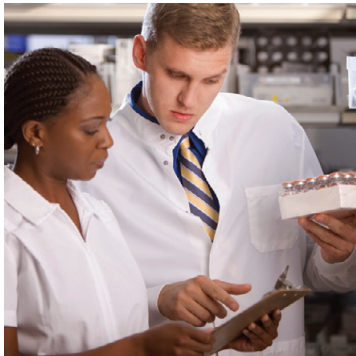


PERSPECTIVES ON LEAN SIX SIGMA IN HEALTHCARE:



WE, THE PATIENT

**LEAN SIX SIGMA IMPROVES PATIENT CARE QUALITY
AND BUSINESS PERFORMANCE**

› We, the Patient

With all the recent articles, papers and conferences on Lean, Six Sigma, Theory of Constraints and other management methodologies, a prevailing question is, “What impact will these have on healthcare?” The answer may lie in who we are. First and foremost, healthcare and any improvements in healthcare are about us, the patient. It always has been and always will be – patients are what drive the entire healthcare system. Without patients, the system will cease to exist. Everyone has been a patient, is a patient, or will be a patient at some time. So, that is the crux of today’s healthcare system – it revolves around us.

There was a time when we, as patients, accepted the healthcare just as it was provided to us. Whether we were treated at a rural community hospital, a specialty outpatient clinic, the physician’s office or at a large teaching medical center – the truth is, we accepted healthcare as it was. Whatever laboratory tests were ordered, medications prescribed or treatments scheduled – we rarely questioned them. We knew the system wasn’t perfect; however, we accepted the notion that healthcare was still the best that it could be.

If we fast forward to today, we no longer accept our healthcare in its present condition. It often takes too long to start our care, test results wait times seem interminable, we’re afraid of getting an infection, our discharge process seems inefficient and the billing is confusing. Out of necessity, our knowledge about healthcare has grown markedly over the past several years. We want to choose when, where, and how we receive our healthcare. Importantly, we want our healthcare system to be continuously improving so that we can make the right choices and achieve the best health outcomes.

› Who is Listening to Us?

After years of incremental improvement, most easy fixes have already been made. What we see now is the need for major changes in healthcare with lasting results that include increased patient satisfaction, increased provider satisfaction, better patient outcomes and improved resource efficiencies.

The Joint Commission is a major driving force for improvement in the healthcare system. Their surveyors look for clear evidence that data is being collected and analyzed for key processes and that improvements are being made based upon the data. They want to see that leadership is involved in all aspects of an institution’s improvement initiatives and that the voice of the patient is being heard and acted upon. In addition to the Joint Commission, local Departments of Health Services (DHS) survey hospitals, often asking similar questions in response to patient or family complaints. Both the Joint Commission and the local DHS put pressure on healthcare facilities to significantly improve their services.

Additionally, Medicare will stop paying for preventable hospital complications by October 2008. Extra costs incurred for a variety of hospital mistakes such as treatment for hospital-acquired infections will need to be absorbed by the healthcare facility. Consequently, maneuvering through stricter accreditation requirements and Medicare’s changing reimbursement policies will be more difficult and costly without a framework for producing systematic improvements.

› How Lean Six Sigma Improves Healthcare

The reality is that adopting continuous improvement programs such as Lean Six Sigma, even at



“While technological advancements have contributed significantly to patient care improvements – Lean Six Sigma provides the fundamental improvements in healthcare processes that create patient care excellence.”

the best healthcare facilities, is essential to just being competitive. Lean Six Sigma develops core capabilities in healthcare that address urgent needs in patient care and safety and make the kinds of improvements that save lives. In this way, it creates a culture of continuous improvement that is weaved into the fabric of the healthcare system.

This methodology can be applied throughout a healthcare facility to achieve improvements in infection rates, medical records and pharmaceutical errors, bed turnover, emergency room bottlenecks, supplies and equipment availability, patient satisfaction and much more. Importantly, Lean Six Sigma uses a data-driven approach to fix root causes of problems with strict controls that ensure corrective actions are sustained. The following case study shows how the tools can be applied to a hospital's patient billing process to achieve dramatic improvements.

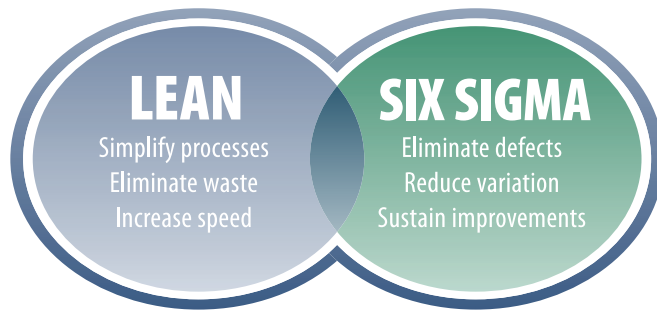
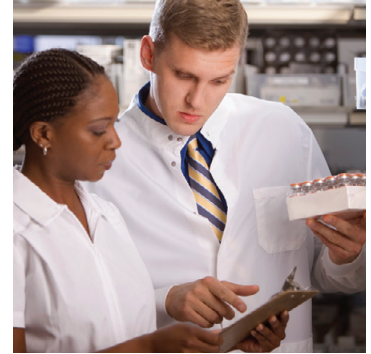


Figure 1: Lean Six Sigma Integration.

› Improving Billing At Kent Hospital

Kent Hospital, a 120 bed hospital serving the Aegean region of Turkey, decided to implement Lean Six Sigma as their next major initiative after becoming one of the first Turkish hospitals to receive JCI accreditation.

Frequently, hospitals focus on using Lean tools to streamline processes. Kent Hospital focused one of the pilot improvement projects on patient billing. The improvement team separated the billing system into inpatient and outpatient processes. A Lean tool called a Value Stream Analysis (VSA) enabled

Before

12,233 Feet Travel

Steps

Value Added Steps: 8

Non-Value Added: 14

Non-Value Added Required: 21



After

8,272 Feet Travel

Steps

Value Added Steps: 7

Non-Value Added: 0

Non-Value Added Required: 12



Figure 2: Current and Future State Inpatient Process Maps.

Kent to map their billing processes and analyze the performance. A one-week Rapid Improvement Workshop (RIW) followed the VSA to drill down into specific problem areas of the process.

Kent management estimated that the hospital was experiencing a twenty-day delay for 13% of bills. In addition, they were unable to recover payments from 1% of all patients due to missing or incorrect documentation.

An eight-person VSA team was formed to examine the billing process and implement improvements to reduce errors, cycle times and increase on-time payment percentage. The VSA event requires that the team physically walk the process. During the VSA, the team measured the distance traveled, counted the number of hand-offs and collected data on defects at each step.

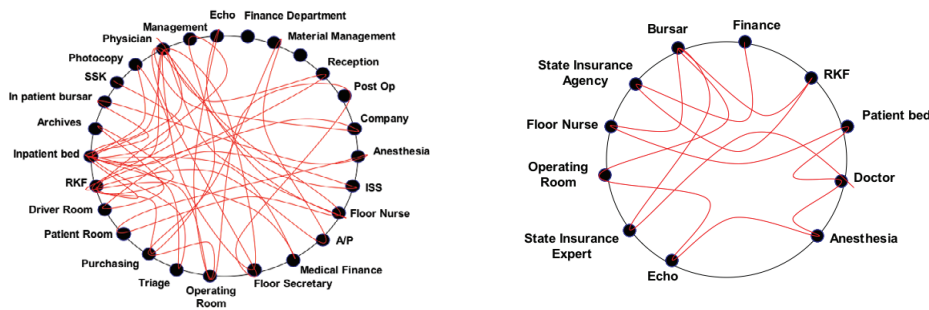


Figure 3: Current and Future State Inpatient Handoff Maps.

The process maps shown in Figure 2 depict the complexity of the current inpatient billing process and the newly designed, improved process. In general, value added steps are defined as process steps that are essential to providing the healthcare service. A patient is willing to pay for the cost of a value added step if it is completed correctly the first time.

Additionally, the team used handoff maps to reduce excessive handoffs in the process. Minimizing handoffs is a solution that quickly reduces delays and errors in a process. The before and after handoff maps shown in Figure 3 illustrate a 67% improvement in handoffs for the inpatient billing process.

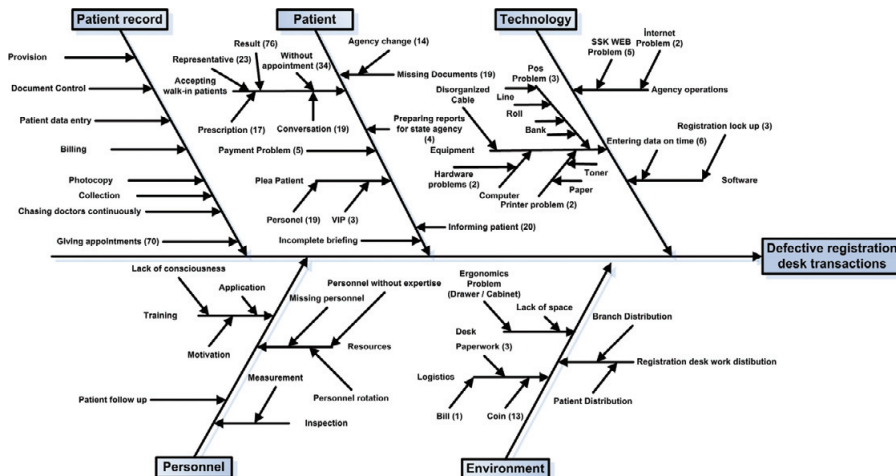


Figure 4: Cause-effect diagram for defective transactions at the registration desk.



“Lean is the continuous pursuit of eliminating waste, or non-value added steps, from a process.”

As part of the improvement activities for the outpatient process, an RIW team examined the root causes of defects for the two steps with the highest defect rate. During the investigation, the team developed the cause-effect diagram shown in Figure 4 to study reasons for registration desk errors, incomplete data entry, and medical records errors. Next, the team collected data to confirm which root causes occurred most frequently. Solutions to prevent those causes were implemented and controls (procedures for responding) were developed in the event that a defect does occur in the future.

After the VSA and RIW improvements were implemented, data from the process were collected again to determine the new process performance. Table 1 summarizes the improvements for both the inpatient and outpatient billing process. In addition to Kent’s improvements in healthcare service quality, two weeks of process improvement activities produced an estimated financial benefit of \$84,740 per year.

Outpatient	Flow time (min)	Cycle time (min)	Stations (#)	Handoffs (#)
Current State	17,251	5,803	13	19
Future State	8,458	2,093	7	11
Inpatient				
Current State	12,233	2,464	26	42
Future State	8,272	2,069	12	14

Table 1: Billing Process Improvements.

› Summing Up the Patient Perspective

As patients, we want to know that a hospital is working diligently to improve its services. Moreover, we want an opportunity to have our voices heard and acted upon when we provide feedback. By borrowing best practices from the corporate world, this proven methodology produces exceptional business results while still delivering compassionate care. Now more than ever, healthcare facilities are faced with the imperative to reduce costs while delivering increasingly better patient care. Healthcare administrators can use Lean Six Sigma to hear the voice of the patient.



“The first projects we conducted showed us how Lean Six Sigma enables us to see our processes, understand our systems better and make us more competitive.”

- Baris Turgutoglu
 Director of Management Operations
 Kent Hospital



About the Author

Charles Mount, Director of Healthcare Services

Charles Mount, CAPT, USN (Ret.) is the director of healthcare services for NOVACES. He oversees the company's Lean Six Sigma programs to improve patient care, safety and satisfaction, which simultaneously generate more profitable business outcomes. He has deep and abiding experience at all levels of healthcare, owing to his 38 years in the U.S. Navy dedicated to advancing patient care at military hospitals around the world. For example, he coordinated the implementation of Total Quality Management for 5,000 employees at the U.S. Navy's largest medical center in San Diego. In addition to his expertise in healthcare and education, as a Commanding Officer, he has conducted strategic planning sessions for a variety of organizations with emphasis on development of mission, vision, and values. Over the years, he has written about managing change in healthcare for a variety of publications. He is both a Lean Six Sigma Black Belt and a graduate of the Institute for Federal Health Care Executives. He holds a B.Sc. degree in Nursing from the University of Washington and a M.Ed. from the University of San Diego.

› Who We Are

NOVACES is a premier implementer of today's most powerful process improvement methodologies that strengthen operational capabilities and financial performance. We deliver Lean, Six Sigma and Theory of Constraints consulting and training to clients in the defense, healthcare, manufacturing, maritime and service industries. We are dedicated to advancing the science of process improvement and leverage research to provide the most effective solutions in the market.

