

# Reform to resident physicians' work hours does not improve surgical patient safety

July 8 2015

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Work hour restrictions for resident physicians, revised nationally four years ago largely to protect patients against physician trainees' fatigue-related errors, have not had the desired effect of lowering postoperative complication rates in several common surgical specialties, according to new study results. The study was published as an "article in press" on the *Journal of the American College of Surgeons* website in advance of print publication later this year.

There was no significant difference in measured surgical [patient outcomes](#) between one year before and two years after the 2011 resident duty hour reform was implemented by the Accreditation Council for Graduate Medical Education (ACGME) according to the study authors. The ACGME is the accrediting and standards-setting body for about 9,500 U.S. medical residency programs. Residents are medical school graduates who are training in a specialized area of medicine, including surgery.

The investigators evaluated outcomes within 30 days of an operation—a combined measure of [patients'](#) deaths and serious complications—in five surgical specialties: neurosurgery, obstetrics/gynecology, orthopedic surgery, urology, and vascular surgery. The number of patients included in this retrospective study ranged from 22,158 in urology to 61,640 in vascular surgery during the three-year period examined.

"This study adds to the body of medical literature showing no strong association between resident duty hour reform and change in

postoperative outcomes," said lead investigator Ravi Rajaram, MD, MSc, a Resident Clinical Scholar at the American College of Surgeons (ACS) and a fellow with the Surgical Outcomes and Quality Improvement Center, Northwestern University Feinberg School of Medicine, Chicago, Ill. "Our finding suggests the ACGME reform is not meeting its goal of improved patient safety in surgery."

Prior studies found that the 2011 ACGME duty hour reform did not affect patient outcomes among general surgical patients.<sup>1,2</sup> However, Dr. Rajaram said the workload changes might have affected surgical specialties differently than general surgery.

"Our study is the first to examine the association of the 2011 resident duty hour reform and patient outcomes among specific surgical specialties for two years after the policy changes took effect," he explained.

On July 1, 2011, the ACGME made the first changes to resident duty hours since its 2003 major reform. The 2011 policy limits first-year residents to working at most 16 hours continuously and requires they be directly supervised by senior physicians at all times when in-house. These new standards also mandate at least 14 hours off work after a 24-hour shift. Additionally, residents working 24-hour shifts may spend no more than four hours (instead of the former six hours) in transferring patients to another care provider, often called patient "handoffs."<sup>3</sup>

"These restrictions impose obstacles for residents and their residency programs," Dr. Rajaram said. "Under the new policies, residents are handing off patients more often, and patient handoffs are one of the most common preventable causes of serious patient harm events."

During transitions in care of a surgical patient, such as moving from the operating room to the recovery room, a health care provider must

communicate important patient information to the new [care provider](#). According to the Joint Commission, at least half of communication breakdowns occur during handoffs, and communication problems are responsible for nearly 70 percent of "sentinel events"—serious harm to the patient.<sup>4</sup>

For this study, patient outcomes data were obtained from the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP). ACS NSQIP is the leading nationally validated, risk-adjusted, outcomes-based program to measure and improve the quality of surgical care in hospitals.

In each of the five surgical specialties, the investigators evaluated patient outcomes in the year before the 2011 reform, the first year after reform, the second year after reform, and both post-reform years combined. First, the researchers compared outcomes between teaching hospitals and nonteaching hospitals.

Because changes in resident duty hours should not affect nonteaching hospitals, this group allowed the investigators to adjust for other factors that might affect surgical care universally over time, such as different medications or new medical technologies. Using this statistical approach, known as a difference-in-differences model, they were able to more accurately estimate the association between duty hour policies and patient outcomes at teaching hospitals, according to Dr. Rajaram.

Additionally, the researchers controlled for other factors that could influence [surgical outcomes](#), such as patient demographics and preexisting medical conditions.

In these adjusted analyses, the researchers found no significant association between the duty hour reform and the number of 30-day patient deaths and serious postoperative complications in the two years

after reform, or either year separately, for any surgical specialty studied.

Coauthor Clifford Ko, MD, MS, MSHS, FACS, a professor of surgery at the University of California Los Angeles, said the study shows that patient outcomes were not worse with less restrictive resident duty hours, probably because there was greater continuity of care than under the current policy.

"NSQIP is the gold standard as a metric of surgical complications and patient deaths because it has the highest level of accuracy," said Dr. Ko, who directs ACS NSQIP and is the ACS Director of the Division of Research and Optimal Patient Care.

Dr. Rajaram called for additional work, including randomized clinical trials on how to best structure resident duty hours. The recently finished Flexibility In duty hour Requirements for Surgical Trainees (FIRST) Trial randomized surgical residency programs to either conventional duty hours or flexible duty hours and will examine patient outcomes using the ACS NSQIP platform. Results are expected in early 2016.

**More information:** Citation: Association of the 2011 ACGME Resident Duty Hour Reform With Postoperative Patient Outcomes in Surgical Specialties. *Journal of the American College of Surgeons*, 2015. DOI: [dx.doi.org/10.1016/j.jamcollsurg.2015.06.010](https://doi.org/10.1016/j.jamcollsurg.2015.06.010)

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Provided by American College of Surgeons

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