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Study, Articles Discuss Impact of Reduced Work Hours for Neurosurgical Medical Residents

Charlottesville, Va.; and Rolling Meadows, Ill. — Since July 2003, when the Accreditation Council for Graduate Medical Education (ACGME) imposed a maximum 80-hour work-week restriction on medical residents, mandatory work-hour restrictions for medical residents have been in place. Other more encompassing and restricted guidelines — such as the Institute of Medicine’s 2008 recommendation of a 16-hour maximum for consecutive hours — also have been suggested, and elements of these recommendations have been introduced into the new ACGME guidelines that became effective in July 2011.

Critics of longer hours argued that medical errors were more likely to occur when medical residents were fatigued and that a radical drop in resident work hours would serve as a better way to achieve optimal patient care. That may not necessarily be the case in neurosurgery, according to two reports available online in the Publish Before Print section of the Journal of Neurosurgery (www.thejns.org), as well as a pair of department articles slated for publication in the February 2012 issue of AANS Neurosurgeon (www.aansneurosurgeon.org).

Travis Dumont, MD, and colleagues at the University of Vermont College of Medicine report increased complication rates on their neurosurgical service after the ACGME restricted the number of resident work hours. Relying on information obtained from a prospective database covering a six-year period, the researchers compared the number and types of complications before and after the ACGME-mandated reduction in resident working hours (time periods July 2000-June 2003; and July 2003-June 2006, respectively). They found that the incidence of morbidity increased from 70 per 1,000 patients in the earlier period to 89 per 1,000 patients after the work hours were restricted; this increase was significant (p = 0.001). Morbid complications considered avoidable or possibly preventable also increased significantly (p = 0.017), from 56 to 66 per 1,000 patients. There was no significant change in mortality rates between the two time periods. Although the authors found no definitive underlying cause for the increase in complications following the ACGME-mandated reduction in work hours, they hypothesize that increased turnover of patients from one resident to another, due to shorter work hours, results in less familiarity with serious cases and may be a reason for the rise in complications.

Aruna Ganju, MD, and colleagues at Northwestern University Feinberg School of Medicine conducted a study examining the effect of fatigue on seven neurosurgical residents’ skills. Residents performed simulation exercises designed to test their psychomotor and cognitive skills. They undertook a variety of ring-transfer tasks — which simulated the types of tasks required in a laparoscopic procedure and could test the proficiency of neurosurgeons — in a rested state (pre-call) and in a sleep-deprived state (post-call, following a 24-hour on-call period of in-house responsibility). Each set of exercises (rested and sleep-deprived) was repeated at least three times by each participant. The residents’ cognitive errors, smoothness of tool movement, and time needed to complete each task were all recorded and analyzed. No significant difference in surgical proficiency between the pre-call and post-call states was found, although proficiency decreased 13.1 percent. The authors compared their results to those of a similar study involving general surgery residents. In that study, surgical proficiency decreased significantly (27.3 percent) in sleep-deprived residents. Ganju and colleagues’ hypothesis “Fatigue does not affect the psychomotor and cognitive skills of medical practitioners equally,”
was borne out in this small study; they suggest that additional studies be undertaken on the impact of fatigue in the various medical specialties before implementation of nationwide policies on physician work hours.

The message of the papers is that a broad restriction on the number of work hours spent by medical residents should be reexamined. What is appropriate for one specialty may not be appropriate for others. Further studies are warranted.

This message of the need for specialty-specific evaluation of work hours will be echoed in the February 2012 AANS Neurosurgeon article “Duty-hours Regulations: An Educator’s View,” in which Eric M. Deshaies, MD, discusses two principal concerns: the increased dangers posed to patients and the dehumanization of neurosurgical training. The author questions the impact regulations have had on training, especially when the “10,000-hour rule” illustrates that practice and repetition significantly impact the ability to master a skill. He notes how successful individuals achieve that success through many hours of practice, and asks “Would Yo-Yo Ma be a master cellist if the government limited his practice time?”

The author also voices concern about how residents can learn the human side of patient care for those “with real disease and real suffering from mannequins.” While simulators and substitutes certainly are helpful in the training process, they are not substitutes for humans. Deshaies asks the question, “As the government continues to directly link reimbursement with patient satisfaction and quality measures, are we as educators doing a disservice to residents by trying to teach selfless professionalism and human healing on computerized surgical simulators?”

The same issue of AANS Neurosurgeon will feature a resident perspective on this subject in “Duty Hours: A Resident’s View,” by Hoon Choi, MD, a PGY-3 at SUNY Upstate Medical University. The author notes that the Libby Zion case of the ’80s continues to impact regulations even today. Dr. Choi offers a detailed analysis of the new regulations, how they impact first- and second-year residents, and how those in the neurosurgical specialty may be affected by the mandated changes.

In addition to offering data covering potential cost savings if preventable adverse effects are reduced, the author also cites studies noting that reduced neurosurgical training may, in fact, compromise resident training. Dr. Choi adds that “With interns limited to 16 hours per shift, a large majority of their time is spent doing paperwork, and their learning curve has flattened exponentially. Operative training has become increasingly ‘top-heavy,’ with residents operating more in their senior years and graduating with fewer cases. These changes have led to an erosion of dedicated research experience as a compensatory response, with research residents pulled to cover call and cases. The ‘shiftwork’ mentality and increased frequency of patient handovers raises concern for a compromised quality of care.”

Dr. Choi notes that a close partnership between faculty and residents is critical to future neurosurgical advancement and improvement, as faculty involvement is vital to helping residents achieve and excel. The author concludes that while “there is much that is broken with this new ACGME-mandated system, the commitment of neurosurgical trainees remains a beacon of hope,” and that commitment to patient care will help the specialty overcome and advance in the area of improving resident education.

Dumont TM, Rughani AI, Penar PL, Horgan MA, Tranmer BI, Jewell RP. Increased rate of complications on a neurological surgery service after implementation of the
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