

Protected 'power naps' prove helpful for doctors in training to fight fatigue

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New research from the Perelman School of Medicine at the University of Pennsylvania and the Philadelphia VA Medical Center indicates that the implementation of protected sleep periods for residents who are assigned to overnight shifts in a hospital represent a viable tool in preventing fatigue and alleviating the physiological and behavioral effects of sleep deprivation among these doctors in training. The new results will be published in the December 5th edition of the *Journal of the American Medical Association (JAMA)*.

"Within the last two years, we've seen sweeping changes in guidelines regulating the number of hours that first-year residents can work as they continue their medical training," said lead study author Kevin Volpp, MD, PhD, staff physician at the Philadelphia VA Medical Center and professor of Medicine and [Health Care Management](#), Perelman School of Medicine and the Wharton School, University of Pennsylvania.

"While these restrictions were put into place to help battle fatigue and improve patient care, the one-size-fits-all model has left many wondering whether or not other viable options could be implemented too. Based on a report from the Institute of Medicine in 2009 recommending protected sleep periods when residents work duty periods of up to 30 hours, we wanted to determine whether offering these protected sleep periods, akin to a power nap, would offer a practical alternative."

In July 2011, medical residency programs across the country revamped physician-trainees' schedules to comply with new work-hour restrictions

imposed by the Accreditation Council on Graduate Medical Education (ACMGE). Under these regulations, first-year residents (also referred to as interns) are no longer permitted to work more than 16 hours at a time. The changes were intended to enhance supervision of trainees by experienced physicians, improve transitions in patient care from one provider to another, and alleviate concerns about residents' fatigue during continuous periods of duty – which previously lasted up to 30 hours.

In the current study, two randomized controlled trials were conducted simultaneously between July 2009 and June 2010, before the implementation of the new ACGME rules. The research team recruited 106 interns from the Hospital of the University of Pennsylvania and the Philadelphia VA Medical Center to one of two groups – either a standard intern shift of 30 hours overnight or a protected sleep period shift – during twelve 4-week blocks. The protected sleep periods in the hospital were honored between 12:30 and 5:30 a.m., and the participants had to handover their work cell phone to another resident to ensure appropriate coverage and patient care. Each participant was also asked to wear a wrist Actiwatch (a wristwatch-like device that monitors rest/activity cycles and light) and complete a sleep diary during the study.

Adherence to the intervention was remarkably high, with about 98 percent of interns signing out their cell phones to covering residents as designed. During the study, the participants in the protected sleep group increased the amount of time they slept while on call by 50 percent (from two to three hours on average). They also decreased the overall amount of time they were awake, reducing periods of no sleep while on extended duty, and the study participants reported far less sleep disturbances, helping to improve overall sleep quality. As gauged by a sleepiness scale, participants felt less fatigued after on-call nights in the protected sleep group.

The research team was encouraged by the results for a number of reasons, including the participants' willingness to modify their traditional shift and embrace the importance and impact of sleep. By accepting sleep at strategically assigned times, the residents were also able to maintain consistent contact with their patients and stay with them during their first critical 24 hours in the hospital, while also improving alertness. The team also notes that decreasing the overall amount of time that participants were awake is particularly important, as continuous periods of wakefulness are a major predictor of work-related performance errors.

"Decades of research from the sleep medicine community have shown that prolonged periods of wakefulness and no sleep impact the performance and health of professionals who must be awake when much of the rest of the world sleeps, such as pilots, first responders, and medical professionals," said senior study author David F. Dinges, PhD, professor of Psychology in Psychiatry and chief, Division of Sleep and Chronobiology in the Department of Psychiatry at Penn. "This study provides the first evidence that contrary to long held cultural beliefs within the medical community, young doctors are embracing the importance of sleep and looking for ways to increase their own performance to better treat their patients."

As the current study was not powered to look directly at patient outcomes, the study authors say that additional comparative effectiveness research into this area will be important when considering widespread adoption of protected sleep periods in health care settings.

More information: *JAMA*. 2012;308[21]:2208-2217.

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