



“Development of an Academic Surgical Student Program for Enhancing Student-Faculty Engagement”

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OBJECTIVE: We describe an innovative medical student surgery interest group and its influence on mentorship and career exploration.

DESIGN: SCRUBS, created to promote interest in academic surgery, is student-led, with continual surgical faculty and resident involvement. Its 3-component programming focuses on clinical skills, research, and mentorship opportunities for medical students to get involved in academic surgery early in medical education.

SETTING: The University of Michigan Medical School, Ann Arbor, MI.

PARTICIPANTS: First through fourth year medical students, surgery residents, and attending surgeons.

RESULTS: SCRUBS is a multifaceted student organization providing longitudinal exposure to various aspects of surgery and academic medicine. The group grew annually from 2010 to 2014, with students and faculty expressing positive feedback. Over the time period reviewed, we had a greater percentage of students applying into surgical specialties compared with the national average (16.8 vs 12% in 2014). The group supported and facilitated mentorship, clinical skills development, and research opportunities for interested students.

CONCLUSIONS: This innovative surgery interest group has been well received by students and surgeons, and our institution has seen above-average interest in surgical careers. Early, preclinical mentorship and exposure provided by SCRUBS may contribute to this higher

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KEY WORDS: Medical education, Surgery, Mentorship, Recruitment

INTRODUCTION

Substantial concerns exist regarding the predicted shortage of physicians, especially surgeons. Exposure to surgeons has notoriously been limited in the preclinical years of medical education.¹ The impact of lack of exposure has been implicated in an evident decline in medical student interest in general surgery.^{2,3} Consequently, there is concern that a continuation of this trend may exacerbate the shortage of surgeons in the medical field.^{4,5} We have attempted to address this issue through “SCRUBS,” a surgery interest group that facilitates early exposure to encourage the recruitment and development of future leaders in academic surgery.

A proposed reason behind the decrease in interest in surgery is limited preclinical mentorship.⁵ Haggerty et al. documented an experience with a structured program designed to expose medical students to cardiothoracic surgery. Overall, the program resulted in an increase in students applying into surgery compared to both the national average and average for nonparticipants.⁶ Similar successes have been seen with positive mentorship programs in other specialties.^{7,8} Mentorship plays a key role in a student's selection of career choice. It has been found that students applying into general surgery are more likely to have had positive role models in the field of surgery.⁹ Additionally,

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exposure to surgeons in preclinical years has been associated with an increase in readiness to begin surgical clerkships.¹ We describe our institution's recruitment and mentorship program as a potential model for other programs to use.

MATERIALS AND METHODS

In 2002, our institution's Department of Surgery extended its commitment to academic surgery to incorporate programs cultivating early interest as a resource for medical students. Founded originally by senior faculty member M.B. Orringer, the original program "SCRUBS" facilitated early exposure to demystify surgeons and their lives for students. Starting from a series of dinners with faculty presentations on various surgical specialties with 12 students, the program has seen drastic evolution and expansion to incorporate teaching and leadership development, involving more than 200 students annually across all levels of the medical school. The current format has broadened to facilitate one-on-one mentorship, research projects, and skills development for first and second year students.

To fully encompass all domains of academic surgery, SCRUBS recently divided into 3 components: clinical, research, and outreach. The goal of the clinical component is to facilitate early exposure and development of foundational surgical skills and promote longitudinal faculty interactions. Surgical faculty and residents hold clinical skills training sessions in the hospital simulation center. These sessions provide an intimate setting where students learn skills like suturing and knot-tying, and provide exposure to skills that are useful beyond just surgery. This provides opportunities to learn how to work with faculty and residents in a "low stress" environment, and faculty-led "Introduction to OR" sessions teach students appropriate behavior for interacting in the OR.

As a novel approach to developing peer teachers and leaders, SCRUBS established a Teaching Fellowship structured to benefit preclinical and clinical medical students. A tiered system with faculty supervision of M4s teaching M1s and M2s serves as the foundation for the Fellowship. Upon completion of a predetermined list of requirements and demonstrated competencies, M2s can lead sessions with the M1s. The development of this program has allowed for the expansion of SCRUBS activities that were previously limited by resident and faculty availability.

The research component of SCRUBS provides surgical research opportunities and a structure for mentorship in a team setting. The former is accomplished by pairing students with a single faculty for a research project that can result in a student first-author

presentation. The latter is accomplished through the SCRUBS Surgery Olympics program. This program commences during the summer after M1 year and continues throughout M2 year. "Olympic" teams consist of one faculty mentor and 4 to 5 students. The students are tasked with completing a clinical research project, writing and presenting findings, and producing a manuscript. The goal is to foster communication skills by teaching students how to write clear and concise clinical research manuscripts. The Olympic teams participate in a structured competition that evaluates academic and technical proficiencies, giving presentations to the Department of Surgery scored by faculty, residents, and students. For the skills component, the SCRUBS teams receive coaching by their faculty leader in practice sessions, cultivating in a competition of laparoscopic, suturing, and knot-tying skills in the simulation lab. At the end of the Olympics program, a winning team is selected based on the results of the abstract, oral presentation, and skills competitions. The 2015 cohort produced 3 scientific journal publications and 29 presentations. We have found that the competitive nature of this program increases student and faculty participation and enthusiasm.

The outreach branch facilitates mentorship between surgical faculty and medical students and provides shadowing opportunities to increase exposure to surgery. The outreach component continues to manifest the spirit of the original "Orringer dinners" with faculty-hosted meals and presentations. Each month different surgical faculty members host 30 members at their home and, after an informal dinner, give a presentation on their surgical lifestyle and career decisions. Additionally, monthly brown-bag lunch talks are hosted featuring surgical faculty speaking on similar topics, with no attendance maximum. The outreach coordinator provides specific documentation detailing how to prepare to shadow in the OR and how to establish a good relationship with a surgical mentor. Additionally, a list of potential mentors in the department of surgery is provided to students.

The opportunities that SCRUBS offers through three pillars foster networking amongst the students and faculty that allow students to gain a realistic perception of the training and lifestyle associated with a surgical career. It is the goal of SCRUBS to provide adequate exposure and opportunities to not only aid in career decisions, but also ensure access to the resources needed for students to succeed.

RESULTS AND CONCLUSION

SCRUBS has developed from a small interest group based on monthly dinners to a large multifaceted organization

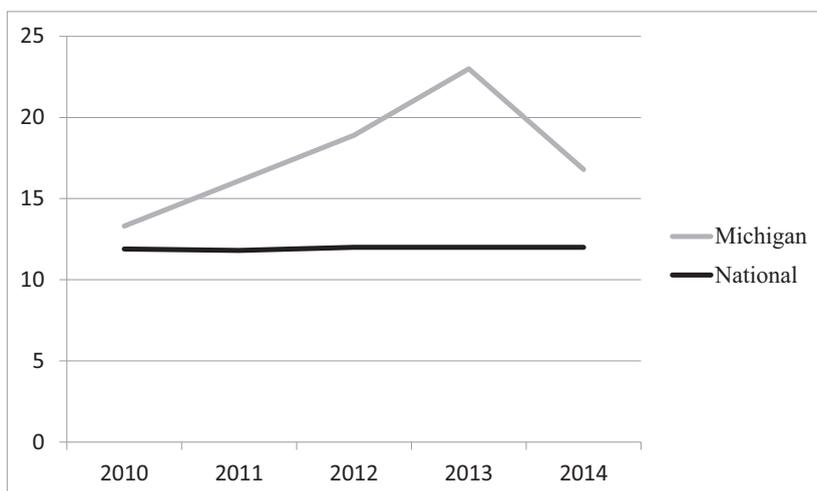


FIGURE 1. Percent of students at Michigan vs nationally placing into all surgical specialties from 2010 to 2014. Surgical Specialty Residency Match.

that continues to grow each year. In order to examine if students at our institution had a greater interest in surgery as a career compared to the national average, we assessed the number of students applying into all surgical specialties (including general surgery, neurosurgery, orthopedic surgery, otolaryngology, plastic surgery, thoracic surgery, and urology) from 2010 to 2014. Each year our school had a greater percentage of students matching into surgical specialties than the national average (Fig. 1). 56 of 106 students have matched into top 25 residency programs according to available rankings on Doximity. While we cannot prove a causal link between SCRUBS and this interest in surgery, these data demonstrate an institution that develops a strong interest in surgical careers.

SCRUBS is one example of a well-developed medical student surgery interest group. While the shape of this group has evolved over the years, its cornerstones of mentorship and exposure to diverse aspects of academic surgery have remained the central focus. By generating interest and providing mentorship in surgery at an early stage of training, a strong pool of future surgeons may be developed, thus mitigating the predicted shortage of practicing surgeons. One limitation is that we are unable to document a casual effect at this time; however, we strongly feel that we have produced a much stronger group interested in surgery and that this is not as robust at other programs.

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