50 Words or Less

Using Lean Sigma methodology and the DMAIC roadmap, a managed care organization reduced the rate of cases pended for insufficient clinical information from 20% to 5% while simultaneously reducing the costs. The case study also highlights the importance of trusting the Lean Sigma process when goals are not initially met.

Reducing the Pend Rate for Insufficient Clinical Information

To manage benefits, managed care organizations (MCOs) often require providers to submit clinical information before the procedure can be authorized. Failure to submit the requested information can result in cases being pended awaiting additional clinical information. Unfortunately, standards for sufficient information often vary and providers are unable to predict what is necessary. In this Lean Sigma project, an MCO sought to reduce the rate of pended cases for diagnostic imaging requests.

The project was managed by a Black Belt following the DMAIC (define, measure, analyze, improve, control) roadmap. A cross-functional team supported the efforts. Classroom training and project consultation were provided by SBTI.
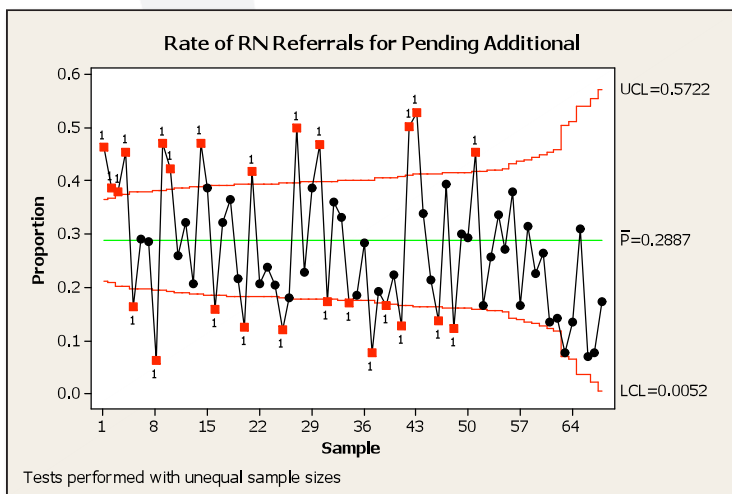

Figure 1 – Rates of Pended Cases by Nurse

Measure Phase
The baseline rate for pended cases due to insufficient clinical information for this MCO was 20 percent. Of those 20 percent, nearly two-thirds were pended by the nurse reviewer. The project goal was to reduce this pend rate to less than 10 percent.

Analyze Phase
As cases are randomly assigned across nurse reviewers, the project team reviewed the rates for nurse pended cases using an individuals control chart.

As displayed in Figure 1, there was considerable variability in the pend rate among nurses. The team then conducted an attribute Measurement System Analysis (MSA). This was to determine the level of agreement among nurse reviewers and with an expert regarding the decision whether to request additional clinical information. The result showed that there was insufficient agreement between nurses, between nurses and the expert, and even within nurses. That is, nurses often disagreed with themselves when assessing the same case.

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The team assembled a Process Map and constructed an Input/Output chart, a Cause & Effects Matrix and a Failure Modes & Effects Analysis (FMEA). As a result of these efforts, the project team determined to focus on making medical necessity criteria more specific, educating nurse reviewers on the criteria, and giving specific instructions for submissions to providers.

Improve Phase

Provider Intervention - The project team met with Provider Relations Representatives to gather information on what was being done to educate providers, how often, by whom and who to target. The team then identified the 100 providers in the region with the highest pending rate. Through a series of communications, these providers were given instruction in necessary criteria for approval and specifically how to submit the information. The providers' offices were given a laminated sheet to be placed by the phone describing the criteria and submission options.

For this cohort of providers, that is, those with the highest pend rate, the rate of pended cases decreased from 34.5 percent to 24.3 percent, a reduction of 33.8 percent. A chi-square analysis verified that the change was statistically significant.

Figure 2 – Provider Instruction Sheet

Nurse Reviewer Intervention – A subgroup of the project team worked with nurse review supervisors to create standard definitions for: Clinical Information, No Clinical Information, Insufficient Clinical Information and Sufficient Clinical Information. When completed, nurse in-service was provided on the new criteria and when to request additional clinical information (i.e., pend the case).

One administrative remedy was also introduced which was to limit pending cases for additional clinical information to only once per case.

The project then entered a pilot phase to introduce the changes and determine their effectiveness. After one month the pend rates were collected and graphed using an individuals control chart.

As shown in Figure 3, the rate of pended cases only decreased to 15 percent as opposed to the 10 percent target. The project team was very disappointed and concerned that their work had been ineffective. T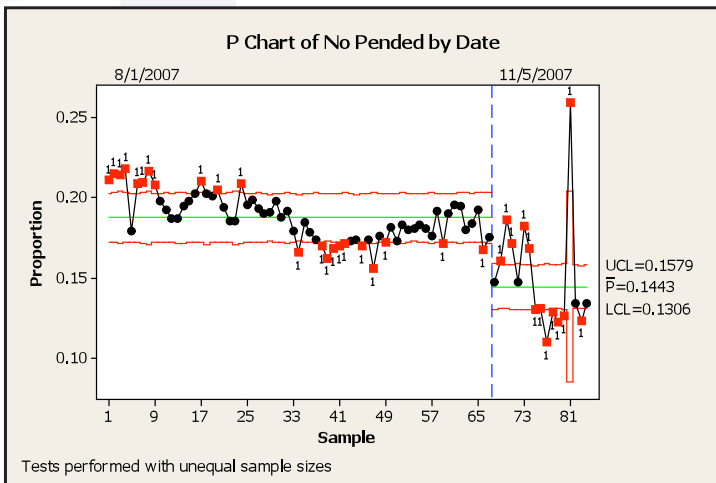he project leader, however, reminded them that they should trust the process and counseled them to return to the FMEA to see if there were any issues that they had overlooked.

Figure 3 – Results of Pilot 1

The team also did a follow-up attribute MSA to determine if the level of agreement among reviewers had improved. They determined that there was improvement, particularly within reviewers, but that, overall, agreement had not improved sufficiently.

The project team then revisited the criteria for sufficient clinical criteria and worked with the nurse review supervisor to make these even more clear, making the decision to pend cases much more obvious. If, for example, there is more than a CPT and ICD-9 code and any of the online survey questions are answered with a Yes or No, reviewers should not ask for additional information and pend the case. Instead, the nurse will either approve the procedure or make a recommendation and send the case for medical director review.

As Figure 4 illustrates, following Pilot 2 the pend rate decreased to 5.3 percent and stabilized at that level. In addition, a third attribute MSA showed that agreement among nurse reviewers and with the expert showed significant improvement to well above a Kappa score of 0.70, indicating satisfactory concordance.

Control Phase

A control plan was put in place and handed off to the process owner to ensure that these improvements would continue in the future. A dashboard was introduced including control charts to monitor ongoing performance of the key variables. With a highly people-dependent process, the control chart can be an essential tool to verify compliance.

Conclusions and General Results

Using the Lean Sigma methodology and DMAIC roadmap, the project team greatly improved the rates of pended cases due to insufficient clinical information. As a result, patients are able to avoid delays in diagnostic testing and providers are able to get results quicker. In addition, the process was streamlined, allowing two FTE's to be reassigned to other projects, resulting in a savings of over $125,000.

Key lessons learned were the importance of working through early disappointments, trusting in the process, and revisiting the Measure and Analyze phases to make certain that key input variables are addressed.

Figure 4 – Results of Pilot 2

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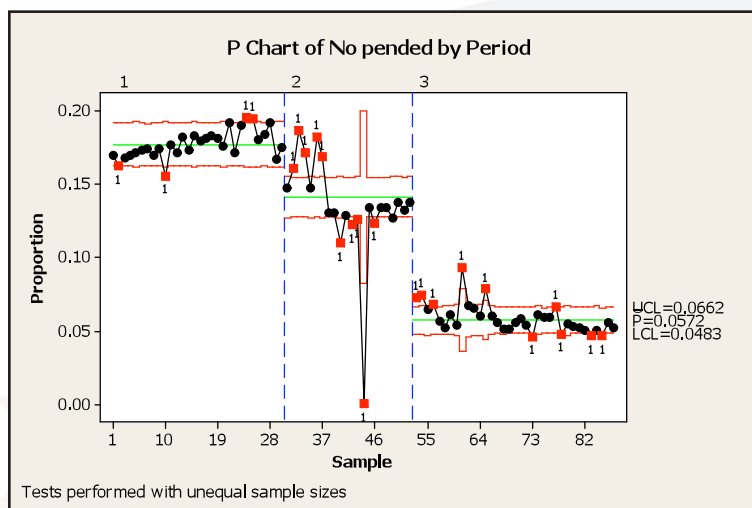2. Zinkgraf, Stephen. *Six Sigma: The First 90 Days.* Prentice-Hall: Upper Saddle River, NJ, 2006.
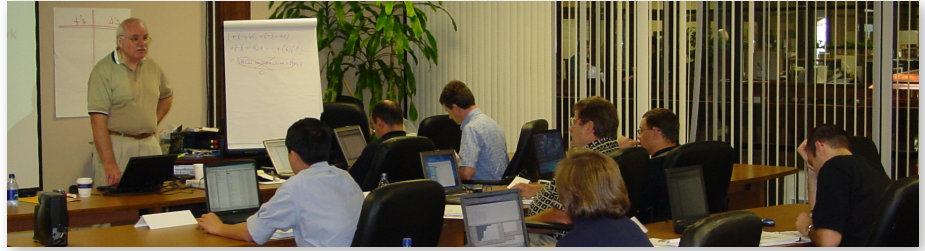
Value Proposition

Recognized as thought leaders and innovators in business process improvements, 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.

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 50 global corporate deployments and an additional 50 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.