

John Black & Associates White Paper – Obstetrics and Lean.

October 12, 2011. Prepared by Gail Sausser, JBA Consultant. Approved by John Black. Requested by John Black in support of 3p Lean Design Workshops conducted by JBA, November and December 2011, to ensure patient-focused design for the new Children’s Hospital, Saskatoon Health Region, Saskatchewan Province, Canada.

A critical review of the research literature on Six Sigma and Lean included only articles that were published in a peer-reviewed journal, described a specific intervention, were not a pilot, generated quantitative data, and were not review articles.¹ This review included a study applying Six Sigma (a Lean-related improvement methodology) in an obstetrics and gynecology clinic. The following results were documented in a hospital-based women’s medical center clinic and compared with a control group:

Wait times for new obstetrical visits decreased from 38 to 8 days. The patient time spent in the clinic dropped from 3.2 to 1.5 hours. Initial gynecologic visits increased by 87% (from 453 to 850 per year), return gynecologic visits increased by 66% (from 1392 to 2311 per year), initial obstetrical visits increased by 55% (from 520 to 808 per year), repeat obstetrical visits increased by 45% (from 2239 to 3243 per year), and the mean patient satisfaction scores increased from 5.75 to 8.54 (on a 10-point scale). The gross clinic revenue increased by 73% in the first 6 months of 2006 over that of the previous year. By contrast, (the control group) internal medicine patient wait times for new patients and for revisits, patient satisfaction scores, total number of clinic visits, and revenues remained unchanged.²

It should be noted that the metrics associated with these methodologies are generally not intended to be research. The proof generated from Lean implementation is in rapid trial and error (PDSA) and rapid use of simple metrics that can be sustained by the process owner to determine if the intended results have been sustained. Research would have to be funded, would be slow to produce results, would need funding and research infrastructure, and would likely not be sustainable by the process owner as a part of their clinical workload.

A recent clinical practice book for obstetrics and gynecology states the need for lean improvement methods.

“Using the lean production method, Toyota engineers have achieved high levels of reliability, quality and cost control. Health systems are in the process of systematically redesigning work using these proven methods.”³ Eliminating patient waiting, reducing delays from batching work, eliminating defects and reducing unnecessary steps in the process, are all Lean objectives cited as needed for the practice of obstetrics and gynecology.⁴

Four years ago, the Agency for Healthcare Research and Quality (AHRQ) at the U.S. Department of Health and Human Services published: “Managing and Evaluating Rapid-Cycle Process Improvements as Vehicles for Hospital System Redesign: Challenges and Lessons Learned.” This publication stated the following benefits were seen using Lean improvements in the design of the healthcare facility:

A Lean tool variant of 3P was applied to assist with planning a move to a new wing of the hospital. Through the application of this tool, it was demonstrated that the obstetrics staff walk fewer steps each day to complete their job tasks. The project team has also been able to

demonstrate that, through the use of this tool, patients who use these services travel faster through the hospital, creating improved throughput (flow) in the new buildings compared with throughput in the older buildings.⁵

At Baystate Medical Center, Lean work focused on six Value Streams, including one dedicated to Obstetrical Care. “This team has established and implemented a post-partum perfect care check-list and now provides patients with estimated time of discharge. This has been a patient satisfier.”⁶

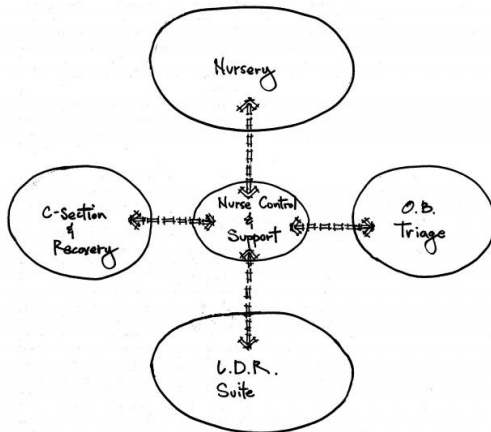
After Hurricane Katrina, Woman's Hospital in Baton Rouge, Louisiana experienced a significant census increase. Although staff felt they were operating at full capacity and doing all they could to treat and discharge patients in the mother and baby unit, patients ended up assigned to less optimal overflow areas in the hospital. Physically expanding the department was not an option. A multi-disciplinary Lean group looked at the current process using Lean:

“The first order of business for the multidisciplinary group was to map out the current process. In doing so, they learned that admissions and discharges to the mother/baby unit were occurring at the same time. Additionally, many processes and activities occurred on the day of discharge. The average length of stay for vaginal deliveries was 51.6 hours and for cesarean deliveries, 79.7 hours.”⁷

“By applying such Lean tools as value-stream mapping and 5S and kanban methodologies, and engaging the front-line staff in finding solutions, the department started to transform.” The improvements are reaping results. “The average length of stay for vaginal delivery has decreased by 2.2 hours and 7.5 hours for cesarean section deliveries. And based on preliminary informal comments and interviews, Vidrine and Terrell also expect an increase in patient and employee satisfaction.”⁸

Gary Vance states that Obstetrical Nursing Units are unique operational areas of a healthcare facility and can be greatly improved by Lean design. Specifics are set forth below.

Unlike other areas within the healthcare environment, the utilization of the Obstetrical Nursing Area is variable and unpredictable. Although the annual total utilization of this clinical unit is consistent and predictable, the daily and monthly variability is why there are so many lean design opportunities.⁹



Above: Operational Flow Diagram

Below are examples of lean design opportunities stated in this publication from both operational and facility design improvements:

- Expectant Mom entry, registration and admission into the healthcare environment
- Staffing efficiency among LDR, C-Section, Triage, Nursery & Post Partum Nursing
- Separation of Front Stage and Back Stage functions
- Efficient and functional flow of the various patient types and clinical scenarios
- Flexibility to allow Obstetrical Services to operate in different scenarios
- Flexibility to allow Obstetrical Services to operate with minimal and maximum volumes
- Mechanical Systems that only operate when specific areas require functionality
- Equipment and finishes that are sustainable and contribute to a healing environment

The strengths of Lean are compatible with the strengths of Obstetrics Units. The core value of Lean is to always put the patient first. The innovations and improvement ideas come from the experience and caring of the staff that actually performs the work, not from the outside advisors. Lean consultants teach how the process can be used to see the waste, help teams focus on the right targets and facilitate change – but the pillar of Lean is always respect for people. In the end, your staff will be able to say, “We did it. We really improved the care of our patients.”

An obstetrics practice has publicly stated that it embraced Lean for the following reason:

“So patients can have a stress-free visit and our staff can be more organized and efficient,” said Ruth White, Atrium ObGyn Practice Manager. “A less stressed staff will result in better care for patients, and better care is what this practice is all about.”¹⁰

¹ Vest, Joshua R and Gamm, Larry D, “A critical review of the research literature on Six Sigma, Lean and StuderGroup’s Hardwiring Excellence in the United States: the need to demonstrate and communicate the effectiveness of transformation strategies in healthcare,” *Implementation Science*, 4(35), 2009, doi:10.1186/5908-4-35.

² Bush SH, Lao MR, Simmons KL, Goode JH, Cunningham SA, Calhoun BC: “Patient access and clinical efficiency improvement in a resident hospital-based women’s medicine center clinic.” *Am J Manag Care* 2007, 13:686-690.

³ Reece, Albert E and Barbieri, Robert L., *Obstetrics and Gynecology: The Essentials of Clinical Care*, Thieme Publishing Group, 2010.

⁴ Reece, supra.

⁵ Agency for Healthcare Research and Quality (AHRQ), U.S. Department of Health and Human Services, *Managing and Evaluating Rapid-Cycle Process Improvements as Vehicles for Hospital System Redesign: Challenges and Lessons Learned*, *AHRQ Publication No. 07-0074-EF*, September 2007. <http://www.ahrq.gov/qual/rapidcycle/rapidcycle3.htm>,

⁶ Baystate Health Quality Measurement and Improvement, "Lean Performance Improvement," 2011. <http://baystatehealth.com/Baystate/Main+Nav/About+Us/Quality/Quality+Report/Quality+Report/Quality+Measurement+and+Improvement/Lean+Performance+Improvement>

⁷ Towne, Jennifer, "Moving Lean Beyond the Emergency Department, H&HN: Hospitals & Health Networks; Nov 2010, Vol. 84 Issue 11, p54.

⁸ Towne, supra.

⁹ Vance, Gary, "Lean Design - Obstetrical Nursing Services," BSA Life Structures, June 11, 2011. <http://blog.bsalifestructures.com/blog/lean-design>.

¹⁰ "Atrium Obstetrics & Gynecology Goes Lean and Calm," Industrial Extension Service, NC State University, Feb 2010.