Evaluation of a Surgery-Based Adjunct Course for Senior Medical Students Entering Surgical Residencies

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BACKGROUND: Preparatory courses for senior medical students aim to ease the transition from medical school to residency. We designed a novel adjunct curriculum to enhance students' readiness for surgical internship. This study addresses the feasibility and outcomes of this course.

MATERIALS AND METHODS: A curriculum was designed based on ACGME surgical milestones. Students participated in 8 (3 h) sessions held over 4 weeks as an adjunct to a well-established intern preparatory course. Course activities involved interactive simulation cases to emphasize care of surgical patients, and skills sessions focused on knot tying and suturing, which were reinforced with home video assignments. Students rated confidence on 14 management skills using a 5-point Likert scale (5 = high confidence). Faculty graded students' technical performance using a global scale (0-10) for 5 suturing exercises. Comparisons between precourse and postcourse data collected for all measures were made using *t*-tests ($\alpha = 0.05$).

RESULTS: A total of 11 students entering 4 different surgical fields participated. Overall confidence in patient management improved from 2.41 to 3.89 (standard deviation = 0.49, 0.35; $p < 0.05$). Students' scores on all 5 suturing tasks increased ($p < 0.05$).

CONCLUSIONS: We developed a surgery-specific component to the existing preparatory course at our institution. Students demonstrated increased confidence in ward management skills and increased technical scores in all exercises. Although only 3 sessions were dedicated to technical skills, improvements may highlight the benefit of home video assignments. This course serves as a specialty-specific model for schools with existing preparatory courses. Our curriculum highlights skills specific for surgical residency, while maximizing resources. (J Surg Ed 73:631-638. © 2016 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: medical education, intern preparatory course, surgical curriculum

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

INTRODUCTION

The transition from medical school to residency is difficult, stressful, and filled with uncertainty. Educators have attempted to address many of these challenges by developing preparatory courses aimed at bridging the gap between the demands of medical school and residency. These courses have taken many forms; some are designed for senior medical students (SMS) during the fourth year of medical education, whereas others occur throughout the first months of residency.[1,2] There are courses that highlight preparation for a specific specialty and others that focus more on the generic transition applicable to all specialties. Despite the various formats and the recognized importance of preparatory courses, implementation of these types of curricula is highly demanding, necessitating significant time, faculty efforts and institutional funds for successful execution.[3]

Surgery Challenges

Surgical residency faces additional challenges.[4] The design of most surgical services have the senior residents in the operating room for the majority of the day, whereas the interns provide immediate care to postoperative patients. Additionally, ongoing changes in ACGME requirements put additional pressure on surgical residents to get operative exposure early in their training. The implementation of

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duty hour restrictions has resulted in the need for basic technical skill acquisition to occur outside the operating room. To this end, a statement released by joint surgical organizations indicated that "all matriculates to surgery residency successfully complete a preparatory course… before the start of their training."[5]

Previous Preparatory Courses

Although many medical schools have implemented "boot camp" courses for SMS and surgical interns, there is no standardization of these courses. Courses range from day-long sessions to month-long elective courses.[6,7] Content covered during these courses also varies considerably, though most courses include technical skills including basic suturing and knot-tying, procedural skills, and ward management skills.[2,6-11] The new ACGME milestones have provided some guidelines for competency goals, and some institutions have developed their curricula with these milestones in mind.[10] Evaluation of these curricula range from surveys demonstrating improved confidence among students, to technical skills assessments demonstrating improvement in basic surgical skills and knowledge-based tests showing higher scores.[7-10] Taken together, the results of these courses suggest that there is a benefit of these courses, though more rigorous research is required to optimize these courses.

Our Course

We chose to design a novel curriculum that can be embedded into a capstone course to enhance student's readiness for surgical internship. Since 2001, UCSF School of Medicine has offered their students a multidisciplinary course aimed at improving the transition from medical school to residency.[3] Various break-out sessions are offered for the students throughout the 4 week course. In 2014, we offered a supplemental course to students entering surgical fields emphasizing both cognitive and technical components. This article discusses our experience with this supplemental course and investigates its efficacy and feasibility.

MATERIALS AND METHODS

A surgical curriculum was designed and executed as an adjunct to the intern preparatory course that is well established at UCSF School of Medicine.[3] The established course, called "Coda" is carried out over 3 weeks and is designed to be a high-yield review of medical school curriculum for students preparing to enter residency. Broad topics are covered in didactic lectures supplemented by small group sessions with hands-on skills (Fig. 1). As an adjunct to this course, a surgical curriculum was designed to highlight management of common postoperative issues and technical skills for those entering surgical residencies. These postoperative issues are unique to the surgical patient population and are not covered in detail in the didactic or small group sessions. To highlight some of these nuances and provide focused technical instruction, the surgery adjunctive curriculum consisted of 8, 3-hour sessions held over a 3-week period. These sessions included an introduction, an intensive review of technical skills, ward management and communication skills, and final evaluation (Fig. 1). The ward management and communication skills were presented via hands-on, practical scenarios. The course was developed based on competencies highlighted in the ACGME milestones for general surgery.[12]

Curriculum

Activities highlighting cognitive components included three 3-hour sessions dedicated to interactive simulation cases and mock-page encounters (Fig. 1). These cases were designed to cover common postoperative scenarios interns encounter and aimed to highlight early recognition and management of life-threatening situations. Scenarios addressed the following topics: postoperative pain (expected, more than expected [anastomotic leak, ileus or vomiting]), electrolyte abnormalities (hyper- and hypokalemia), insomnia, agitation or acute mental status change (hypoxia, shock, glucose and electrolyte abnormalities, medications), fall, postoperative fever (concerns based on when, related to the surgery, it occurs [anastomotic leak, surgical site infection—superficial or deep]), oliguria (prerenal presentation, pre- or posttransplant patient), respiratory distress (pulmonary embolism and pneumothorax), chest pain (myocardial infarction), tachycardia (atrial fibrillation and congestive heart failure), hypertension, hypotension (hemorrhagic shock and septic shock). Students took turns individually in front of the class working through various mock-page scenarios. Templates were created for the aforementioned topics using an adapted version of previously published preparatory material.[13] The templates were designed to highlight key concepts for the different scenarios and guide the operators through the debriefing session (Appendix A). Instructors including attendings and surgical residents played the roles of patient, nurse, chief resident, etc. A student would work through the scenario and receive immediate feedback at its conclusion. Usually 2 scenarios were covered in each session. At the end of the session, the entire group debriefed together identifying take-home points which highlighted the specific acute ward issue presented.

Technical skills were highlighted in an additional three 3-hour sessions (Fig. 1). These sessions focused on basic surgical knot tying and suturing. Instruction in knot-tying was based on our previously validated kinesthetic