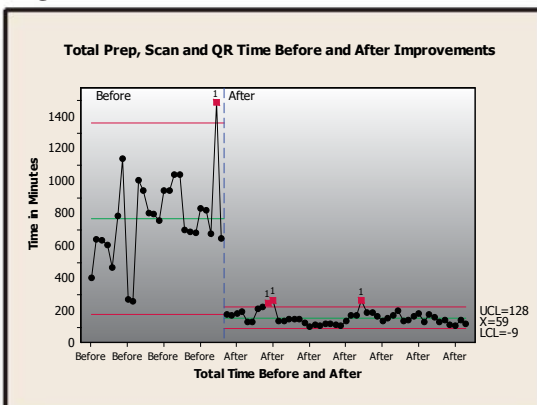
Improve Phase

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

A. Document Imaging

1. 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.
2. 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.
3. The supervisor changed staffing patterns to match chart volume.
4. The department organized a Weekend Chart Party and "burned down" all outstanding charts.
5. 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 six hours to less than one. Equally important to the staff, however, is that it is rare that one shift leaves work for the next shift. When there is, it is quickly completed.

Figure 2



To realize quality goals tomorrow, hospitals must aggressively pursue payment for care today.

The project team made one final improvement. Instead of Health Information staff going to nursing units to collect charts when they become available, nursing units are tubing completed charts for imaging. This speeds retrieval and supports the single-piece flow process.

B. Coding & Abstracting

1. The department hired one additional FTE, splitting that position among several part-time employees. This provided flexibility for peak periods and staff absences.
2. The department set rules for noise abatement: no music (headphones, instead); no hands-free phone calls; no cross-cube conversations; etc. Additionally, sit/stand tables were purchased for staff who were more productive working in a standing position.
3. The Information Services department made system modifications to reduce run time errors.
4. 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 around to 11 days to a post-intervention of 5.4 days as displayed in Figure 3.

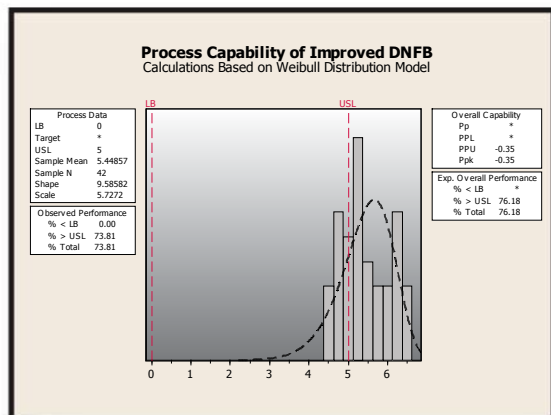


Figure 3

DNFB days dropped from an average of 11 days to less than 5 ... the hospital brought a one-time increase of nearly \$2.5 million in revenues to its bottom line.

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 around 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 revenues to its bottom line, 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.

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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.

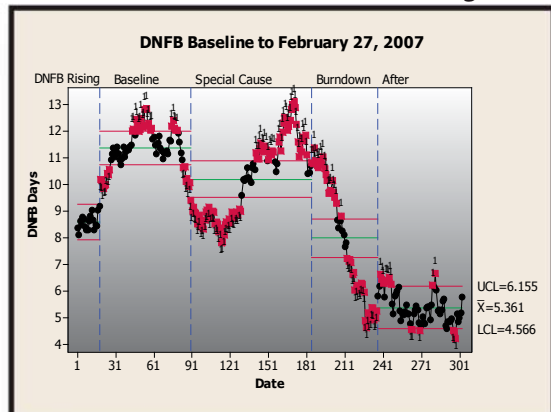


Figure 4



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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