Neurosurgery Residents' Work Hours Don't Affect Complication Rates

Limits on duty hours for residents in training haven't increased the safety of one common brain operation, concludes a study in the November issue of Neurosurgery, official journal of the Congress of Neurological Surgeons. The journal is published by Lippincott Williams & Wilkins, a part of Wolters Kluwer Health.

Hospitals that train neurosurgery residents have had an uptick in complication rates since the work-hour limits were introduced, according to the study led by Drs. Anand I. Rughani, of the University of Toronto, and Travis M. Dumont of University of Buffalo, N.Y. The findings raise concerns that limiting residents' work hours may have contributed to increased complication rates, at least indirectly.

Have Work Limits Affected Neurosurgery Complication Rates?

The study was designed to evaluate the patient safety impact of rules limiting the hours worked by residents, introduced in 2003. The goal of the limits—a maximum of 88 hours per week—was to reduce the risk of errors and injury related to resident fatigue.

The researchers analyzed data from a nationwide hospital database from 1998-2002 and 2004-2008—five years before and five years after the new work-hour rules. The study focused on surgery to remove benign brain tumors called meningiomas—a common neurosurgery procedure that did not significantly change in other ways during the periods studied.

Complication rates were assessed for more than 21,000 patients. The study looked at complications not only at teaching hospitals where residents work and train, but also in non-teaching hospitals, which don't train residents.

The data from teaching hospitals showed a significant increase in complication rates after the work-hour limits were introduced: from 14 percent in 1998-2002 to 16 percent in 2004-2008. In contrast, complication rates at non-teaching hospitals remained "nearly constant"—fifteen percent during both time periods.

The increase in complications at teaching hospitals remained significant after adjustment for other known risk factors—especially age and medical illnesses.

Ongoing Debate on Impact of Limiting Duty Hours

The findings add a new piece of evidence to the ongoing debate over the impact of work-hour limits—particularly for neurosurgery residents. Last year, Neurosurgery published a survey study which found that neurosurgery trainees strongly opposed the new limits. Residents felt that working fewer hours had a negative effect on

their training opportunities.

The new study shows that, at least for one common neurosurgery procedure, limiting residents' work hours has not increased patient safety. Instead, complication rates actually increased in the years after the new rules were introduced.

Has the increase in complications occurred because residents have less surgical experience? Not necessarily, according to the authors. Other factors, especially age and medical illness, remain strong predictors of complications. Yet it's possible that the limits could have affected risk in other ways—possibly by leading to "increased patient hand-offs, decreased continuity of care, and thus [increased] errors related to postoperative patient care."

"We would not argue with the idea that fatigue or sleep deprivation contribute to decreases in performance, but the relative contributions of these factors must be carefully weighed against the perhaps more pervasive effects of increased patient hand-offs, increased provider turnover, and decreased familiarity with patients, " says Dr. Rughani.

Dr. Dumont and coauthors believe their study "raises questions about the relationship between work-hour restrictions and clinical care." They discuss the results in light of other studies showing decreased "academic productivity" by residents—including lower performance on written exams. The researchers conclude, "It could be argued that duty-hour regulation has exerted a common influence across the spectrum of academic, scientific, and clinical activities and performance."

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