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## **Increased on-call workload associated with various negative effects for medical interns**

Medical interns who experience an increase in their on-call workload are more likely to get less sleep while on call, have longer shift durations and participate less in educational activities, according to a study in the September 10 issue of *JAMA*, a theme issue on medical education.

In 2003, the Accreditation Council for Graduate Medical Education (ACGME) restricted resident duty hours in an attempt to reduce resident fatigue and the likelihood of fatigue-related errors that could harm patients. Further restrictions in resident duty hours are being considered. "Yet, little attention has focused on the risks associated with work intensification. Further limitations on duty hours without any attempt to address work intensification may result in residents doing the same amount of work in less time, which could undermine resident welfare and patient safety," the authors write.

Vineet M. Arora, M.D., M.A., of the University of Chicago, and colleagues examined whether increased on-call intern workload, as measured by the number of new admissions on-call and the number of previously admitted patients remaining on the service, was associated with reductions in on-call sleep, increased total shift duration, and lower likelihood of participation in educational activities (such as lectures or bedside teaching). The study, conducted from July 2003 through June 2005, included 56 medical interns observed during 1,100 call nights.

The researchers found that average sleep duration on-call was 2.8 hours and that average shift duration was 29.9 hours. Approximately 30 percent of shifts were deemed noncompliant with duty hours (greater than 30.5 hours). Analysis indicated that each new on-call admission early in the academic year was associated with less sleep (-10.5 minutes). A significant association between admission workload and shift duration also was observed. For each new on-call admission early in the academic year, shift duration increased by 13.2 minutes. Call nights during the week and early in the academic year were associated with the most sleep loss and longest shift durations.

A higher number of previously admitted patients remaining on the service was associated with a lower odds of participation in educational activities. Interns reported spending 11 percent of their time in educational activities.

"These findings raise concerns about the possibility of future duty-hour restrictions in the absence of corresponding limits on workload," the authors write. "Our study highlights the importance of considering reductions in on-call admissions as a strategy to alleviate sleep deprivation and ensure compliance with duty hours for interns early in the academic year in a traditional extended-duty shift model."

"... our findings suggest that research is needed to understand workload effects on clinical outcomes, especially in shorter shift systems in which sleep loss is less of a concern. There is a paucity of studies exploring this area and a heightened interest in optimizing resident schedules to improve resident health and patient safety. These findings may help inform program changes and policies designed to reduce resident sleep deprivation and improve duty-hour compliance," the researchers conclude.

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