

A Randomized Trial of a 3-hour Protected Nap Period in Medical Interns

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Introduction Previous work has demonstrated the effectiveness of protected sleep periods of 5 hours for internal medicine interns in increasing amount slept and alertness after extended shifts. Here we evaluate intern and patient outcomes associated with protected nap periods of 3 hours that are personnel neutral.

Methods Randomized controlled trial in 61 medical interns at the Philadelphia VA Medical Center (PVAMC) Medical Service and Oncology Unit of the Hospital of the University of Pennsylvania (HUP). Four-week blocks were randomly assigned to either a standard intern schedule (extended duty overnight shifts of up to 30 hours), or sequential protected sleep periods with cell phone sign out between 00:00-03:00 (early shift, intern 1) and 03:00-06:00 (late shift, intern 2). Study participants wore wrist actiwatches, completed sleep diaries, and performed a 3-minute version of the Psychomotor Vigilance Tests (PVT-B).

Results On 97.4% of intern on call nights, cell phones were signed out as designed. Interns at HUP had significantly longer sleep durations during protected nap periods compared to controls (HUP early shift: 2.40 vs. 1.55 hours, $p < 0.0001$; HUP late shift: 2.44 vs. 1.55 hours, $p < 0.0001$). At PVAMC sleep duration was longer only for the late shift group (PVAMC late: 2.40 vs. 1.90 hours, $p < 0.0001$). PVT response speed was significantly faster in the intervention group after on-call nights at the PVAMC but not at HUP. There were no differences in patient outcomes between standard schedule months vs. intervention months.

Conclusions A protected nap period of 3 hours resulted in more sleep during call and reductions in periods of prolonged wakefulness. The current design on sequential naps was personnel neutral and appears feasible to integrate into scheduling designs that have trainees working extended (24+4) shifts.

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