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Best practices for integrating Lean into the medical-design process



By Barbara Anderson and Elsa Mersereau

Lean principles are regularly employed in healthcare organizations as a process-improvement methodology. Increasingly, Lean thinking is a consideration during the design of healthcare projects in an effort to improve workflow, eliminate waste and enhance patient-centered care. Lean provides the opportunity to improve the experience of caregivers, patients and families with the highest quality of care while reducing costs. By identifying the foundational differences and challenges in integrating Lean thinking as part of a design process, stakeholders will be primed to chart a new approach to the design of healthcare environments.

Traditional vs. Lean processes

Integrating Lean thinking into the design process alters the way design teams conceptually approach a project. The traditional and familiar architectural process used to design medical facilities involves sequential steps that build on information, layer by layer. In this traditional approach, each project phase is accomplished by gathering information from users and

consultants and documenting it electronically in AutoCAD or Revit. This is often done without much consideration for the operational changes that may occur within the new space.

In a Lean approach, the space program document — an inventory of all the functional spaces needed with an estimate of the size and quantity of the space — is used primarily at the project management level to identify the overall amount of space to be developed and the project budget. In the Lean design process, the space program outlines the boundaries of the project for the clinical users. The design and the arrangement of the program, within these boundaries, is defined iteratively by selected core team members that work together to plan the project from the inside out.

Lean requires substantially more upfront planning time than a traditional architectural approach. In Lean design, the team co-facilitates events and takes a leadership role in order to integrate all of the operational considerations into the project. In a traditional approach, the design team presumes the client has done this work internally and is prepared to share it with the design team.

Lean design planning

During the pre-design effort, the team evaluates the “current state” of key operational flows and processes to define the “future state” of the operations and care model. The operational planning that takes place during Lean design events is focused on streamlining existing processes and procedures to inform the layout and configuration of the space. Based on the organization’s commitment to Lean, roles are adjusted and the process for planning and design is developed.

Lean design events are often conducted for three to five consecutive days and include a Lean consultant (if involved), core team members and several members of the design team. Lean design events must be carefully choreographed to layer sequential decision making. This may be jointly accomplished by the design team and the Lean consultant. Leading these events requires that design team members have the skills to facilitate diverse groups of stakeholders, and the ability to prioritize and introduce Lean concepts to drive conceptual layouts. Event activities include simulations in full-scale mockups of patient and caregiver spaces, providing a living laboratory to create, test, evaluate and modify prototypes.

Opportunities and benefits

When Lean is fully integrated into the design process, the benefits to the organization are endless. Opportunities for improvement include increased operational efficiency, reduction of unnecessary space and improved patient and caregiver satisfaction. Lean design helps answer questions like, “How can we improve our current work process?” and “How should the physical space be configured to support this improved work process?” Testing

in full-scale mockups enables the people closest to the work to engage in the process of answering these questions.

In one recent project, a multi-specialty care clinic used Lean principles to meet key objectives and target metrics to increase throughput, while reducing non-patient care spaces by 23 percent, maximizing flexibility, reducing lead times to shorten patient visits and grouping common patient flows to overlap support.

Exam rooms were increased to a universal size that meets the care needs of all multi-specialty groups. The ability to flex these rooms resulted in a 30-percent reduction in the number of exam rooms. In addition, the new operational model has served as a physician recruitment and retention tool.

Operational efficiencies are a common goal of Lean improvements. For example, a project combining a medical and dental clinic into a new replacement facility predicts significant supply chain efficiencies. Redesigning and standardizing the

process for inventory management for the clinics estimate the following results:

- > Consolidate and standardize supply inventory to reduce supply costs by approximately \$180,000.
- > Save eight hours in clinical staff time ordering supplies per week at both clinics; a savings of approximately \$40,000 per year.

Lean events provide an opportunity for the cross-pollination of ideas. This heightened level of engagement brings excitement and energy to teams, with the full recognition that it is creating a healthcare facility for the future. The recent design of a new critical access hospital in Pendleton, Ore. serves as an excellent example. It increased the employee engagement score from 30 to 95 percent (national percentile ranking) within one year.

"We just received our most recent employee survey scores and the new hospital has definitely had a positive impact on these scores, especially employee engagement," said Jim Schlenker, interim

CEO, St. Anthony Hospital, Pendleton, Ore. "After all, Lean was a very important part of the whole process to getting us on the right path."

To maximize the opportunities of Lean, the design process must be altered to fully integrate Lean principles. No Lean design process is the same. Lean is a holistic, iterative process that can benefit the design of healthcare facilities to provide a positive impact on productivity, cost, quality and timely delivery of services.

Barbara Anderson, RN, MN, is senior medical planner at ZGF Architects LLP. Her more than 12 years as a clinical nurse and over 22 years of experience combined with her knowledge of Lean, provides a unique perspective in bridging the gap between operations, planning and design.

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