

Improving Preoperative Throughput

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Preoperative throughput is an important piece in achieving the perioperative goal for first case on time starts. An inefficient preoperative (preop) department can delay surgery starts and impact the patient flow throughout the day. Research is abundant in applying lean six sigma principles in the operating room, however there are minimal studies that specifically apply these tools in the preop. The perioperative process includes the preop, operating room, and the postoperative departments. All areas have to run like a well-oiled machine to improve performance and achieve positive outcomes. This article will discuss the implementation of new practices in preop along with the benefits and obstacles identified during the pilot study.

Keywords: *perioperative, preoperative, throughput, first case on time starts, complex adaptive leadership.*

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FIRST IMPRESSIONS ARE ESSENTIAL as health care organizations are focused on patient satisfaction. On the day of surgery, the preoperative (preop) area is the first department the patient and family visits. The preop department has the ability to prevent errors and halt a process before a sentinel event can occur. The department has to run like a well-oiled machine as many systems have to work together, functioning efficiently. Change and progress is an arduous task; however, it may be the answer to producing great revenue while reducing expenses. According to Garner,¹ the perioperative department is the most costly, but produces 40% of the revenue for the hospital.² For example, in an operating room (OR), the costs average \$10 to \$30/minute.³ Highly complex day-to-day operations focus on improving efficiency,

reducing waste, and increasing productivity, while cutting costs and decreasing resources. Literature is abundant pertaining to OR efficiency and throughput; however, literature on the preop department is not as prevalent. Sutherland and Heuvel⁴ reviewed workflow in the OR at the University of Maryland Medical Center and found that strategies were developed to improve anesthesia, add-on cases, scheduling, preference list, and postanesthesia care unit (PACU). Discussion regarding the workflow was not included in their study.

It is imperative to evaluate patient flow throughout the perioperative period to produce successful surgical outcomes. There are a number of variables that can affect the surgical patient flow and cause numerous delays or cancellations during the day. Effectively evaluating current processes in each department will provide a better picture of areas that are working well, and those that need improvement. Using process improvement methods are vital in removing barriers or obstacles that stymie flow. This article will focus on the first component of the perioperative department, the preoperative area, and streamlining its operations to improve OR first-case on-time starts.

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Complexity Theory and Complex Adaptive Leadership Model

First-case on-time starts have been a perioperative initiative in many health care organizations. The preop department is where the surgical process begins. It focuses on operational performance that can reduce labor costs and improve customer satisfaction. Nursing can be very complex with many variables, especially in the surgical arena. Because nursing has the largest staff and the highest expense in an organization, it is vital that we analyze current practices and ensure that they work best in that specific setting.⁵

It is critical to point out that the preop department has a number of unexpected events that occur, which impact the response of registered nurses (RNs) adjusting work processes to overcome the situation. Three examples of unexpected events include laboratory results out of normal range, patients arriving later than the expected arrival time, and patient condition changes. These interruptions occur daily, and adjustments have to be made. According to Vardaman et al,⁵ “nurse workflow behaves as a complex adaptive system” (page 79). The nursing environment often includes nonlinear processes and unpredicted events that interrupt workflow patterns. Workflow in health care can be highly complex, but the challenge is adapting to the events quickly without interrupting throughput. Complexity theory explains the need to be adaptable, especially in an environment that is constantly changing such as health care.⁶ Chadwick⁷ completed a study in surgical services that indicated an average of 33 minutes was spent on malfunctions and breakdowns in an 8 hour period per employee. This study illustrates that complex adaptive systems entail complexity science, and surgical services can be seen as a complex adaptive system.

Furthermore, complexity science includes multiple relationships that must occur for the perioperative area to run efficiently. Managers want to control the situation, but they have to be able to supervise in all conditions, whether they are controlled or uncontrolled chaotic events.⁷ Complexity theory allows leadership and team members to think outside the box, which perpetuates the formation of new ideas versus the conventional way of thinking.⁷ Staff’s resistance to change

will most likely be a barrier when implementing best practices.⁸ Additionally, the ability to lead in a complex environment such as the periop area can be challenging in itself, but it is essential to identify ways to motivate staff and physicians.⁷ The complexity theory suggests that empowering staff to take ownership in their work environment creates an atmosphere that supports autonomous leadership.⁷

Literature Review

There are very few articles and research studies analyzing the whole perioperative arena. A case could be delayed by hours if the issue is not caught in preop. Even more important is patient safety. The preoperative team has a great responsibility to catch potential patient safety events that could occur and to prevent them from happening. According to Sutherland and Heuvel,⁴ the periop can be described as an air traffic control service that ensures multiple ORs are prepared for the day, staff have reviewed their assignments, and equipment is available for each case. Communication is critical for updates on circumstances that may occur, such as patient issues, delays, and cancellations. The study states that one-third of the University of Maryland Medical Systems surgical population is added on throughout the day, and surgery times posted are random. An OR facility has multiple scheduled cases running simultaneously. Accommodating unscheduled cases can be challenging, but must be integrated into the process as well. The charge nurse in preop, OR, and PACU should review operations daily, identify challenges that may occur, and fix them early to prevent frustrations.

Fowler et al² examined perioperative services that included preop, OR, and PACU. They researched the periop processes, failures, staff member responses to failures, and process variation. The study goals analyzed periop workflow starting with patient scheduling and ending at patient discharge, but much of the research was limited to specific workflow issues in the preop and PACU. They did state that delays were caused by missing key documents that have to be completed in the preop, delayed laboratory tests, and staff delays. These issues caused a snowball effect causing interruptions in all departments in periop. The study revealed that staff view workarounds as

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