

**Neurosurgery residency** involves a complex structure with multiple **hospitals**, **services**, and clinic days, leading to challenges in creating equitable **on-call schedules**. Manually prepared scheduling systems are prone to **biases**, **error**, and perceived **unfairness**. To address these issues, they developed an automated **scheduling system** (Automated Optimization of Neurosurgery Scheduling System [AONSS]) to reduce biases, accommodate resident requests, and optimize call variation, ultimately enhancing the educational experience by promoting diverse junior-senior-attending relationships.

AONSS was developed and tailored to the University of Florida program, with inaugural use in 2021-2022 and mandatory implementation in the 2022-2023 academic year. 2019-2021 academic years were used as control. Residents were surveyed using Google Forms before and after implementation to assess its impact. Outcome measures included call and pairing variations, duty hours, as well as subjective factors such as satisfaction, fairness, and perceived biases.

Twenty-six residents (28%-39% female/year) were included in the study. AONSS was used for 6/13 blocks during the 2021-2022 academic year and 13/13 blocks for the 2022-2023 academic year. Overall call variation reduced by 70%. All other objective secondary measures have improved with AONSS. Weekly and monthly duty hours were reduced and less varied. Satisfaction scores improved from 21% reporting being somewhat satisfied or very satisfied to 90%. Fairness scores improved from 43% reporting being somewhat fair or very fair to 95%. Perception of gender bias decreased from 29% to 0%. No resident felt there was racial bias in either system.

The newly developed automated scheduling system effectively reduces variation among calls in a complex neurosurgery residency, which, in return, was found to increase residents' satisfaction with their schedule, improve their perception of fairness with the schedule, and has completely removed the perception of sexual bias in a program that has a large percentage of females. In addition, it was found to be associated with decreased duty hours <sup>1)</sup>

<sup>1)</sup>

Porche K, Mohan A, Dow J, Melnick K, Laurent D, Hoh B, Murad G. Automated and Optimized Neurosurgery Scheduling System Improves Resident Satisfaction. Neurosurgery. 2024 Jan 8. doi: 10.1227/neu.0000000000002821. Epub ahead of print. PMID: 38189465.

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