



Introduction

Many health care systems focus on getting first-start cases in the operating room on time as a key metric of efficiency. Pre-operative placement of regional blocks can be time-consuming, particularly when trainees are performing them. Our quality improvement project sought to reduce delays related to regional block placement for our first start cases at Grady Memorial Hospital in Atlanta. Several different methods have been employed at different hospitals including special blocks rooms and block teams (1,2). However, it is apparent that each site faces its own unique hurdles to starting their cases on time.

Methods

We generated reports in EPIC to determine the number of first-start patients who received regional blocks, and the number of those cases that had block placement recorded as a reason for delay. We analyzed the rate of delay by operating room, which correlates to the type of case performed. We also examined whether the delay rate varied by day of the week. Next, we surveyed attending anesthesiologists about barriers to timely block placement and how often they didn't offer pre-operative blocks for fear of being late to the operating room. Based on feedback from the surveys we devised strategies to attempt to improve efficiency in block placement.

Results: Baseline Data

The period from January to September 2017 was selected as our pre-intervention baseline. During this period there were an average of 25 first-start blocks per month. Blocks were identified as being involved in delays to the operating room for 21% of these cases. As Figure 1 shows, this rate varied by operating room, a surrogate for the type of case. Despite a high volume of first-start blocks, our hand service had the lowest rate of delays.

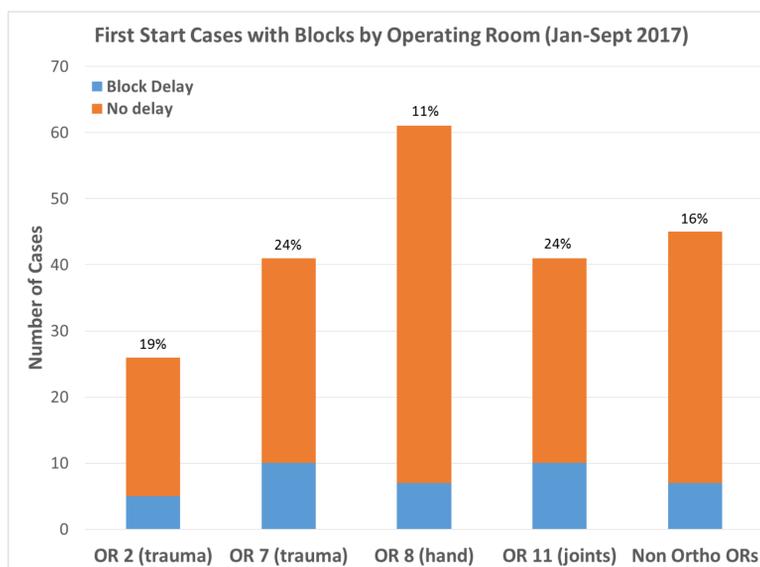


Figure 1. Operating room 8 is set aside for the orthopedic hand service and OR 11 is frequently used for hip and knee replacements. Operating rooms 2 and 7 are used for a majority of the orthopedic trauma cases. Non-orthopedic operating rooms were grouped together for purposes of analysis. The number of cases are depicted by bar height and the rate of delay for each OR is shown above each bar.

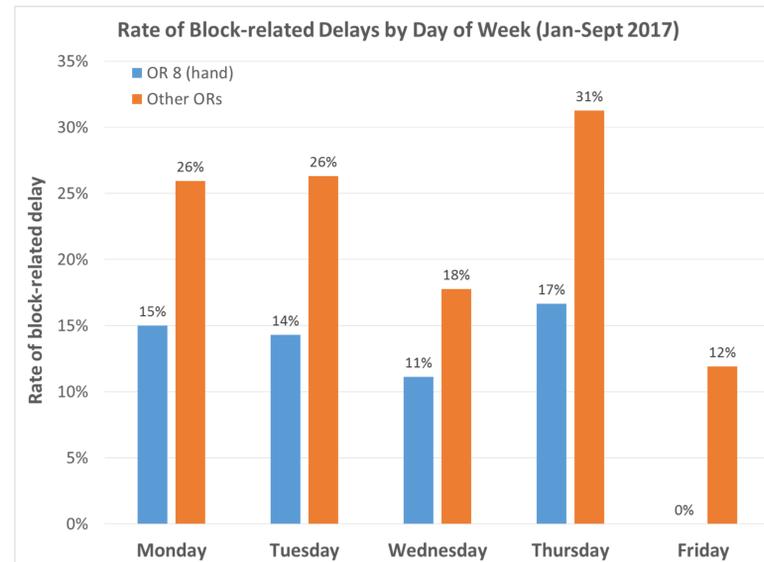


Figure 2. Rate of block delay varied by day of the week. Operating room 8 cases were analyzed separately because the high volume and low rate of delays would skew results for other operating rooms. In both cases the rate of delays were lowest on Wednesdays and Fridays.

Results: Survey Data

Twelve faculty completed the survey, which corresponds to a 60% response rate. The desire to avoid delays led more than half of respondents to forgo first-start blocks at least once per month. Their responses suggest that roughly 15-20 patients each month are not offered pre-operative blocks because of concern for late starts.

Educational conference timing was mentioned by 83% of faculty as a barrier to first start regional blocks. However, there was little desire to arrive earlier to relieve this time pressure. Respondents identified streamlining the process for patients receiving a block, discussing with the surgeon beforehand and acquiring additional ultrasound machines as the three most promising avenues for improvement (Figure 3).

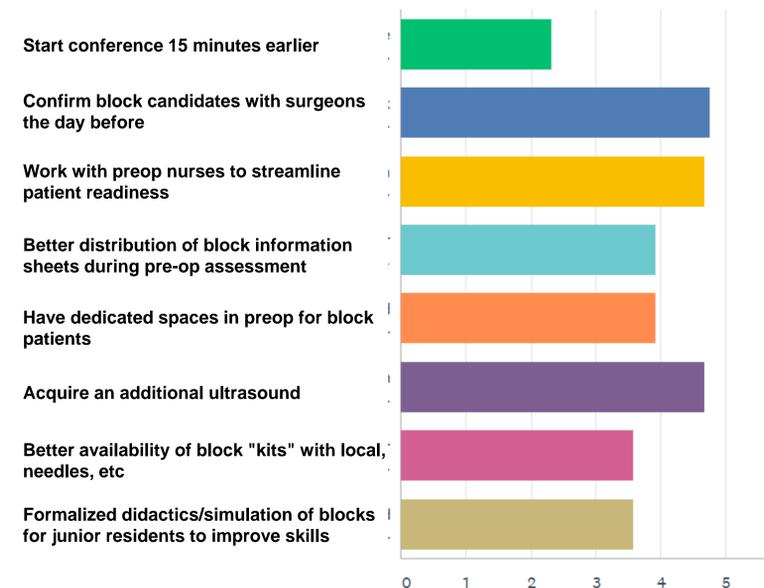


Figure 3. Weighted responses to a question about how aggressively to pursue various changes in an effort to reduce first-start delays due to blocks. The five point scale ranged from "don't waste time on this" (1) to "definitely worth pursuing" (5).

Results: Interventions

In October 2017 one of our Acute Pain faculty began to systematically contact surgeons about block candidates one day in advance. In May of 2018 we began to end conference five minutes earlier. However, during the spring and summer of 2018 we had an increase in the number of days in which at least one ultrasound machine was out for service. Figure 4 shows the volume of first-start blocks and the rate of delay throughout the study period.

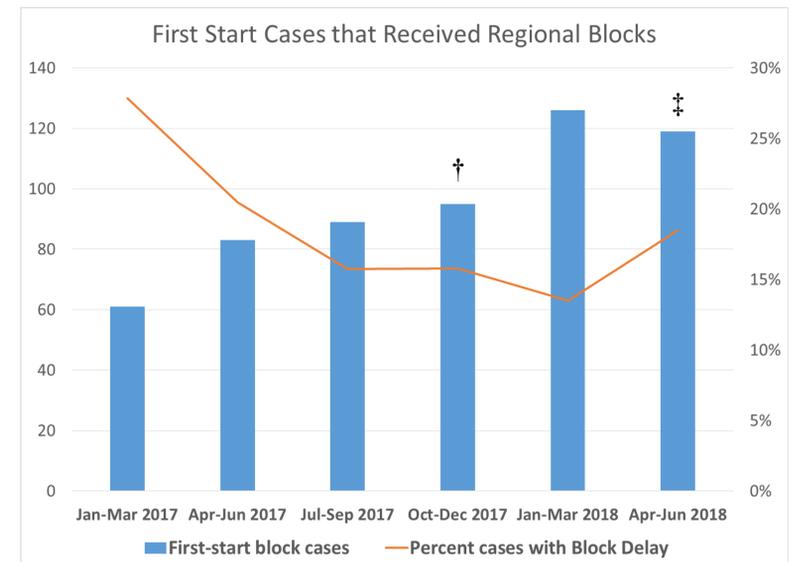


Figure 4. First-start block volume (blue bars) and rate of block delays (orange line) during the baseline (January-September 2017) and intervention periods (October 2017-June 2018). † Start of surgeon communication initiative. ‡ Period of earlier conference stop time and decreased ultrasound availability.

Discussion

Although many factors influence the rate of first-start delays due to regional blocks, lack of communication with the surgeons seems to play an important role. Our orthopedic hand surgeon has a strong preference for regional/MAC. Since this is widely known among the anesthesiologists there is less of a communication barrier for these cases. Also, initiation of a communication intervention led to a stable/decreasing rate of delays during a period of increasing volume (Figure 4, October 2017-March 2018).

The increase in delays from April to June 2018 suggests that a scarcity of ultrasounds can more than offset other improvement efforts. Two additional ultrasound machines have been approved for this year's capital budget.

References

1. Friedman et al. Increasing operating room efficiency through parallel processing. *Annals of Surgery*. 2006;243:1
2. Williams et al. Process analysis in outpatient knee surgery: effects of regional and general anesthesia on anesthesia-controlled time. *Anesthesiology*. 2000;93:2