CASE STUDY

Industry: Healthcare

Client: Columbia Regional Hospital

Event: Lean Sigma

50 Words or Less

Columbus Regional Hospital (CRH), a 325-bed medical center, successfully implemented an ambitious program to make staff utilization more efficient and decrease staffing costs in the inpatient service. The solution required that the hospital address, simultaneously, the complex issues of patient classification and bed assignment, demand profile, hospital geography, staffing, and skills matrix.

Patient placement increased floor utilization 30%, reduced staffing, saving $608,000/year

Project Background

Columbus Regional Hospital was experiencing a situation common to hospitals across the country: a higher than acceptable cost per discharge; unpredictable staff pattern and workload with high variation for staff schedules; unacceptably high overtime and agency usage; moderate occupancy rate with high patient transfers; inefficient throughput (surgery, ED, procedures); overspecialized care delivery contributing to quality of care issues; and a non-systematic approach to patient placement.

Example of Risks for Over-Specialization

Before the project, stroke patients were routinely assigned to a particular unit, say 4A. Often, though, a patient with a stroke would be placed on another floor either because 4A was full or because the stroke was considered a co-morbid condition. Risk: nurses unfamiliar with that aspect of the patient's condition. With de-specialization, the hospital standardized and broadened competencies among similar units using professional standards for nursing certification. Modules were developed for the remaining specialty populations: dialysis, chemotherapy, and bariatric. These require special equipment and space or are low volume, high risk.

The hospital embarked on a four-phase project with the goal to develop:

- A new patient geography layout
- More appropriate patient-family groupings
- A more patient-centric nursing teaming model
- A demand-driven staffing model
- A robust patient placement process

Phase 1 – Assessment

Phase 1 involved identifying the major metrics by which performance would

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be determined, along with the goals for the future state. Financial impact of the project was measured in terms of Cost per Adjusted (CMI) Discharge.

Phase 2 - Concept Design

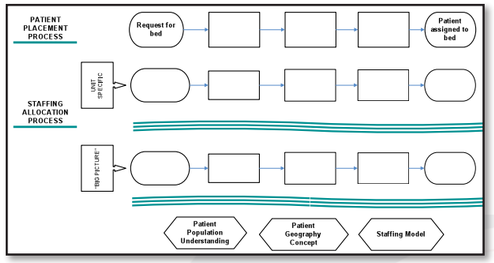

Figure 1: Process and Organizational Concepts Involved in Patient Placement

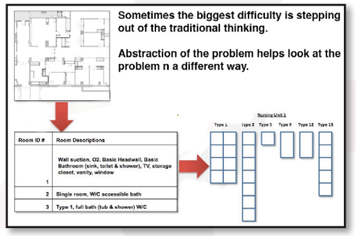

Figure 2: Abstracted Physical Facilities

Phase 2 revolved around construction of the conceptual elements. See Figure 1.

Physical Facility:
The team identified physical facilities for patient care by room types, special room needs, etc (Figure 2). For example: cardiac monitors, wide doorways, negative air flow, radiation implant rooms.

Patient Populations:
The team identified small subsets of patient populations, their facility needs and nursing care needs. For example: chemotherapy and radiation patient placement in room with private bathroom, cared for by nurses with chemotherapy and radiation therapy competency.

Developing Patient-Family/Geography Concepts:
Multiple potential concepts were developed using the facility description, the population group facility and care needs, and patient annual demand profiles (Figure 3). The goal was to maximize room occupancy, minimize patient transfers, and group patients by room type and care requirement.

Teaming Model Concepts:
The team created the Care Teaming Model by examining current work content, breaking down all work activities into component elements, determining "licenses" required and redistributing work content based on licenses and balance of workload.

Staffing Model Concepts:
The team constructed staffing "Running Modes" (Figure 5) and related them to demand levels. This was done by identifying the highest demand loading on the unit and then, using patient-family / geography as a backdrop, determining how the maximum staffing by role would look.

#	Population Description	Adult / Peds	Facility	Special Skill
...	...	...	...	...
8	***Radiation & Chemotherapy Symptoms***	***A***	***Bp***	***CH,R***

Facility	Special Skills
Bp: Private bathroom	CH: Chemo
...	R: Radiation
...	...

Figure 3: Patient Populations by Type, Facility Need, and Special Skills Required

At this point, it was possible to create a Staffing Roster. The team has: measures of predicted demand, a required demand set point to maintain adequate staffing, the relationship between demand set point and running mode.

Financial Review:
Finance used the staffing concepts and roster predictions to determine the financial impact of the project.

Staffing Allocation Process:
The team then focused on the process of allocating staff to nursing units. This typically involved focus on both the longer horizon scheduling of staff as well as the short term flexing of staff between units.

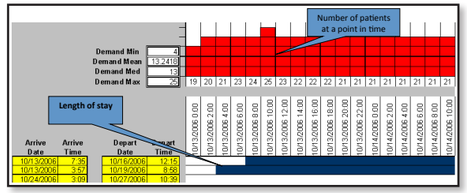

Figure 4: Understanding Instantaneous Demand

Patient Placement Process:
Finally, the team focused on the process of placing patients on nursing units. They mapped current state process and created simple, streamlined routing decision rules for placement.

Phase 3 - Detailed Design & Implementation

A description of detailed design and implementation plan was developed from Phases 1 and 2. Then the goals, duration and work content were determined once implications of concepts and new processes were understood.

"Lessons Learned" during implementation included:

- Implement the complete concept. This is a holistic, conceptual framework - all or nothing.
- Avoid permitting variation based on (physician) personal preference
- Plan for change
- Consistent message from management
- Accountability for the process, framework and roles at all levels
- Anticipate negative reaction to the concept
- Timely discussion on key roles and policy changes

Demand (Patients)	Running Mode	PCC	RN	CP	USP
16-20	Full	1	8	5	1
13-15	-1	1	7	4	1
11-12	-2	1	6	4	1
9-10	-3	1	5	3	1
7-8	-4	Float	4	3	Float
<6	-5	Float	4	2	Float

Figure 5: Relating Level of Demand to Running Mode

Phase 4: Control Planning & Globalization

Once the working model was determined to be fundamentally stable, a Control Plan was developed. This plan encompassed the key control elements, such as triggers and tracking that ensure the model and supported processes are consistently and robustly followed. During Control Plan development, job descriptions, work content and reporting structures were formalized and communicated.

Results

Using the disciplined, standardized approach of Lean Sigma in a rigorous, time-intensive project, the inpatient service at CRH was able to change the model of care to be more patient-centric, consolidate from six inpatient units to five (even with an 18% volume increase at go-live), increase floor utilization from 55% to more than 80%, and reduce inpatient annualized staffing costs by $608,000.

Since 2005, CRH leadership has been integrating Lean Sigma performance improvement into the way they do business.

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.

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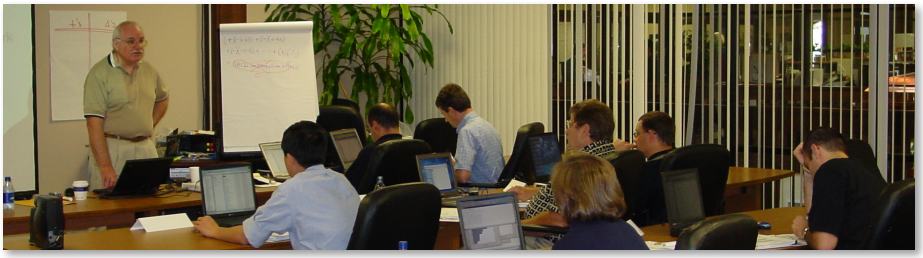
ABOUT SBTI



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.

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