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Duty hours and perceived competence in surgery: are interns ready?



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ABSTRACT

Background: A fundamental shift in the structure of many surgical training programs has occurred after the July 2011 rule changes. Our intern didactic program was intensified in 2011 with targeted lectures, laboratories, and clinical cases as well as direct supervision until competency was achieved for basic clinical problems. We sought to compare interns' perceived preparedness throughout and at the end of the academic years before and after July 2011.

Materials and methods: Intern perceptions of preparedness to manage common clinical scenarios and perform procedures in general surgery were serially surveyed in academic years ending in 2011 and 2012 based on the Residency Review Committee supervision guidelines.

Results: Interns felt less prepared across all measured domains from 2011–2012. Interns felt significantly less prepared to manage hypotension (3.00/4 points to 2.67/4 points; $P = 0.04$), place a tube thoracostomy (2.45/4 points to 1.92/4 points; $P = 0.04$), or perform an inguinal hernia repair (1.91/4 points to 0.92/4 points; $P = 0.01$) without supervision. Interns were also significantly less likely to agree that they were able to gain clinical skills based on experience (4.31/5 points versus 4.15/5 points; $P = 0.02$). Longitudinal analysis throughout internship demonstrated improved preparedness to manage common clinical problems and perform procedures between the second and the fifth months of internship.

Conclusions: First-year residents after July 2011 felt less prepared in the topics surveyed than those before July 2011. Interns made the greatest gains in preparedness between months 2 and 5, suggesting that despite planned interventions, no substitute currently exists for actual clinical experience. Planned educational interventions to improve intern preparedness are also indicated.

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1. Introduction

After implementation of the latest resident supervision and duty-hour regulations from the Accreditation Council for Graduate Medical Education in 2011 [1], the structure of many surgical training programs underwent sweeping changes. In addition to commonly relying on day and night shifts to

assume the care of inpatients, reports have also noted an increased number of transitions between care providers as a result of these staffing structure changes [2].

Prior studies have reported residents' projections of effect from the 2011 duty-hour regulations on their clinical training and education [3,4]. As the most recent iteration of rules has primarily strengthened the supervision and duty-hour

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requirements for first-year residents, there is a need to understand and assess the impact of such changes not only on the resident education as a whole [5] but also on the ways in which interns are prepared to assume roles with less supervision in their training programs.

An increasing body of literature has centered on the premise that surgeons completing their training under the modern paradigm feel unprepared for independent practice [6,7] and may also serve as an explanation for the large number of surgical trainees seeking additional fellowship training after general surgery residency [8]. However, a gap in the literature exists around residents' perception of their preparedness for various aspects of practice during the course of their residency training. Thus, our study has two primary aims: first, to serially measure interns' perceived preparedness to manage common patient care scenarios longitudinally after implementation of the 2011 Accreditation Council for Graduate Medical Education duty-hour regulations to define a potential learning curve and second, to determine differences in interns' perceptions of preparedness at the end of the academic year before and after the 2011 regulations.

Because the 2011 regulations require first-year residents to have direct supervision for a number of common patient care scenarios until they have demonstrated competency in their management [9], our intern didactic program was correspondingly intensified with lectures, case studies, and computer scenarios targeted at basic patient management. Interns discussed clinical cases in small groups, and one intern laboratory was dedicated to simulations of patient management scenarios. Additionally, each intern had direct supervision from a senior resident (post-graduate year [PGY] 3–5) during all calls for urgent patient management until they achieved a passing score on a multiple-choice competency examination. We hypothesized that from June 2011 to June 2012, given these interventions, we would observe increased intern confidence in management of common patient care scenarios. We were specifically interested in perceptions of our interns and not the effectiveness of our interventions *per se*.

2. Materials and methods

Our group developed a survey to examine several aspects of resident perceptions and attitudes about their residency experiences [5]. Perceived preparedness was assessed using questions from a previously published survey [10] adapted for targeting the finishing PGY 1 level. Respondents were asked to select their self-assessed level of preparedness to manage four acute patient scenarios and perform four common procedures without direct supervision. Patient management scenarios were selected from among those required to have direct supervision by the Surgery Residency Review Committee (RRC). To reflect the most common tasks of interns, the procedure scenarios included two bedside procedures and two operative procedures. Respondents were forced to select some degree of preparedness or unpreparedness using the scale “very unprepared,” “somewhat unprepared,” “somewhat prepared,” and “very prepared.” Invitations to complete this anonymous survey were distributed electronically via the SurveyMonkey platform (SurveyMonkey Inc, Palo Alto, CA) in June 2010–2011

and 2011–2012 academic years to all PGY 1 residents completing a full year of general surgery training ($n = 18$) at Johns Hopkins Hospital. Age and gender were collected for demographic purposes.

Longitudinal preparedness was also assessed on the same scale using an anonymous survey given electronically at four intervals over the course of the 2011–2012 academic year—during residents' first, second, and fifth months of training. This survey included the same questions as the year-end instrument but was expanded to include preparedness level ratings for the management of additional patient scenarios developed from the Surgery RRC guidelines for direct supervision [9] (Table 1).

Survey data were compiled and analyzed using basic parametric statistics. Comparisons between the resident responses in different months of training were made using the two-sample *t*-test and chi-square test as appropriate. All calculations were performed with the Stata 11 statistical software package (StataCorp, College Station, TX). The Johns Hopkins University School of Medicine's Institutional Review Board approved this study with participant consent during survey completion.

3. Results

Survey participation was solicited with an initial e-mail and three reminders to nonrespondents. Response rates for each administration were 100%, 100%, 61%, and 72%, respectively, for months 1, 2, 5, and 12, with an overall response rate of 83%. Mean respondent age was 27.4 y (range, 26–32 y), and 28% were female (range, 10%–35%), mirroring the composition of our intern class in both years.

3.1. Comparison of year-end preparedness

Reported preparedness to manage four common clinical and procedural scenarios at a first-year level between June 2011 and June 2012 are shown in Table 2. When comparing results from the academic years ending in 2011 and 2012, mean ratings of resident confidence to manage each problem while unsupervised decreased over the study period. These differences were only significant for the management of a patient

Table 1 – Surveyed patient management scenarios.

| Survey period | Patient problem |
|----------------------------------|--------------------------|
| Longitudinal and year-end survey | Hypotension |
| | Mental status change |
| | Tachycardia with hypoxia |
| | Oliguria |
| Longitudinal survey | Arrhythmia |
| | Hypertension |
| | Fever |
| | Low respiratory rate |
| | Compartment syndrome |

Categories of urgent patient management scenarios corresponding to Surgery RRC guidelines included on longitudinal and year-end surveys of intern preparedness.

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