



# Program Director Perceptions of Surgical Resident Training and Patient Care under Flexible Duty Hour Requirements

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**BACKGROUND:** The Flexibility in Duty Hour Requirements for Surgical Trainees (FIRST) trial was a national, cluster-randomized, pragmatic, noninferiority trial of 117 general surgery programs, comparing standard ACGME resident duty hour requirements (“Standard Policy”) to flexible, less-restrictive policies (“Flexible Policy”). Participating program directors (PDs) were surveyed to assess their perceptions of patient care, resident education, and resident well-being during the study period.

**STUDY DESIGN:** A survey was sent to all PDs of the general surgery residency programs participating in the FIRST trial (N = 117 [100% response rate]) in June and July 2015. The survey compared PDs’ perceptions of the duty hour requirements in their arm of the FIRST trial during the study period from July 1, 2014 to June 30, 2015.

**RESULTS:** One hundred percent of PDs in the Flexible Policy arm indicated that residents used their additional flexibility in duty hours to complete operations they started or to stabilize a critically ill patient. Compared with the Standard Policy arm, PDs in the Flexible Policy arm perceived a more positive effect of duty hours on the safety of patient care (68.9% vs 0%;  $p < 0.001$ ), continuity of care (98.3% vs 0%;  $p < 0.001$ ), and resident ability to attend educational activities (74.1% vs 3.4%;  $p < 0.001$ ). Most PDs in both arms reported that safety of patient care (71.8%), continuity of care (94.0%), quality of resident education (83.8%), and resident well-being (55.6%) would be improved with a hypothetical permanent adoption of more flexible duty hours.

**CONCLUSIONS:** Program directors involved in the FIRST trial perceived improvements in patient safety, continuity of care, and multiple aspects of resident education and well-being with flexible duty hours. (J Am Coll Surg 2016;222:1098–1105. © 2016 by the American College of Surgeons. Published by Elsevier Inc. All rights reserved.)

Resident duty hour requirements have been a topic of considerable debate during the past 30 years. Although there is general agreement that some duty hour regulation is necessary, ostensibly to reduce resident fatigue and

prevent errors in patient care, there has been criticism of the weak evidence for the duty hour restrictions mandated by the ACGME in 2003 and 2011.<sup>1-10</sup> Several retrospective studies have failed to demonstrate

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improvement in patient outcomes, safety, resident education, or overall resident well-being after duty hour reforms, and most studies in surgery have shown no resulting difference or a worsening in patient postoperative outcomes and resident education.<sup>8,10-23</sup> However, other studies have suggested that duty hour reforms resulted in improvements in surgical resident well-being and reduced fatigue.<sup>8</sup>

To study the impact of duty hour reforms on continuity of care and resident education, a prospective, national, cluster-randomized, pragmatic trial, the Flexibility in Duty Hour Requirements for Surgical Trainees (FIRST) trial, was conducted to examine how increasing flexibility in surgical resident duty hour requirements affects patient outcomes and resident perceptions.<sup>12,24-26</sup> The FIRST trial randomized general surgery residency programs to an intervention arm that waived rules on maximum shift lengths and time off between shifts (Flexible Policy) or to a control arm with standard ACGME duty hour policies (Standard Policy). The FIRST trial was the first national randomized trial to compare standard surgical resident duty hour requirements with more flexible policies. The major findings of the FIRST Trial were that flexible duty hour policies for surgical residents were non-inferior to standard ACGME duty hour policies with regard to patient outcomes and resulted in no difference in resident self-reported satisfaction with their overall well-being and education quality.<sup>25</sup>

Earlier surveys of residency program directors (PDs) have gauged their perceptions of duty hour requirements. These surveys revealed the concern that the inability of residents to witness the evolution of patient presentation and clinical course of illness adversely affects both resident education and operative experience.<sup>27-31</sup> These studies also found that PDs perceived a decline in both residents' preparedness to take on more senior roles and their ability to achieve specialty-specific competency goals during residency after the 2011 ACGME reforms.<sup>29,32,33</sup>

The prospective, randomized design of the FIRST trial provides a valuable opportunity beyond previous survey-based studies of PD perceptions of duty hour policies by allowing for direct comparison of PD perceptions of standard ACGME duty hour policies with more flexible policies by study arm assignment. The objectives of this study were, therefore, to use the FIRST trial PD survey to assess PDs' perceptions of how residents used the additional flexibility in duty hours in the Flexible Policy arm of the FIRST trial, compare PDs' views about the effect duty hour regulations have on resident education and well-being between the 2 study arms, and determine PDs' attitudes about the effect of a hypothetical permanent change to flexible duty hours nationally.

## METHODS

### Data source and study population

All ACGME-accredited general surgery residency programs, as of January 1, 2014, that had at least 1 affiliated hospital participating in the American College of Surgeons NSQIP were eligible to enroll in the FIRST trial. Programs in the state of New York, where duty hours are regulated by state law, and those in poor standing with the ACGME were excluded. A total of 117 general surgery residency programs were included in the FIRST trial, and all PDs of these programs were eligible to participate in the FIRST trial PD survey.

The FIRST trial study period extended from July 1, 2014 to June 30, 2015. Of the programs participating in the FIRST Trial, 58 programs and 80 associated hospitals were randomized to have flexible duty hours in the intervention arm (Flexible Policy), which allowed for the elimination of all standard ACGME-mandated resident duty hour restrictions, with the exception of duty hours limited to 80 hours per week averaged over 4 weeks, a minimum of 1 free day per week averaged over 4 weeks, and no in-house call more frequently than every third night averaged over 4 weeks. The other 59 programs comprising 71 hospitals were randomized to adhere to the standard 2011 ACGME restrictions in the control arm (Standard Policy). Complete details of the FIRST trial study protocol have been described previously.<sup>25,26</sup>

The FIRST trial PD survey was developed and adapted from earlier surveys. The survey was initially tested with a sample of PDs using cognitive interviews, and then was iteratively revised by the study team.<sup>32,34</sup> The survey asked PDs in the Flexible Policy arm about their perceptions of how residents in their respective programs used the additional flexibility in duty hour requirements granted in the FIRST trial. The survey also asked all PDs in both study arms about their level of satisfaction with duty hour policies and procedures, and the perceived effect of these policies and procedures on patient safety, surgical resident education, and resident well-being during the FIRST trial study period compared with the previous year. Finally, the survey asked all PDs for their perceptions about the future impact of a hypothetical permanent change to flexible duty hours nationally.

The survey was sent to all of the PDs from the eligible 117 general surgery residency programs participating in the FIRST trial. RedCap, a web-based survey tool, was used to administer the survey.<sup>35</sup>

### Statistical analysis

Bivariate analysis was completed to compare differences by study arm using the Pearson chi-square and Fisher's exact

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