Eliminating extended work shifts improves sleep duration for senior resident physicians

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Getting a good night's sleep is important for everyone—including physicians. In 2011, the Accreditation Council for Graduate Medical Education (ACGME) set a limit on first-year resident physician shifts of 16 or fewer continuous hours of work. This policy change was based primarily on the results of studies comparing outcomes for first-year residents who worked extended-duration work shifts (24 hours or more) to those who worked rapid-cycling work shifts.

But data for more senior resident physicians has been lacking. Currently, resident physicians are permitted to work extended-duration shifts of up to 28 hours after their first postgraduate year. A new study led by investigators from Brigham and Women's Hospital is the first multi-center randomized clinical trial of senior resident physicians (postgraduate year two and higher) to compare the work hours and sleep obtained by those working extended shifts with those whose scheduled shift lengths were limited to no more than 16 consecutive hours. The team found that hours of sleep per week increased by 8 percent for pediatric resident physicians working under the modified schedule. The team's results are presented today at the American Thoracic Meeting and simultaneously published in *Sleep*.

"Sleep deficiency impairs performance and patient safety, adversely affects the mental and physical health of resident physicians and increases their risk of occupational injury and motor vehicle crashes," said senior author Charles Czeisler, Ph.D., MD, FRCP, chief of the Division of Sleep and Circadian Disorders at the Brigham, who

presented the findings at the meeting. "This operational trial, conducted in six pediatric intensive care units across the country, showed that rosters eliminating scheduled extended-duration shifts reduced weekly work hours and improved sleep of resident physicians."

The current study enrolled 302 resident physicians working in pediatric intensive care units at six U.S. academic medical centers. Sleep was measured using wrist-worn actigraphs, and work hours and sleep data were collected using electronic diaries. In the clustered-randomized crossover clinical trial, resident physicians were randomized to an Extended Duration Work Roster (EDWR), with extended-duration (24 hours or more) shifts, or a Rapidly Cycling Work Roster (RCWR), in which scheduled shift lengths were limited to 16 or fewer consecutive hours.

Resident physicians worked 10 percent fewer total hours per week during the RCWR compared to the EDWR and obtained significantly more sleep per week. Weekly sleep duration increased nearly four hours overall in the RCWR as compared to the EDWR.

The authors note that the RCWR schedule was implemented differently across the six hospitals and that more information is needed about optimal scheduling practices that ensure enough opportunity for residents to sleep.

"There is a compelling need for the design of schedules that enable sufficient sleep in settings that require safety-sensitive 24-hour operations," said corresponding author Laura Barger, Ph.D., an associate physiologist in the Division of Sleep and Circadian Disorders. "These findings extend the evidence from our previous single-site study, provide data on more senior resident physicians, and indicate that eliminating extended-duration shifts may improve sleep duration for senior resident physicians."

More information: Laura K Barger et al, Effects on Resident Work Hours, Sleep Duration and Work Experience in a Randomized Order Safety Trial Evaluating Resident-physician Schedules (ROSTERS), *Sleep* (2019). DOI: 10.1093/sleep/zsz110

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