Abstract Title: Evaluation of Weekend Operating Room Delays at a Level 1 Trauma Center: A One-Year Retrospective Analysis

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Problem of Need Addressed by the Project/Aim Statement: Healthcare expenses are increasing but often fall short of patient's expectations of quality care. Operating rooms (OR) are a vital, yet expensive, hospital resource and, as a result, represent a key target for reducing healthcare costs. On-time case starts for first cases of each day are a widely used metric for determining OR efficiency. This retrospective case-study aims to utilize the electronic medical record (EMR) to quantify the most common causes of delayed starts to first cases on weekends within the Department of Orthopedic Surgery at an academic level 1 trauma center.

Description of measures/QI methodology or approach used in development of the interventions: An institutional EMR was reviewed to identify the first-start weekend cases between January 1, 2022 to January 1, 2023. Inclusion criteria consisted of orthopedic surgery trauma-related weekend cases, staffed by the on-call general orthopedic trauma attending surgeon. Pre-scheduled, non-trauma cases were excluded. Additionally, cases posted after 4am on the weekend were excluded. "On-time" case start was defined as documented "in-room" time of 07:30. Statistical comparisons were completed, including an ANOVA to account for delay variability and weekend day occurrence.

Results/Evaluation/Outcomes: Of the 106 weekend days included in this study in 2022, 88 first start cases were recorded, while 18 days did not have a first case, as defined by the inclusion criteria. The mean time (AM, morning of surgery) for assigned room, pre-op, surgeon ready, in room, OR ready, anesthesia ready, anesthesia start, and case start were 04:28 (+/- 0.0419), 07:15 (+/- 0.0241), 07:23 (+/- 0.0206), 08:07 (+/- 0.02102), 07:44 (+/- 0.017), 08:21 (+/- 0.018), 08:03 (+/- 0.0173), and 8:43 (+/- 0.0184), respectively (Table 1). These data show that 0% of included days had an on-time first case. Causes for delay included other/not recorded (24 cases, 27%), patient factors (6 cases, 6.8%), insufficient anesthesia coverage (14 cases, 16%), transport (10 cases, 11%), OR delays (18 cases, 20%), surgeon factors (7 cases, 8%), "weekend" (5 cases, 5.7%), and pre-op delays (4 cases, 4.5%),

Discussion/Conclusion/Next Steps: This study found that, of 88 first start cases over 106 weekend days in 2022, 0% started on time. The most common cause for delay was "Other/Not Recorded" reflecting an absence of recorded data to support modifiable risk factors associated with improving an "on-time" first start case. The second most common cause included OR factors, such as lack of equipment availability, extensive pre-operative set-up, and OR nursing staff delays or insufficient coverage. The third most common cause was insufficient anesthesia coverage, including lack of attending coverage assigned to room or pre-operative block delays. These causes represent factors that can be mitigated with further investigation to uncover the root cause of delay. Defining precise causes of delays in this setting and implementing strategies to reduce, or even eliminate, these issues will create better patient outcomes, reduced OR costs, and better utilization of limited resources. Further investigation is warranted to evaluate data-driven strategies for reducing delays that can be followed longitudinally to determine effectiveness.

Table 1. Mean time for assigned room, pre-op, surgeon ready, in room, OR ready, anesthesia ready, anesthesia start, and case start

Time	Mean	SD
Assigned room (AM)	04:28	+/- 0.0419
Pre-Op	07:15	+/- 0.0241
Surgeon ready	07:23	+/- 0.0206
In room	08:07	+/- 0.02102
OR ready	07:44	+/- 0.017
Anesthesia ready	08:21	+/- 0.018
Anesthesia start	08:03	+/- 0.0173
Case start	8:43	+/- 0.0184

Table 2. Causes for delay

Cause of delay	Number of cases (n,%)
Other/Not Recorded	24 (27%)
Patient Factors	6 (6.8%)
Insufficient Anesthesia Coverage	14 (16%)
Transport	10 (11%)
OR Delays	18 (20%)
Surgeon Factors	7 (8%)
“Weekend”	5 (5.7%)
Pre-op Delays	4 (4.5%)