

Extending length of surgical trainees' shifts does not affect surgical patients' safety

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Allowing surgeons in training, otherwise known as residents, the flexibility to work longer shifts than currently allowed in the U.S. and/or take less time off between shifts to provide continuity of patient care is not associated with a greater risk to patients of early serious postoperative complications or death according to study results involving 117 U.S. general surgery residency programs and 151 hospitals. This flexibility was also reported by residents to make it less likely they would need to leave during an operation or hand off an active patient care issue to another provider.

The landmark trial results, presented today before the Academic Surgical Congress, are concurrently published online in the *New England Journal of Medicine* in advance of print publication on February 25.

Compared with current resident duty hour requirements—some of which have been in place for 12 years—implementation of less restrictive work hour policies also showed no significant difference in residents' self-reported satisfaction with their overall well-being and quality of their training. The study is called the Flexibility in Duty Hour Requirements for Surgical Trainees (FIRST) Trial.

"Making duty hour policies more flexible for surgeons-in-training appears to be safe for patients and acceptable to the trainees," said lead study investigator Karl Bilimoria, MD, MS, FACS, a Faculty Scholar at the American College of Surgeons (ACS) and director of the Surgical Outcomes and Quality Improvement Center at Northwestern University

Feinberg School of Medicine in Chicago.

Up until now, there has been little high-quality data to show the effect of increased work hour restrictions on surgical patient care. The FIRST Trial is the first-ever national randomized trial of resident duty hour policies, according to the investigators.

"This is the first time we have high-level national prospective evidence to inform resident duty hour policies," Dr. Bilimoria said.

Duty hour policies were revised nationally in 2003 and again in 2011 by the Accreditation Council for Graduate Medical Education (ACGME), the accrediting and standards-setting body for about 9,500 U.S. medical residency programs, of which 252 are General Surgery programs (and with 117 of those surgery programs participating in the FIRST Trial.) Made to address concerns about patient safety and residents' well-being, the initial reform limited residents' work hours to 80 per week, capped overnight shift lengths, and mandated minimum time off between shifts.* The more recent changes further shortened the shift length for interns (first-year residents) and increased residents' time off work after a 24-hour shift.*

Although the ACGME reforms aimed to protect patients against trainees' fatigue-related errors, Dr. Bilimoria said the newest restrictions increased the frequency of transferring patients to other care providers—a process called "handoffs."

"In surgery, this more frequent turnover may compromise continuity of patient care, potentially jeopardize patient safety, and decrease the quality of resident education by forcing residents to leave at critical times, such as in the middle of an operation or while stabilizing a critically ill patient," he said.

The FIRST Trial investigated whether surgical patients' complication rates in the first postoperative month would be affected by less restrictive duty hour policies. Complication rates were obtained from participating hospitals' data submitted to the ACS National Surgical Quality Improvement Program (ACS NSQIP). The NSQIP database is the leading nationally validated, risk-adjusted, outcomes-based program to measure and improve the quality of surgical care in hospitals.

In addition, the new study measured residents' perceptions of and satisfaction with their overall well-being, quality of education, and patient care, using a survey administered by the American Board of Surgery (ABS). The ABS sets the standards for the board certification of surgeons upon completion of residency training.

The investigators randomly assigned eligible ACGME-accredited general surgery residency programs to use one of two types of duty hour policies during the academic year from July 1, 2014, to June 30, 2015. Both groups adhered to three main ACGME rules: The workweek was limited to 80 hours; one day off in seven was required; and residents could not take call more often than every third night.

A total of 117 programs at 151 hospitals completed the study. One group of 59 programs and their affiliated 71 hospitals participated in "Standard Policy," with all existing ACGME duty hour policies.

The other group, consisting of 58 programs and 80 affiliated hospitals, received permission from the ACGME to waive rules on maximum shift lengths and time off between shifts. In this flexible duty hour group ("Flexible Policy"), programs were given the flexibility to implement one or more of the following policy changes: Interns' work shifts ("duty hour periods") could extend beyond the current maximum of 16 hours; more senior residents' duty hour periods could exceed 24 hours; residents were not required to have at least eight hours off between

shifts; and residents were not required to have at least 14 hours off after 24 hours of continuous duty.

"Our goal was to revise only the policies that would interfere with continuity of care or would result in increased handoffs, particularly at unsafe times," Dr. Bilimoria explained. "Residents in the flexible duty hour group did not work more hours; rather, they worked more effectively by rearranging their hours."

Using the ACS NSQIP database, the researchers evaluated a combined measure of patients' deaths and serious complications within 30 days of an operation. Among nearly 139,000 patients treated, the rate of this composite outcome was similar in both groups (9 percent), the investigators reported. They also found no group differences for the 10 other patient outcomes studied, including the need for an unplanned second operation.

Residents' satisfaction with the quality of their resident education and their overall well-being was measured by the ABS survey they took in January 2015. Among the 4,330 residents responding to the survey, those in the flexible duty hour group (2,220 respondents) were not more likely to report dissatisfaction with their educational program quality compared with the Standard Policy group (2,110) according to survey results. They also did not report significantly greater dissatisfaction with their overall well-being. Importantly, residents in Flexible Policy programs were no more likely than the Standard Policy group to report perceiving a negative effect of fatigue on personal or patient safety.

The Flexible Policy program residents were more likely than the Standard Policy group to report improved experiences on several measures, including continuity of patient care, acquiring of operative skills, and professionalism, Dr. Bilimoria reported.

Importantly, residents in the flexible duty hour group were far more likely to report being present for the entire duration of an operation and being able to care for their patients through an entire episode of illness, rather than handing off care to another provider, he said.

"Our study findings offer another opportunity to look at ACGME duty hour reform and move forward in improving patient safety and resident education," said ACS Executive Director and study coauthor David B. Hoyt, MD, FACS.

"The results of the FIRST Trial demonstrate that greater flexibility in surgical resident work hours can prevent disruptions in patient care and surgical education, without an adverse effect on patient outcomes," said ABS Executive Director and study coauthor Frank R. Lewis, MD, FACS.

More information: * Accreditation Council for Graduate Medical Education. Resident duty hours in the learning and working environment: comparison of 2003 and 2011 standards. Available at: [www.acgme.org/acgmeweb/Portals ... onTable2003v2011.pdf](http://www.acgme.org/acgmeweb/Portals...onTable2003v2011.pdf). Accessed January 11, 2016.

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