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News

JAMA Study: Long Hours Equal to Alcohol in Impairing Young Doctors

After long hours on call, medical residents' performance on attention tests and on a driving simulator was comparable to, or worse than, their performance after consuming moderate amounts of alcohol, according to a study conducted by experts at Brown Medical School and the University of Michigan. Results of the first-ever research are published in JAMA.

PROVIDENCE, R.I. — Fatigued medical residents' performance on attention tests and on a driving simulator is comparable – or worse – than their performance after drinking three to four cocktails, according to research from Brown Medical School and University of Michigan.

The negative effects of fatigue on doctors-in-training are well documented and increasingly a matter of concern. In July 2003, the Accreditation Council for Graduate Medical Education instituted a landmark 80-hour-per-week limit on the nation's roughly 98,000 residents.

But the latest study, published in the current issue of JAMA, is the first to compare residents' sleep deprivation with alcohol ingestion – a standard of impairment long studied by researchers and easily recognized by the public.

"The take-home message here is that the repercussions of fatigue on residents are considerable," said Judith Owens, director of the Pediatric Sleep Disorders Clinic at Hasbro Children's Hospital and associate professor of pediatrics at Brown Medical School. "This is a national problem, and we shouldn't consider it solved by an 80-hour cap on hours."

Owens, a pediatrician who was involved in a serious car accident after an overnight shift as a resident, helped create the Sleep, Alertness, and Fatigue Education in Residency (SAFER) Program used in residency programs across the nation. She said regulators, hospitals and medical schools must keep pushing to protect residents – and the public – from work-related fatigue.

"We have to continue to educate doctors-in-training," Owens said, "and we should help them develop sleep risk-management strategies. This is particularly important since our study shows that many sleep-starved residents don't recognize that they're impaired."

Mary A. Carskadon, director of the Bradley Hospital Sleep and Chronobiology Research Lab and professor of psychiatry and human behavior at Brown Medical School, said further reducing residents' hours need not be the only solution to the problem.

"We could improve on-call sleeping quarters, provide rides to and from work, reinforce the importance of catching up on sleep after heavy call," Carskadon said. "Because there is a risk to residents and to other drivers – and that risk needs to be managed."

Led by former Brown Medical School researcher J. Todd Arnedt, now at the University of Michigan Health System, the team compared the post-call performance of 34 medical residents to examine the effects of extended work hours.

Each resident was tested under four conditions – light call, light call with alcohol, heavy call and heavy call with placebo.

Light call was defined as one month of daytime clinic rotations with little or no overnight duty, during which residents averaged 44 hours of work per week. Residents averaged six hours and 37 minutes of sleep the night before the tests.

Heavy call was defined as overnight duty every fourth or fifth night, during which residents worked an average of 90 hours per week (80 hours per week after July 1, 2003). Those residents had, on average, three hours and 26 minutes of sleep before the testing sessions.

Residents were tested a total of four times, twice each during two separate sessions conducted at the end of light and heavy call months. Before one of the test sessions, residents were given an amount of vodka found in three to four standard cocktails to achieve a 0.05 blood alcohol concentration – an amount just below the legal driving limit.

Each group performed computer tests to gauge their attention and judgment. They also spent 30 minutes on a driving simulator.

The results: Heavy call and light call with alcohol testing showed similar numbers of attention lapses and slowed reaction times on computerized tests. On the driving simulator, both groups also showed the same level of impairment in their ability to maintain lane position and avoid going off on the road. After heavy call, residents were actually 30 percent more likely to fail to maintain a steady speed on the simulator.

Owens said these results not only have safety implications for medical residents, but other workers who regularly pull down long shifts or go without sleep for extended periods, such as nurses, truck drivers, and police officers.

Former Rhode Island Hospital research assistants Megan Crouch and Jessica Stahl contributed to the work. The American Academy of Sleep Medicine funded the study.

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