SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

To study how Lean practices can contribute value to schematic design phases by providing resources and support to project leaders and architects.

DESIGN IMPLICATIONS

Design interventions of the studies are discussed in the findings. Practitioners should be encouraged to work with their clients to develop research studies based on design interventions.

Integrating Lean Exploration Loops into Healthcare Facility Design: Schematic Phase

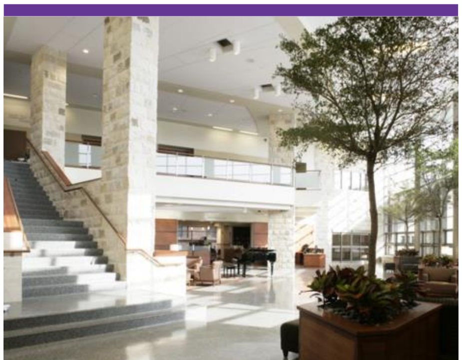
Johnson, K., Mazur, L.M., Chadwick, J., Pooya, P., Amos, A., McCreery, J., 2017 | *Health Environments Research & Design Journal, Volume 10, Issue 3, Pages 131-141*

Key Concepts/Context

Lean Exploration Loops (LELs) are part of a Lean production methodology that involves thinking preemptively about the "next steps" within a process and rapidly generating, testing, and evaluating these next steps prior to any formal narrowing-down of viable options. Lean production models are applied within healthcare environments in a variety of ways; however, this study is unique in how it presents the use of LELs during the "schematic phase" of construction planning for a new large surgical tower. Although the schematic phase usually entails determining the layout for each floor of a given building, this study focuses only on the second floor of the new tower due to its role as the "master floor."

Methods

The Lean team used recent data from a related healthcare facility to estimate the capacity needs of the new pre- and post-op bays in the surgical tower. During "round 1" of LELs, architects presented large posters of potential designs for the second floor, allowing the team to target problematic designs and calculate utilization rates. Before round 2, the Lean team coordinated short (2-4 hour), focused meetings called "express workouts" (EWOs). These were used to explore specific goals and processes with relevant stakeholders. The EWOs produced material for analysis in the round 2 LEL, in which process maps for workflows within several areas on the second floor were printed and hung in a conference room for easy reference. Once these maps were assessed, another set of EWOs took place. The round 3 LEL used information from previous rounds and EWOs to further narrow down preferred floorplans among the team. A post-round 3 discussion was held in which physical models were employed to help visualize specific design concepts.



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Findings

Three rounds of LELs and supplementary EWOs produced a set of final schematic recommendations, which included 12 pre- and post-op bays per operating room (OR) floor; ORs built with scrub sinks, doors, and stretcher alcoves in standard areas; two-sided pre- and post-op bays featuring inner clinical workspaces and outer patient transport corridors; elongated and narrow equipment storage and sterilization areas; and a "communicating" elevator and centrally-located stairwell for staff to relieve stress from main elevator shaft usage. The authors conclude that the use of LELs was particularly helpful during the schematic phase of design due to its ability to zero in on operational issues.

Limitations

This is a case study that focuses on one particular project; as each construction project is unique, results from using LELs may vary. While this study outlines the uses and effects of LELs, there is little insight into how many participants perceived their usage. The lack of qualitative data from participants during the case study, as well as quantitative data from after the LEL-informed designs have been put into action, leaves room for further exploration into the application of LELs.