

## Resident Sleep Associated With Overnight Duty Periods of 12-, 16-, and 24-Hour Durations

**Background/Objectives:** Acute and chronic sleep deprivation are associated with fatigue and reduced performance and have provided rationale to modify resident schedules. We evaluated sleep in trainees working in 3 Canadian intensive care units (ICUs) during trials of 3 resident overnight schedules—conventional 24-hour, 16-hour, and sequential 12-hour overnight duty.

**Methods:** Consenting ICU residents wore wrist Actigraphs. Data were reviewed for completeness and sleep was estimated. Days were classified as on-call, postcall, weekday, or weekend (no duty). Sleep duration (minutes), presented as median (interquartile range [IQR]), was compared using analysis of variance.

**Results:** The 25 trainees had a median (IQR) of 6 (5–8) complete 24-hour periods of Actigraph data (total 185). Sleep in the 24 hours preceding the end of duty was greatest in sequential 12-hour night schedule (409 [358–447]) versus 16-hour night (145 [112–239]) and conventional 24-hour (118 [38–215]) schedules ( $P = .001$ ). Sleep from 8 PM to 8 AM was similar: 12-hour night 126 (62–174), 16-hour night 85 (40–100), and conventional 24 hours 84 (17–185,  $P = .50$ ). Midway through the 3- or 4-day sequence of 12-hour nights trainees were sleeping for 410 (359–447) minutes per day. Sleep duration was 664 (542–853) minutes postcall, 450 (400–521) minutes on weekdays, and 485 (391–548) minutes on weekends free of duty.

**Conclusions:** Canadian trainees in ICU are acutely but not chronically sleep deprived, and routinely obtain a median of 1 to 2 hours of sleep when working overnight. However, over the 24 hours ending at morning handover, trainees working sequential nights obtained the most sleep. The median duration of postcall recovery sleep (11 hours) and routine sleep ( $> 7$  hours) suggests that Canadian ICU trainees are not chronically sleep deprived.

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