

A Solution to After-Hours Fatigue and Surgical Backlog

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Abstract

After-hours surgery represents a novel solution that can effectively combat surgical fatigue of care teams in addition to addressing the high volume of surgical backlog associated with the repercussions of the COVID-19 pandemic. This commentary seeks to rationalize how successful employment of a dedicated after-hours surgical team and protocol has tremendous potential for increased efficiency while maintaining good surgical outcomes in patients.

Keywords

geriatric trauma, trauma surgery, adult reconstructive surgery, foot and ankle surgery, sports medicine, spine surgery, upper extremity surgery

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The concept of after-hours surgery (maintaining scheduled operative time outside of traditional work hours) has long been debated across various subspecialties, including orthopaedic surgery. It is presumed that after-hours surgeries may lead to poorer outcomes, and there are significant infrastructural hurdles that may pose barriers to implementation. However, emerging literature is indicating that after-hours surgery may not represent as much of a risk as previously thought. Switzer et al 2013 published findings that demonstrated surgical time of day does not affect outcomes in geriatric patients undergoing hip fracture fixation.¹

Furthermore, many hospitals are experiencing widespread procedural backlogs from the COVID-19 shut down, and after-hours surgical planning is being discussed by various institutions across the country. Thus, it is reasonable to explore the possibility of after-hours surgery as both a time and cost-effective modification to the traditional surgical staffing model.

A study by Eskesen et al. hypothesized that nighttime operating would be associated with a higher occurrence of intraoperative adverse events. They found that there was no correlation between intraoperative adverse events and nighttime operations. Concern that there may be poor outcomes after surgery undertaken during the night with a potentially fatigued surgeon and operating room team is certainly not new. Indeed, this topic has been the subject of much research. Despite the findings by Eskesen et al., there is evidence to suggest that

after-hours surgery may play a role in poor outcomes.^{2,3} There is also data in concordance with their results, suggesting that time of day has no bearing on surgical success.³⁻⁵ Regardless, it is reasonable to assume that a dedicated after-hours team starting their workday would be better suited to staff cases as opposed to surgical teams working overtime.

There can be difficulty in attaining a seamless transition from the daytime to evening, with a daytime surgical staff transitioning to evening support staff that is more limited in personnel and availability. Traditionally, as the surgical day progresses toward later in the evening, only a few operating rooms remain open. There is frequently competition among services for operating room time,⁶ and cases must be triaged to prioritize the most emergent cases first due.

A very reasonable solution would be to maintain a sizable number of operating rooms operating for a "night" shift, with dedicated nighttime surgical staff, and subsequently allowing several hours at the end of the day for operating room

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reorganization and cleaning and equipment sterilization. This would allow for urgent and emergent cases to be addressed efficiently and with a dedicated staff, and certainly augment the number of elective cases that could be performed by the hospital. Surgeons and support staff alike would be placed into either the dedicated time periods either during the daytime or overnight with a consideration for fatigue associated with operating all day and all night. Providers working the night shift would have an opportunity to take care of day to day requirements during normal business hours. After-hours surgical planning may also represent a way to address the backlog of cases that many orthopaedic surgeons are currently facing due to COVID-19 lock downs.

Emergency rooms and intensive care units remain continuously open, with standard shifts accounting for all hours of the day. The overall prevalence of alternate shift work in the United States is 28.7%, and while there is evidence that shift work can be detrimental to long term health, a growing body of evidence exists on coping mechanisms for evening shift workers.^{7,8} Moreover, circadian rhythms vary from person to person.⁹ Much work has been undertaken on shifting the normal sleep-wake cycle of “night-owls” (individuals whose normal sleep-wake cycle is significantly shifted toward the night hours) toward cycles that intersect more closely with the “normal” functional hours of society. This practice is known as “phase-advancement.”¹⁰ These individuals would gravitate toward the evening shifts and may perform more optimally by virtue of being more in sync with their normal circadian rhythm.

Adoption of after-hours surgery could improve the efficiency of hospital resource utilization. More surgeries in total can be performed with costly OR equipment and facilities. The utilization of a rotating schedule of surgical teams coupled to a dedicated emergency OR room would likely facilitate more prompt surgical intervention and decrease length of stay. With the rapidly increasing number of outpatient surgeries being performed, and rising surgical demand due to COVID-19 limitations,¹¹ developing an effective infrastructure for after-hours surgery could have tremendous benefits for both physicians and patients alike.


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