

ST. ELIZABETH HOSPITAL GOES “LEAN” TO PROVIDE EXCEPTIONAL PATIENT CARE

By David C Daisher, Construction Accounts Director, Lean Six Sigma Black Belt TransMotion Medical, Inc.

The Gathering Storm

Today's hospital administrators and caregivers are facing extremely challenging times. Simply put, patient care challenges are daunting. Treatment protocols are complex. Reimbursement restrictions and government-mandated reforms are impacting the bottom line. Patient satisfaction is declining¹. Staffing is at a crisis, with nurses suffering from back injuries that cause them to transfer out of patient care or leave the profession entirely². At St. Elizabeth Hospital in Appleton, Wisconsin, a committed team implemented Lean Six Sigma principles to develop a revolutionary new approach to the process of patient care in the Emergency Department and Outpatient Surgery area. Lean Six Sigma is an approach that combines the concepts of Lean and Six Sigma resulting in the elimination of the seven kinds of wastes: Defects, Overproduction, Transportation, Waiting, Inventory, Motion and Over-Processing, and the provision of goods and service at a very high standard of quality. The hospital's innovative solution focuses on delivering personalized treatment that's safer, more efficient, less stressful, and more cost-effective.



St. Elizabeth Hospital, Appleton, WI

Established Situation

Until 2009, St. Elizabeth's Emergency Department (ED) and Outpatient Surgery (OPS) department consisted of a triage area, 13 bays, and 5 private rooms that served over 26,000 patients per year. It occupied a cramped space whose entrance was not conveniently located to any major street. In the OPS department, there was one bathroom



OPS patient bay with curtain dividers.

for the 24 patients treated on average per day. Patient areas were separated from each other by use of only curtains, resulting in very little privacy and high noise levels. Each narrow patient bay could only accommodate either a stretcher or a recliner. When a patient had to be transferred from the stretcher to the recliner, the established process was to move the family out of the room, push the recliner in, move the patient from the stretcher to the recliner (a fall hazard), remove the stretcher, and then move the family back in. Caregivers constantly walked the halls to locate the proper device whenever a patient transfer was required. Despite these physical drawbacks, staff productivity was high. But managers observed that virtually every aspect of the ED and OPS could be improved.

Business Issues

To solve the many issues, the hospital formed a Lean team and they knew from the beginning that their solution had to accommodate not just medical requirements, but business realities. Any redesign had to use only existing resources, existing space, and existing staff. The redesigned area had to be used as close to 100% capacity as possible each day, avoiding the common pitfall of overbuilt, underutilized space. Finally, any solution had to result in efficiencies that helped the hospital manage and minimize the impact of new reimbursement restrictions.

Methodology and Learning

Beginning in 2009 the hospital began to develop a strategic plan for the ED and OPS department, based on continuous improvement principles. The plan featured a comprehensive analysis of virtually every aspect of the areas, from the patient experience, to space optimization, to the patient handling process.

Patient Experience: The hospital's methodology embraced Lean Six Sigma's principle that all improvements should begin with *"the voice of the customer."* A team of employees interviewed over 700 patients, identifying 73 key areas of improvement from initial entry to outbound transition. One result of this learning was the decision to create private rooms rather than open patient bays; private rooms are the only way to ensure that patient privacy, and HIPAA regulations are met. These and other findings were then communicated to planners and architects, so that they could design a less stressful environment for patients, family and staff.

Space Optimization: Team members also recognized that a better patient flow would not only enhance the overall patient experience, but make the ED and OPS department more cost-effective. To determine the most efficient configuration, a year's worth of data was assembled to show how many patients were treated, what time of day they arrived, and how long they stayed in the ED and OPS. The result was a critical piece of learning: the ED and OPS department (renamed Surgical Procedure Area or SPA) have peak patient loads at different times of day. Simulation software confirmed that both departments could cohabit a single *"flex space"* optimizing both space and staff time. Practitioners would be able to focus on patient care as a process rather than a place.

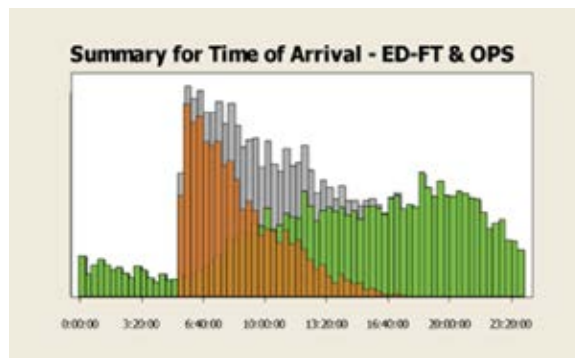
Space optimization analysis was also conducted at the room level. This included creating a *"living laboratory room mock-up"* to test patient comfort and process efficiency.

Patient Handling: Staff members recognized that patient handling was inefficient and potentially unsafe. They reviewed the typical **patient transfer process** from start to finish observing where they could strip away waste and add value. They evaluated the **time spent** moving family members, locating a transport device, making the transfer itself, storing the unused recliner or stretcher, and then inviting the family members back in the patient area. *"We knew that the patient chair or bed had to be the centerpiece of Lean patient handling,"* states Michael Hofmann, RN, BSN, Director of Pre-Operative Services at St. Elizabeth. The team then tested multiple patient transfer devices, looking for a solution that made the process simpler, faster and safer. Other testing criteria included ease of use, convenience, and maneuverability in bathrooms and other tight spaces. Several devices were evaluated and rejected before finding the optimal solution.

Innovative Solutions

St. Elizabeth's redesigned ED/SPA area opened in 2011. By implementing the Lean process it is now equipped to meet the demands of healthcare today. It also meets the hospital's key objectives of increased patient comfort and high operational efficiency.

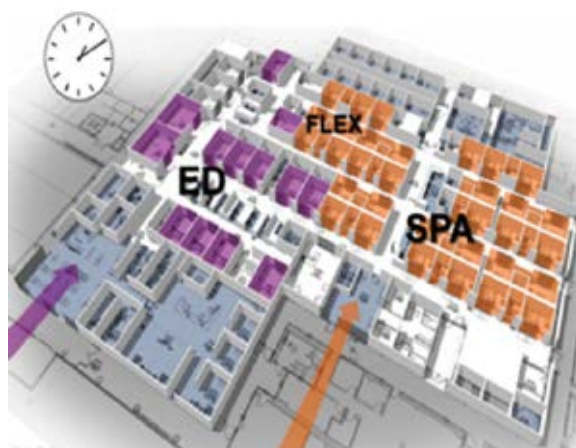
Optimizing Space & Staff Time: The design of the space itself, based on the concept of flexibility, is revolutionary. It combines the ED/SPA functions into 48 private patient rooms for major trauma, emergency, and outpatient surgery/procedures.



Time of arrival for OPS in orange, time of arrival for ED-FT In green, and combined arrival time in gray.



ED-FT area in purple, SPA area in orange, and Flex space in red.



Example of SPA patients "flexing" into shared space.

For optimal use of space, eight of these are centrally-located “flex rooms” that can be used either for emergency care or outpatient procedures, as the patient load dictates during any 24-hour period. The SPA utilizes flex space in the mornings at its typical peak times, while ER uses the same rooms in the afternoon when outpatient surgery patients have been discharged and ER patients start coming in at a higher rate.

“As far as we know, this hasn’t been done before in the country or the world,” says Hofmann. The nursing staff resides at centrally-located stations with convenient access to the patient rooms. The rooms themselves are also designed down to the last detail to enhance efficiency and maximize the overall patient experience. Each is identical in its layout and supplies. In-room information technology streamlines recordkeeping and keeps the family informed of their loved-ones progress throughout the care cycle. Minimal flat surfaces and easy-to-clean glass doors reduce the risk of infection as well as cleaning time.



Example of ED patients “flexing” into shared & SPA areas.



Reinventing the Patient Experience: The new ED/SPA puts the patient first. Incoming patients no longer wait in a reception area. They are immediately taken for triage and/or prep into a private room that’s designed for their comfort. Radiant heat panels and noise reducing wall coverings create a calm treatment environment. Each room has a semi-private bathroom, as well as a monitor/entertainment center that minimizes perceived wait time and displays the patient’s location and health status. Patients return to the same room after testing and treatment.

Revolutionizing Patient Handling with the Universal Care Platform™: The team addressed patient handling issues by selecting a stretcher-chair with exceptional motorized positioning, purchased from TransMotion Medical (TMM)³. TMM’s Universal Care Platform™ replaced a bulky combination of stretchers, recliners and wheelchairs, with one unit that can perform all three functions significantly streamlining the patient handling process. Patients stay on this surface during the entire hospital visit, reducing the number of transfers by 50% from four to two, per procedure. The stretcher-chair also significantly lowers the risk of patient falls and minimizes the likelihood of back injuries to staff. The TMM stretcher-chair, which was assessed during a three-day trial, has received high ratings in all evaluation criteria, including patient comfort, safety, ease of use, workplace hazard reduction, and pre- and post-op patient benefit. *“There are such key things around the chair solution. It saved us on furniture, fixtures and equipment, saved us on space, on productivity, and on staffing,”* states Michael Perry – Project Leader, for St. Elizabeth.

Staff Acceptance

Caregivers are enthusiastic about the redesigned space. *“It wasn’t a big leap to get them to agree with it,”* states Hofmann. *“They were already doing their best to follow high productivity principles. The redesign just gave them tools so that they can do a better job at it.”*



One of the new SPA rooms at St. Elizabeth Hospital.

Measurable Results

St. Elizabeth's "lean" approach resulted in multiple positive outcomes:

- **Cost Savings:** The hospital's revolutionary flexible space solution saved on cost as well as space. If the hospital had created separate ER and OPS areas, they would have had to build 68 patient rooms. Instead, by breaking down these silos and allowing the two departments to "flex" into each other's space, they only needed to create 48 rooms. This resulted in more than \$6 million in construction savings.
- **Increased Volume:** The hospital saw a 40% increase in patient volume in the first 14 months after the expansion was completed. This is attributed to "word of mouth" recommendations from patients who were highly satisfied with their hospital experience. Moving to motorized Stretcher-Chairs offered a Universal Care Platform (UCP) – it's a pre-op chair, procedure stretcher, and post-op recliner all in one. This significantly reduced patient transfers – an important component that helped drive the positive patient impressions.
- **Reduced Time to Discharge:** Hospital nurses observed that using a UCP also directly reduced patient length of stays, another enhancement to the patient experience. Before the renovations, patients frequently experienced post-operative nausea because they had to stand in order to transfer from a stretcher to a chair. Since the new UCP is both a stretcher and a chair, it permits a gradual transition from the supine to the sitting position. As a result, nausea is significantly reduced and patients feel ready to leave the hospital sooner. In addition, patients can operate the control pendant themselves, so they determine the speed of their transition. This results in a feeling of personal empowerment.
- **Items Learned:** In retrospect, there is one metric that hospital administrators acknowledge. Initially, the hospital designed and specified the size of its doorways to accommodate traditional, bulky stretchers, before they became aware of the UCP alternative. As a result, the cost of each door was \$10,000. If the hospital had been able to specify TransMotion's UCP at the earlier design phase, it's more compact footprint would have allowed them to save an additional \$250,000 in construction costs.

Summary

With the Lean Process and Universal Care Platform™ equipment, St. Elizabeth Hospital has resolved an inherent contradiction in today's healthcare environment; they have used the process efficiencies that economic realities demand to deliver care that is more personalized than ever. Through extensive research and analysis, detailed planning, and comprehensive testing, they have created an innovative, flexible ED/SPA area that significantly improves the overall patient experience, maintains quality of care, and increases staff efficiency. The team's principles and methodology might just serve as a roadmap for other healthcare institutions seeking to stay ahead of the curve in patient satisfaction and cost management.

REFERENCES

1. 2010 Harvard Business Review, HBR Blog Network, by Ron Ashkenas, managing partner of Schaffer Consulting and a co-author of The GE Work-Out and The Boundaryless Organization, <http://blogs.hbr.org/ashkenas/2011/01/hospitals-can-work-better.html>
2. 2006 NurseWeek Magazine, McPeck, P., Watching Our Backs – RNs Get a Lift From 'No Lift' Policies, <http://news.nurse.com/apps/pbcs.dll/article?AID=2006606190306>
3. www.TransMotionMedical.com

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TransMotion Medical, Inc.

1441 Wolf Creek Trail
Sharon Center, OH 44274
(330) 239-4192 or
1-866-860-8447 (U.S. only)

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