Barnes-Jewish Hospital Enhances Quality Patient Care by Embracing Lean

by Sarah Kinkade and Laurie Wolf

A large organization can have its advantages, but a seamless learning curve to embrace lean methodology, unfortunately, is not one of them. Faced with a hospital of staff with varying education levels, the Barnes-Jewish Hospital operational excellence team was challenged with ensuring that all employees understand lean and how to integrate lean into their daily work.

About Barnes-Jewish Hospital

Barnes-Jewish Hospital at Washington University Medical Center is the largest hospital in Missouri and the largest private employer in the St. Louis region. An affiliated teaching hospital of Washington University School of Medicine, it has a 1,800-member medical staff with many who are recognized as “best doctors in America.” Barnes-Jewish Hospital is a member of BJC HealthCare, one of the nation’s largest healthcare organizations. In 2009, the 9,400 employees at Barnes-Jewish staffed more than 1,100 beds and treated 54,700 inpatient admissions.

The hospital is consistently named on the honor roll of America’s Best Hospitals by U.S. News & World Report. The only Missouri hospital to make the publication’s honor roll, Barnes-Jewish has been listed on the honor roll annually since 1993. In addition, Barnes-Jewish was the first adult hospital in Missouri designated as a Magnet hospital by the American Nurses Credentialing Center in 2003. This is the highest national recognition for excellent nursing practice in hospitals. Barnes-Jewish received re-designation as a Magnet hospital in 2008.

Transforming Performance Through Lean

Beginning with traditional performance improvement efforts in 2003, the hospital experimented with consultants and internal leadership, but generally achieved the same result each time: pockets of success that were rarely sustained. Then in 2007, the hospital leadership pulled together a team of management engineers, known as the operational excellence department. By combining clinical and manufacturing backgrounds, all with a foundation in lean or Six Sigma techniques, the team made improvements by implementing value streams. The major difference in a value-stream improvement was the ability to sustain that success over time. In 2009, a team from the Barnes-Jewish women and infants department presented results of value-stream process improvements as a finalist in ASQ’s International Team Excellence Award (ITEA) process. The team’s sustained improvements in admitting and discharging patients won an award for the best safety project.
Unfortunately, these successful interventions were not widespread to other areas. The shortfall to this process occurred when a patient came to the hospital and was treated in more than one area. For example, if a patient arrived in the emergency department, where lean activities have made processes very efficient, then traveled to radiology for an x-ray and waited for three hours, the hospital as a whole was not functioning efficiently. Knowing these silos would never produce an entire lean organization where the patient could flow easily throughout, the operational excellence team implemented a lean curriculum to educate every employee.

As the hospital began to use lean tools such as value-stream analyses and kaizen events, it saw change occur more quickly than with traditional performance improvement approaches. Although individual value streams were realizing impressive results, this success was not widespread. Cultural change was slow, partly due to the small number of employees involved in events, and the even smaller number of employees who truly understood lean. The hospital needed a variety of tools that would enable wide diffusion and adoption of lean principles to achieve true cultural change within the organization. By focusing on educating all employees, the team chose to develop a lean curriculum.

**Developing a Lean Culture**

Throughout 2008, the operational excellence team developed the curriculum with help from the organizational development team and hospital leadership to ensure every employee, regardless of job title or education level, would have “enough” and the same knowledge of lean. The operational excellence department teaches each lean curriculum course, ensuring that each course is taught in the same way. Though this method is a strain on the department’s time, team members felt it was the only way to accomplish the goal.

Each member of the leadership team was asked not only to participate in the lean curriculum, but to help lead the educational session for his or her employees. In essence, the leaders were pulling the lean strategy through each department. As leaders experienced the education with their employees, they seemed to embrace the concept much better than if they sent their employees to participate without understanding the lean process themselves.

John Lynch, MD, chief medical officer at Barnes-Jewish, says the hospital has created a great model for other healthcare organizations to follow. “Lean management techniques have been around manufacturing industries for many years, but their application to healthcare is relatively new,” he says. “At Barnes-Jewish, we have found a way that works well in our healthcare environment to teach every employee about lean and how it can improve their daily work.”

The implementation of lean curriculum aligns with the organizational strategy in every area. The six strategic focus areas of the hospital are safety, quality, service, people, innovation, and financial health. The various lean tools can be applied to multiple strategies and improve each metric the hospital tracks. As a result, lean is literally shown as the hospital’s foundation on the strategic map and called “the way we work,” as shown in Figure 1.

During the curriculum rollout, employees from many departments were eager to attend the course and immediately began improvement projects as soon as they completed the training. This initial enthusiasm made the rollout time intensive for the operational excellence team, but after six to nine months, subject-matter experts were comfortable running events on their own and new requests decreased. The next challenge was deciding how to engage the remaining directors that did not respond to the “pull” request.

Through partnering with the organizational development department, lean curriculum was added to every employee’s required annual competency list. This ensures that every employee attends the basic lean course, and it also provides a tracking mechanism. Though implementation is still in process, the culture has shifted at the hospital already. The administration has complete buy-in to lean methodology and hundreds more employees are participating in lean events. Figure 2 depicts the

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**Figure 1—Lean as the foundation for Barnes-Jewish Hospital’s current strategic map**

<table>
<thead>
<tr>
<th><strong>Our Mission</strong></th>
<th><strong>Our Vision</strong></th>
<th><strong>Our Values and Service Behaviors</strong></th>
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</thead>
</table>
| Barnes-Jewish Hospital takes exceptional care of people. | Barnes-Jewish Hospital, along with our partner, Washington University School of Medicine, will be national leaders in medicine and the patient experience. | • Integrity  
• Compassion  
• Accountability  
• Respect  
• Excellence |

<table>
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<tr>
<th><strong>Our Goals</strong></th>
<th><strong>Innovation</strong></th>
<th><strong>Finance</strong></th>
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<tbody>
<tr>
<td>Safety: Avoid all preventable harm</td>
<td>Innovation: Build clinical programs that are national leaders</td>
<td>Finance: Generate earnings to sustain mission and pursue vision</td>
</tr>
<tr>
<td>Quality: Provide the best possible care</td>
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<td>Service: Develop superb customer experiences</td>
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<tr>
<td>People: Attract, retain, and develop a high-quality, diverse workforce</td>
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**The Way We Work**

Lean Thinking
- Add value, eliminate waste
progression of lean over the years as various strategies (such as traditional performance improvement, Six Sigma, and lean) were implemented at Barnes-Jewish Hospital.

The operational excellence department established a solid foundation of lean by focusing on a lean training program with modules in 5S, standard work, problem solving, and managing for daily improvement. This lean training initiative, combined with traditional process improvement, Six Sigma, and other culture-changing tools, is achieving enhanced quality in patient care and a safer environment for employees, patients, and visitors. Every department that participates in a focused lean module is required to designate a local subject-matter expert to serve as the resource for others to turn to after the module is in place, as shown in Figure 3. This subject-matter expert is an employee of the local department, usually a unit secretary or project coordinator, who can handle the additional workload and is eager to expand his or her skills. By training an expert, the operational excellence department can focus on the overall strategies of the hospital instead of becoming over-involved with 5S in every area.

In addition to education of the seasoned staff, every new employee is now introduced to lean methodology as part of the two-day new employee orientation. The major lesson learned for the hospital was to make sure every employee knows the importance of lean methodology. Without that, culture change cannot be achieved. Change management techniques taken from a Destra Consulting program called Accelerating Change and Transitions™ (ACT) were also useful. ACT tools provide a road map to establish shared goals methodically and then assemble the components to ensure acceptance and commitment. ACT includes familiar tools such as threat-opportunity analysis, stakeholder analysis, and the elevator speech.

To keep an eye on lean progress, the operational excellence department tracks metrics, such as how many employees participate in lean events, how many events happen each month, the number of employees who are exposed to lean through lean curriculum, and how often an event team gives an outbrief presentation to hospital leadership.

The operational excellence team also tracks which value streams are currently working to improve patient flow throughout the hospital. Each value stream’s information is posted for all employees to see. Many departments keep a strategy wall for employees to keep up with what is happening.

Improving the Patient Experience and Increasing Efficiency

Results of the program include a high-quality patient experience and improved efficiency throughout the hospital. The tangible results from the lean curriculum process were seen through the progress of lean education in the organization. As of January 2010, approximately 9 percent of all staff has participated in lean activities, compared to only 2 percent involved in prior performance improvement activities, as shown in Figure 4.

Other benefits of the educational program include a standard education for all employees designed to level-set the entire organization. A subject-matter expert is available when needed at the gemba (the place where value is created for customers through daily work) in each department. Subject-matter experts also help with sustaining and handling new projects to allow management engineers to manage a greater number of projects at the same time. Hospital leaders expect lean principles to be evident in every decision.

The trust and teambuilding created between multi-disciplinary departments is the most valued result. This is validated
continually at every outbrief session to hospital leadership. The teams presenting are becoming more and more interdisciplinary, showing a true teamwork mentality.

Although each enterprise goal is influenced by multiple factors, progress can be linked to the organization’s efforts in lean transformation. As depicted in Figure 5, comparing metrics achieved in 2009 to 2008 shows that improvement occurred in the hospital’s operating margin, employee turnover rate, patient safety scorecard, oncology growth, patient satisfaction scores, and average length of stay for patients.

**Figure 4—Percentage of employees involved with lean activities**

![Graph showing percentage of employees involved with lean activities]

**Figure 5—Improvements linked to the lean transformation**

![Graph showing percent improvement 2008-2009]

**Continuing the Lean Transformation**

In addition to improved metrics, the hospital successfully implemented 13 software system changes, including a provider order entry system.

The method of team management is changing as the transformation journey matures. The hospital is now viewed by service lines—similar to a product family. Figure 6 illustrates this in a matrix that lists service lines in the horizontal rows and support services in columns. For example, the matrix can be used to show that inpatient medicine must rely on radiology, pharmacy, and labs to provide high-quality patient care. Viewing the enterprise at this high level helps reveal where to deploy resources.

Performance boards that relate directly to the strategic goals are posted throughout the hospital. Service line and ancillary support departments are beginning to manage performance accordingly. Status updates are published hospital-wide through e-mail, hospital publications, and Friday outbriefs.

**Sharing Results**

The operational excellence team presented the lean transformation project at the ITEA process during the World Conference on Quality and Improvement in May 2010. The presentation focused on how implementing a lean curriculum program in a large organization of 9,400 employees can instill and sustain a culture change in a diverse environment. This team project earned a people’s choice award for best innovative idea for internal customers.

For Barnes-Jewish Hospital, lean is a balancing act of diffusing lean thinking to all employees while guiding project work with a strategic focus through value-stream activities. The team’s journey is establishing the foundation necessary for Barnes-Jewish Hospital to lead healthcare reform and remain a national leader in medicine.

**Figure 6—Barnes-Jewish Hospital’s enterprise service matrix**

![Matrix showing service lines and shared service functions]
For More Information

- To learn more about Barnes-Jewish Hospital, visit the organization online at www.barnesjewish.org.
- For further details on this team project, contact Kent Rubach, operational excellence director, at krubach@bjc.org or 314-747-1840.
- Details on the ASQ International Team Excellence Award process are available at http://wcqi.asq.org/team-competition/.

About the Authors

Laurie Wolf is a Certified Professional Ergonomist with a master’s degree in human factors engineering. She is an ASQ Certified Six Sigma Black Belt. Her recent Lean Six Sigma work at Barnes-Jewish Hospital involves physician services on 13 medicine units for patients from admission to discharge, resulting in a safer environment for both patients and employees.

Sarah Kinkade works in the public relations/marketing department at Barnes-Jewish Hospital, focusing on internal communications. She is dedicated to communicating the improvement initiatives, such as lean, at the hospital to employees and externally to the public. She has a bachelor’s degree in communications and a master’s degree in business administration.