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Beyond 250: A Comprehensive Strategy to Maximize the Operative Experience for Junior Residents

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OBJECTIVES: Among surgical educators, duty-hour restrictions led to concern regarding the adequacy of operative experience during residency, especially for junior residents. The American Board of Surgery recently instituted guidelines mandating "a minimum of 250 operations by the end of the PGY-2 year". A series of programmatic and institutional changes were implemented at our institution to augment the junior resident operative experience and to exceed compliance with this mandate.

METHODS: Operative data from Accreditation Council for Graduate Medical Education case logs for categorical and nondesignated preliminary interns from our large academic surgical residency were identified for 5 consecutive academic years, 2011 until 2016. American Board of Surgery In-Training Examination (ABSITE) scores were collected anonymously. The program systematically instituted the following changes: night float minimization, identification of new surgical opportunities, augmenting use of midlevel care providers, identification of rotations with suboptimal operative experiences, maximizing rotations with involvement of junior residents in the operating room, and systematic review of junior case logs.

RESULTS: After implementation, average total cases for residents completing postgraduate year (PGY)-2 increased from 176 to 330 ($p < 0.001$). Specifically, there was an 18% increase for interns ($p = 0.059$) and a 118% increase for PGY-2 residents ($p < 0.001$). There were statistically significant increases in skin and soft tissue cases, vascular cases, endoscopy, and complex laparoscopic cases. Average case volumes for senior residents did not change. Night float time was significantly decreased (5.7 vs 3.4 wk; $p = 0.04$). ABSITE scores were not significantly changed during this time.

CONCLUSIONS: Before implementation of these interventions, our program would have had 0% compliance with the 250 junior resident case rule. Within 12 months of implementation, total case volumes for residents completing PGY-2 increased by 88%—exceeding minimum standards. Overall, 100% programmatic compliance was achieved. Our program's experience exemplifies how mandates from the American Board of Surgery can lead to programmatic changes that improve the experience of surgical house officers. (J Surg Ed ■:■■■-■■■. © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: operative experience, surgical training, resident education, duty hours

COMPETENCIES: Practice-Based Learning, Systems-Based Practice, Medical Knowledge

INTRODUCTION

In 2003, the Accreditation Council for Graduate Medical Education (ACGME) instituted the 80-hour work week and required 4 days off per month for house officers,[1] thereby leading to widespread concern in the surgical community that surgical training would suffer.[2,3] A second round of regulations were instituted in 2011, which mandated that interns work no longer than 16-hour shifts and that maximum shifts for postgraduate year (PGY) 2 and above residents were decreased from 30 to 28 hours.[4] This led to similar concerns, although more specifically toward the operative experience of the junior surgical house officers (PGY-1 and PGY-2).[5] Numerous studies demonstrated a decrease in operative volume for chief residents after the 2003 regulations,[3,6-10] although more recent systematic reviews have been equivocal.[11] More recently, studies suggest that the 2011 regulations lead to a decrease in operative case volume for junior residents.[10] Another multi-

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institutional study of multiple general surgery residencies also revealed that implementation of the 2011 ACGME regulations led to a 26% decrease in total cases, 32% decrease in surgeon junior cases, and a 46% decrease in first assistant cases among categorical surgical interns.[12] Although the 2011 duty-hour restrictions have now been repealed, there is ongoing concern that the operative volume for junior residents may be inadequate.

To address the issue of decreased operative cases for junior residents, the American Board of Surgery (ABS) recently instituted guidelines stating that residents must perform "a minimum of 250 operations by the end of the PGY-2 year for applicants who began residency in July 2014 or thereafter", with the first set of residents to whom this requirement is applicable will finish their PGY-2 year in June 2016.[13]

At our institution, we instituted a series of programmatic and institutional changes to augment the junior resident operative experience in response to the new ABS requirements. Herein, we present our experience.

METHODS

ACGME case logs for categorical and preliminary interns and second-year residents from Yale New Haven Hospital (YNHH) were identified for 5 consecutive academic years, 2011 to 2012 until 2015 to 2016. The study was exempt from institutional board approval.

Operative data collected included total cases subdivided as surgeon junior, first assistant, and teaching assistant. Surgeon junior cases are defined as cases in which the resident performs $>50\%$ of the case. First assistant cases include cases in which the resident is assisting the faculty, and do not count toward the 750 required cases for board eligibility. Specific case types were queried using the defined category reports from the ACGME, which included surgeon junior cases and excluded first assist cases.

American Board of Surgery In-Training Examination (ABSITE) scores were collected in an anonymous fashion from the program director for PGY-2 residents in the 2014 to 2015 and 2015 to 2016 classes. Data were analyzed using SPSS version 22. Descriptive statistics were performed. Mean and standard deviation were calculated with $p < 0.05$ considered statistically significant.

Programmatic changes

In response to the ABS requirement for 250 cases, our program instituted a series of changes to augment the junior resident operative experience for the 2015 to 2016 academic year (Table 1).

Significant changes were made to the junior resident schedules, which minimized the weeks of night float to a maximum of 4 weeks for categorical general surgery junior residents. This was accomplished by having other surgical trainees whose primary services benefit from night float coverage contribute to the system (e.g., integrated cardiac, vascular, and plastics).

Additionally, new surgical opportunities were identified within the institution at alternate sites, where bread-and-butter general surgery cases were being performed, including open inguinal hernias, lipoma excisions, cholecystectomies, and colonoscopies. No additional travel expenses were required to participate in these cases, as the outpatient surgical center was a brief walk from the main campus. These cases were made available to surgical residents.

Midlevel care providers such as nurse practitioners and APRNs were engaged in this process, and understood the need to get junior residents off the floor and into the operating room. No new positions were created during the study period, rather existing positions were optimized.

The PGY-5 residents of the 2015 to 2016 class made a concerted effort to improve the junior resident operative experience. The program mandated operating room schedules and case assignments for each service to be sent out on the Thursday of the previous week, to give residents maximum time to prepare, and to ensure that every resident on the team was allotted an appropriate number of cases.

To emphasize the importance of the junior resident operative experience and to facilitate a cultural shift within our program, a weekly junior resident volume report was generated and presented to the department at the quality improvement conference. Each service was required to specifically report the total number of cases and the number covered by junior residents. This permitted frequent observation of the patterns and trends in junior resident surgical case volume.

To ensure accurate and timely logging of cases, the case logs were audited by the program leadership every 2 to 4 weeks. Additionally, every 2 months, the program held either case conferences or town hall meetings. Case conferences involved residents presenting to their peers and the program director the number of cases and types of cases they had done. Town hall meetings were held with the administrative chief and were used to identify rotations with a suboptimal operative experience. Junior resident rotations were also audited monthly, to monitor rotations with a consistently poor operative experience.

RESULTS

A total of 7 residents were excluded from the analysis because of either case recording irregularities or because they had not completed 2 training years as categorical residents. Many of these residents were preliminary residents who left after 1 year, after being offered positions at other institutions, or were categorical residents who left the program before completing PGY-2 and thus did not have complete data. Six of these 7 residents only did intern year before leaving the program. One had serious irregularities in

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