

# The Inefficiency of Electronic Medical Record Use by Surgical Healthcare Professionals

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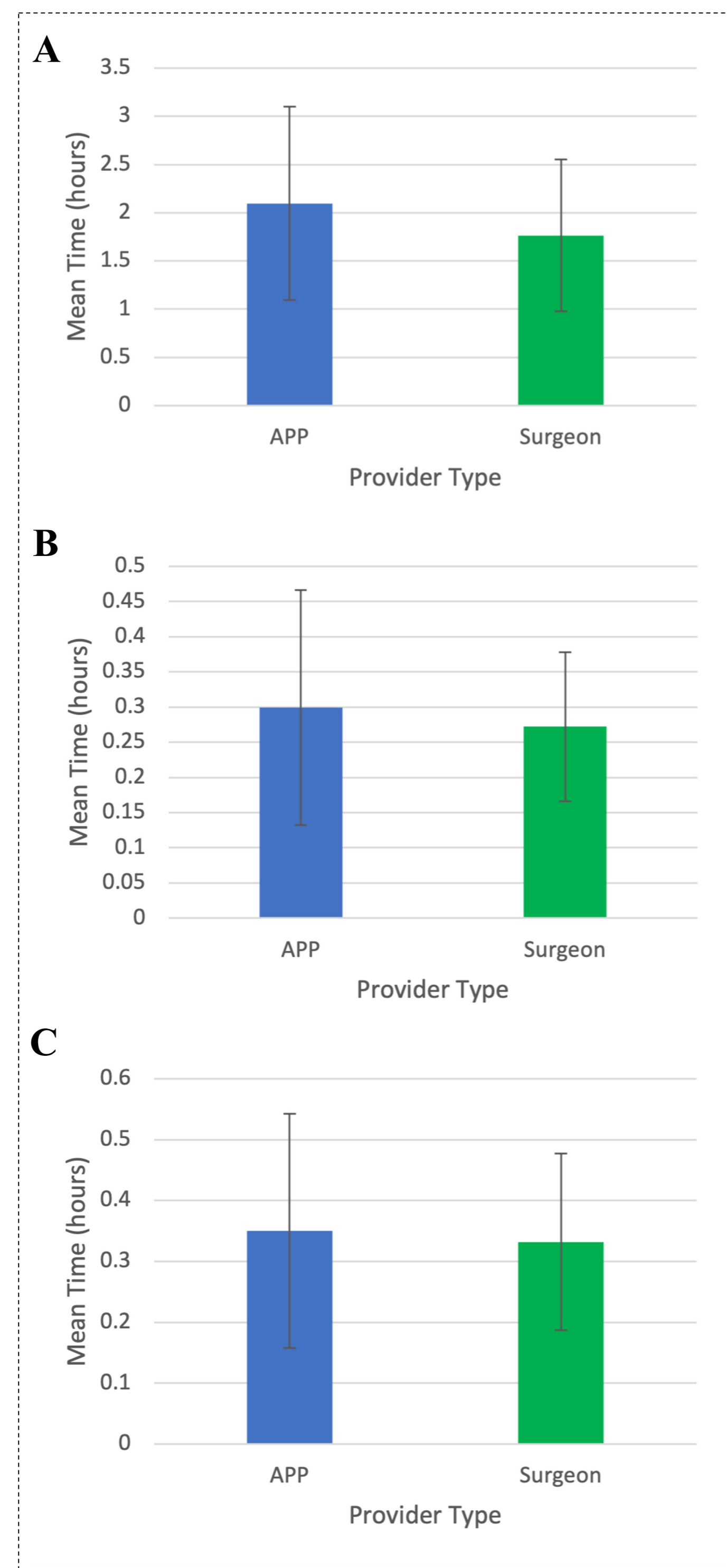
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## BACKGROUND

- Electronic medical records (EMRs) were originally designed to manage the exponentially growing information handled by the healthcare system.<sup>1</sup>
- Several studies have noted usability issues common to EMRs.<sup>2</sup> Abundant time spent on EMRs has been correlated with professional burnout.<sup>3</sup>
- Given the time demands of a clinic and surgery schedule, as well as the association between EMR usage and burnout, continued investigation into the utility of EMRs is important.
- We investigate both the number of login encounters and time expended on EMRs by surgeons and advanced practice providers (APPs) across several surgical specialties including plastic surgery.

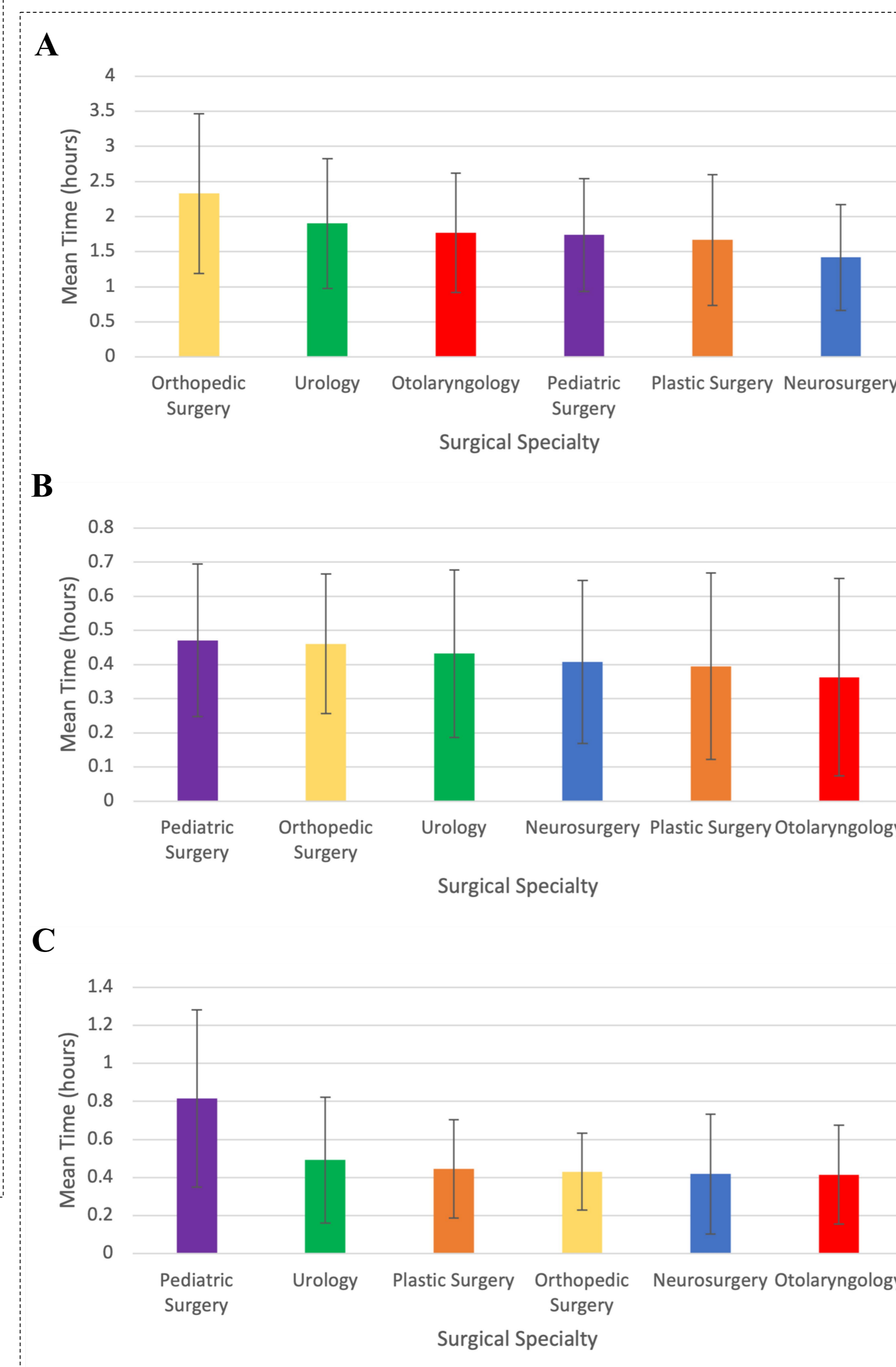
## METHODS

- A retrospective observational study was conducted at the largest tertiary pediatric hospital in the nation utilizing EMR data obtained from July 1, 2017 to June 30, 2018 for all employed surgical APPs and surgeons.
- Surgical specialties included were neurosurgery, pediatric surgery, urology, orthopedic surgery, plastic surgery, and otolaryngology.
- Login and logout times for all surgeons and surgical APPs were retrieved from a single EMR system. Encounters and hours expended on EMR were calculated and stratified into three categories: within working hours, outside of working hours during the work week, and during the weekend.
- The mean hours expended per provider over the study period were calculated for each of the three-time categories and compared between provider types and surgical specialty.



**Fig 1:** Figure 1a-c: Mean time in hours per day expended utilizing the EMR system between surgeons and surgical APPs during (a) working hours, (b) outside of working hours during the work week, and (c) during the weekend.

**Fig 2:** Mean time in hours per day expended utilizing the EMR system among surgical specialties during (a) working hours, (b) outside of working hours during the work week, and (c) during the weekend.



## RESULTS

- Among the surgical specialties analyzed, neurosurgery proportionally logged into EMRs after-hours most frequently, accounting for over 30% of their total EMR encounters. Plastic surgery providers were least likely to log in to the EMR system after-hours (9.12% of encounters).
- The mean time spent on EMR during working hours and after-hours during the work week was significantly less for surgeons than surgical APPs (1.76 hours/day vs. 2.10 hours/day,  $p < 0.0001$ ; 0.272 hours/day vs. 0.299 hours/day,  $p = 0.0173$ , respectively).
- Among the surgical specialties evaluated, orthopedic surgery spent the most time logged into the EMR system during working hours at 2.33 hours/day compared to 1.67 hours/day and 1.42 hours/day for plastic surgery and neurosurgery, respectively.

## DISCUSSION

- Surgeons and APPs spent extensive time utilizing electronic health records both within and outside of working hours.
- Substantial time was universally expended navigating electronic records regardless of provider type and specialty.
- This study suggests that opportunities to optimize surgeon and APP utility of EMR should be further explored to improve provider work-life balance, and the variability based on surgical subspecialty warrants additional investigation.

## REFERENCES

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3. Robertson SL, Robinson MD, Reid A. Electronic Health Record Effects on Work-Life Balance and Burnout Within the I3 Population Collaborative. *J Grad Med Educ*. 2017;9(4):479-484. doi:10.4300/JGME-D-16-00123.1