



Enhancing Cardiovascular Operations for a National Leader in Medical Research

A hospital consistently listed in U.S. News & World Report's Honor Roll of America's Best Hospitals engaged Tefen to perform a diagnostic of its cardiovascular (CV) procedural and imaging services. The medical facility was inundated with designing a new cardiovascular center, a major milestone for the hospital's cardiac service. While the new building was expected to provide state-of-the-art facilities, hospital leadership wanted to assure that processes and the patient experience would meet the new center's high standards. Their move to a new building presented the unique opportunity to revamp processes and align them with leadership's expectations.

The objective of the diagnostic project was to improve upon: flow of patients, staff, family, and materials throughout the various CV modalities by adopting a patient-centric approach, increase capacity through case scheduling, and to align employee staffing levels with demand.

Challenge

During the design of the new cardiovascular center, several issues were not addressed:

- How to move into a new building with improved processes to meet commitment to community
- How to integrate seven modalities that were previously operated separately: Electro-Physiology, Cardiac Catheterization, Invasive Radiology, Stress Testing, Nuclear Medicine, PET/SPECT, and CT/MRI. All modalities were to be integrated in the same floor (L2) and operate as one unit. In addition, the Recovery Room and Reception-Registration-Waiting areas were to be shared across all L2 services.

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- Ideal staffing levels to ensure efficiency and enhanced customer experience across the L2 services (focused on nurses and technicians).
 - Scheduling rules to be applied to ensure increased capacity alongside enhanced patient experience.

How Tefen Helped

Tefen applied a two-phase process, comprised of a thorough diagnostic and a hands-on implementation. The diagnostic focused on mapping current-state operations, identifying opportunities for improvement, designing solutions, and developing a roadmap to implement them. The following describes the approach and tools utilized during the diagnostic phase.

Tefen began by executing a tdata analysis to describe each modality. Data elements included classification for type of procedure/diagnostic performed, provider, start/end time stamps, and room used. As a result, Tefen was able to compile descriptive statistics to support key decisions in each area.

Next, Tefen's team developed a current state Value Stream Maps (VSM), which highlighted the non-value-added steps associated with the care process. Patient care time is always considered "value-added," while wait time and registration are "non-value-added." The subsequent establishment of cross-functional Kaizen teams served to collaboratively generate improvements to the current process. The teams pursued solutions to improve upon the current state identified in the VSMS. Kaizen teams included "Day of Procedure," "Day of Diagnostic," "Pre-Arrival," "Transportation," and "Scheduling."

A data-supported scheduling analysis was used to identify opportunities that might smooth the demand curve. A comparison of procedure and provider type was completed to be used as input for practice pattern discussions, and scheduling guidelines. This analysis led to the recognition of scheduling based on type of procedure and provider, which allows for greater accuracy and reduction of wait times for patients, nurses, technicians, anesthesia staff, and family members. Simulation models were used to illustrate the future-state processes and provide visibility for expected performance, given the improvements.

Staffing analysis was completed to allow a better alignment with demand. Demand across the

modalities varied by time-of-day and day-of-week, resulting in overtime and extremely long working hours for some staff members. The analysis and revised work schedules supported better alignment to demand, allowing predictable working schedule for staff while reducing overall operating costs.

Training and transformation of knowledge was provided through four training events: two classes on Lean Healthcare and two classes on Change Management. The Lean Healthcare class focused on establishing common terminology and familiarity with basic Lean tools to help project team members contribute along the process. Change Management helped management-level staff to better coordinate and communicate the transformation to the rest of the organization.

Performance Excellence Delivered

Most of the Quality, Access, and Cost benefits are expected to be realized upon moving into the new building in April 2008. Nonetheless, significant benefits have already been realized during the diagnostic phase. Overall, the patient experience was greatly improved both prior to the patients' visit to L2 as well as during their stay. This was achieved by thoroughly mapping existing operations processes and identifying significant opportunities and solutions for improving the facility's quality of patient care. The elimination of hand-offs between preparatory and procedure nurses served to instigate a continuity of care throughout the patient's day of procedure. Without question, the center's patients appreciated the more attentive care they received.

The analysis also served to enhance the staff's awareness of productivity and performance. Using the simulation model created in tandem with Tefen, the hospital staff could understand and anticipate performance and productivity levels in the future state.

Ultimately, with Tefen's help, the client, through both cost avoidance and savings, was also able to identify over \$3,000,000 in financial benefits. By aligning staffing with demand and reducing overtime due to improved case scheduling, the cardiovascular center could streamline procedures while saving costly resources.

About Tefen

Tefen is an international management consulting firm, committed to improving overall operational effectiveness for Fortune 500 companies around the world. The firm's main areas of focus include operations excellence, manufacturing, quality, customer service, research and development and supply chain management. With its "hands-on" approach philosophy, the company has achieved tremendous success in delivering quantifiable and value-driven results for its clients in a variety of industries, including healthcare, life sciences, general manufacturing, high-tech and financial services. All of Tefen's support programs are ISO 9001 certified. Tefen currently employs over 300 professionals worldwide.

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