

# Surgical Practical Skills Learning Curriculum: Implementation and Interns' Confidence Perceptions

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**OBJECTIVE:** To provide an overview of the practical skills learning curriculum and assess its effects over time on the surgical interns' perceptions of their technical skills, patient management, administrative tasks, and knowledge.

**DESIGN:** An 84-hour practical skills curriculum composed of didactic, simulation, and practical sessions was implemented during the 2015 to 2016 academic year for general surgery interns. Totally, 40% of the sessions were held during orientation, whereas the remainder sessions were held throughout the academic year. Interns' perceptions of their technical skills, administrative tasks, patient management, and knowledge were assessed by the practical skills curriculum residents' perception survey at various time points during their intern year (baseline, midpoint, and final). Interns were also asked to fill out an evaluation survey at the completion of each session to obtain feedback on the curriculum.

**SETTING:** General Surgery Residency program at a tertiary care academic institution.

**PARTICIPANTS:** 20 General Surgery categorical and preliminary interns.

**RESULTS:** Significant differences were found over time in interns' perceptions on their technical skills, patient management, administrative tasks, and knowledge ( $p < 0.001$  for all). The results were also statistically significant when accounting for a prior boot camp course in medical school, intern status (categorical or preliminary), and gender ( $p < 0.05$  for all). Differences in interns' perceptions occurred both from baseline to midpoint, and from midpoint to final

time point evaluations ( $p < 0.001$  for all). Prior surgical boot camp in medical school status, intern status (categorical vs. preliminary), and gender did not differ in the interns' baseline perceptions of their technical skills, patient management, administrative tasks, and knowledge ( $p > 0.05$  for all).

**CONCLUSIONS:** Implementation of a Practical Skills Curriculum in surgical internships can improve interns' confidence perception on their technical skills, patient management skills, administrative tasks, and knowledge. (J Surg Ed ■■■■-■■■. © 2017 Published by Elsevier Inc. on behalf of the Association of Program Directors in Surgery)

**KEY WORDS:** readiness, boot camp, curriculum, perception, confidence, simulation

**COMPETENCIES:** Medical Knowledge, Practice-Based Learning and Improvement, Interpersonal and Communication Skills

## INTRODUCTION

In 1999 the ACGME established 6 core competencies to be achieved during residency, which include medical knowledge, patient care, interpersonal and communication skills, professionalism, practice-based learning and improvement, and systems-based practice.<sup>1,2</sup> With the implementation of duty hour restrictions, along with increased accreditation oversight requirements for junior residents, residency programs restructured their educational delivery systems.<sup>3</sup> Residents must now demonstrate mastery of competency-based educational requirements while adhering to challenging workweek time limitation.

To increase medical students' preparedness for surgical residencies, the American Board of Surgery, American

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College of Surgeons (ACS), Association of Program Directors in Surgery (APDS), and the Association for Surgical Education (ASE), suggested that all medical schools adopt a surgical preresidency preparatory course in their curricula to acquire basic clinical and technical skills. The intent is to diminish the variability in skill sets that currently exists among incoming surgery interns and to improve the interns' preparedness for meeting the competency-based education requirements.<sup>4,5</sup> Although medical school surgical boot camps have proven to be effective in fostering the necessary prerequisite skills to enter a surgery internship, recent graduates come from different medical schools with varying preresidency preparatory course work. Selden et al.<sup>6</sup> found that boot camps held during a neurosurgery internship met intended goals and provided interns with specific skills and knowledge in a way that improved the quality of care. Krajewski et al.<sup>2</sup> showed similar results for a competency-oriented intern boot camp curriculum that provided interns with essential knowledge and practical skills to attain clinical competence.

Although most studies evaluate how interns' confidence changes when exposed to an intern boot camp before the start of clinical duties, this study entails evaluation of the effect of a comprehensive year-long curriculum on intern confidence and perceived skills. The General Surgery Intern practical skills curriculum (PSC) was piloted during the academic year 2015 to 2016 with incoming surgery interns, and their perception of their technical skills, patient management, administrative tasks, and knowledge was assessed over time.

## METHODS

### Participants

The intern class of the General Surgery Residency Program at BIDMC for the 2015 to 2016 academic year was comprised of 20 residents, including 10 categorical residents, 2 designated preliminary residents, and 8 nondesignated preliminary residents. One of the categorical residents was in the 0 to 5 integrated vascular surgery residency program. The designated preliminary interns had PGY-2 positions in radiology (1) and otolaryngology (1). The desired pursued specialty of the nondesignated preliminary interns were general surgery (5 interns), orthopedics (2 interns), and urology (1 intern). Totally, 13 interns were male and 7 female in which 10 interns attended a surgery boot camp at their medical school, whereas 10 did not. Participation in the PSC was required as part of the overall residency curriculum, but study participation was voluntary, although all participated.

### Practical Skills Curriculum

The curriculum was composed of didactic, simulation, and practical sessions, covering topics in 4 major categories:

technical skills, urgent patient management, administrative tasks, and surgical or medical knowledge. This curriculum was developed based on the corresponding month-long medical student boot camp developed at our institution (A. Gupta, unpublished data).<sup>7</sup> The curriculum was then expanded to incorporate more advanced intern-level topics in all areas but particularly in the nontechnical categories. The curriculum topics are shown in [Appendix A](#). Most of the simulation sessions were held at the institution's simulation center, whereas others occurred if needed, depending on topic, in other locations within the institution. Attending physicians, senior residents, and subspecialty fellows taught the sessions.

Overall, 40% of the sessions were held during the first 2 weeks of orientation, before the beginning of clinical duties. The remaining sessions were held during protected time designated exclusively to the PSC throughout the academic year, which included 2-hour sessions (1 per week) for 2 months, and then twice monthly (1 or 2 hours per session) for the remainder of the academic year. The total time of the sessions was 84 hours.

Resources used to implement this curriculum were those available through the simulation center of our institution. Surgical kits (suture and knot tying) for the sessions were purchased as part of the educational budget. Senior residents participated as instructors as part of their teaching rotation duties; in addition, faculty were invited to lead sessions based on their area of expertise and availability.

### Survey

The 4 major skill categories comprising the PSC were used as a framework to develop the survey. Survey questions were developed and reviewed by a panel of education experts, including residency program leadership. Questions were formatted into a 5-point Likert scale survey to be administered to participants ([Appendix B](#)). The survey was composed of 43 total items: 19 questions for technical skills, 9 for urgent patient management, 8 for administrative tasks, and 7 for knowledge.

Before the beginning of the first session, all residents provided their consent to participate in the study and they were asked to fill out the survey (baseline). Data were deidentified by 1 member of the research team. Interns were asked to complete the same survey after 4 months (midpoint), and again toward the completion of the PSC (final). Interns were also asked to fill out an evaluation at the completion of each session to obtain feedback on the curriculum itself ([Appendix C](#)).

### Survey Analysis

Ordinal data from the subtopics of the survey were converted to interval data to obtain major category totals for technical skills, patient management, administrative

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