SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

To study a multidisciplinary team's application of Lean production methods to increase capacity, improve flow and communication, and meet patient expectations in a newly redesigned endoscopy unit.

The Participative Design of an Endoscopy Facility using Lean 3P

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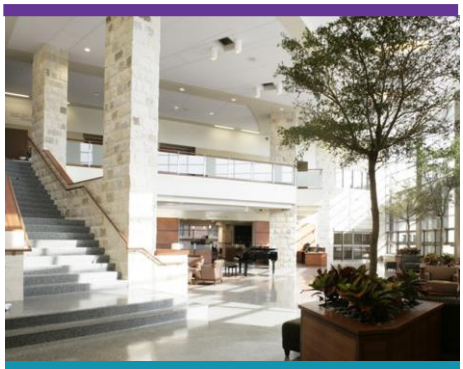
Key Concepts/Context

Demand for endoscopies in the United Kingdom is increasing, contributing to mounting wait times and physical stresses on treatment environments that struggle to handle the growing volume of patients. When one endoscopy unit moved to redesign their facility to better accommodate higher capacities and generally enhance facility performance, researchers saw an opportunity to study the application of the Lean "3P" (short for production preparation process). This is a design method that engages cross-functional stakeholders in a new department's design stages. The Lean 3P method works to provide a structured approach for clinical and corporate staff to collaborate with patient representatives, ensuring that several unique perspectives are incorporated into the design process. During this study, "point of delivery" (POD) principles were also emphasized, which focus on providing dignity and privacy to patients through informed design decisions.

Methods

Lean tools were used to varying degrees during each stage of the study. To gauge the "current state" of the endoscopy facility prior to planning and implementing new designs, historical data from the facility's information system were analyzed with oversight from endoscopy team members. This step allowed researchers to understand how the flow of personnel, supplies, and activity affects their daily procedures. For the design intervention itself, the Lean 3P method (production preparation process) was used, which involved scoping, planning, and data collection and analysis. Design tools typical for Lean 3P methods include various prototyping techniques, organizational games, idea generation exercises, flow and process mapping, fishbone diagrams, and more.



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Findings

The multidisciplinary team that used the Lean 3P method designed an improved endoscopy facility that reduced patient travel distances by 25.8% per procedure and staff travel distances by 27.1% per procedure. The design also resulted in a 25% increase in treatment capacity while floor space was only increased by 13% in total. The prototyping exercises involved in Lean 3P were noted for being especially useful for participants from different backgrounds.

Limitations

The authors note that since this is a single case study, it may not be feasible to apply these findings to all usages of Lean 3P. The overall space available to the endoscopy department was limited to a relatively small increase in footprint size, which may have influenced the potential of the Lean 3P exercises. Load-bearing walls and steel beams presented architectural difficulties when it was time to implement the new design.

Design Implications

Using the Lean 3P method can be a useful way to incorporate a variety of perspectives from multiple disciplines. The collaborative design process afforded by the Lean 3P structure can potentially generate innovative, unsuspected design strategies that could result in greater healthcare delivery overall.