

The recruitment of medical students to careers in general surgery: Emphasis on the first and second years of medical education

Kirby I. Bland, MD, Birmingham, Ala

From the Department of Surgery, University of Alabama at Birmingham, Birmingham, Ala

A TREND OF DIMINISHING INTEREST for careers in General Surgery is evident among senior medical students graduating from American schools of medicine. This trend has the potential to affect the number of positions filled each year in the National Residency Matching Program (NRMP). The variety of reasons for this decline in applications to General Surgery residencies has caused great concern.

In their efforts to confront the demands for this variation in career options by fourth year medical students, residency program directors in General Surgery must understand why graduating seniors make their specialty choices and what these trends portend for the future of our profession. Family Medicine, Internal Medicine, and Pediatrics, as well as General Surgery have continued to show a declining number of annual applicants; in contrast, Anesthesia, Dermatology, Radiology, Emergency Medicine, Pathology, Ophthalmology, and Neurology note increasing interest by senior students. Previous studies have suggested that "controllable lifestyle" issues are of primary importance in senior medical students' decisions of which specialty to pursue. Traditional factors that used to influence students' choice of careers (specialty content, prestige, and financial remuneration) have been replaced by the following: (1) number of hours on call, (2) duration of the residency training with its increasing educational debts, (3) the likelihood

of litigation, and (4) the professional control expected by practitioners regarding occupational work hours.

At The University of Alabama at Birmingham (UAB), we have had encouraging success in the retention and recruitment of senior medical students entering General Surgery. Moreover, other UAB surgical specialties have also been successful in recruiting UAB students in Neurosurgery, Orthopedics, Otolaryngology, and Urology with little variation in the career choices of our students. This analysis will focus on measures the UAB Division of General Surgery considers of value to both enhance recruitment of first year (MS-1) and second year (MS-2) medical students and to integrate this effort into the applied measures for maintaining interest in the profession for third year (MS-3) students.

CONTEMPORARY NATIONAL RECRUITING TRENDS

In a recent review of the NRMP results of the decade 1990 to 2000, matching results were stable with an average 98.4% of General Surgery positions filled.¹ However, in the 2001 NRMP match, only 93.4% positions filled; in the 2002 match, 94.4% of categorical positions offered were filled. This decline in the match rate, as well as the evident reduction in United States senior medical matching into General Surgery, has provoked major concern among surgical educators. Questions arise as to whether these reductions in the 2001 match were a natural fluctuation; however, with the persistent decline reflected in the 2002 match, despite the overall "fill rate" with international medical graduates, this lower match rate of U. S. students appears to validate the trend in results from the Medical Student Graduate Questionnaire (MSGQ).¹ The MSGQ data confirmed a declining interest in

Accepted for publication March 20, 2003.

Reprint requests: Kirby I. Bland MD, Professor and Chairman, Department of Surgery, University of Alabama at Birmingham, 1808 7th Avenue South; Room 502 BDB, Birmingham, AL 35233.

Surgery 2003;134:409-13.

© 2003, Mosby, Inc. All rights reserved.

0039-6060/2003/\$30.00 + 0

doi:10.1067/S0039-6060(03)00128-4

General Surgery since 1990 among U. S. students. However, the data suggested no effect on the General Surgery match regarding number of positions filled because of a relative plethora of applicants until 2001. Throughout the 1980s, more students desired a career in Surgery than were positions available (10% of senior medical students, approximately 1,600 students, were interested in the 1,100 available positions).

However, for 2001, the number of U. S. students interested in General Surgery (960 students) was fewer than the number of positions offered ($n = 1,041$, 6.0%); this number approximated the number of students who matched ($n = 973$). Thus, we can infer that this buffer has been exhausted, and as trends in the 2002 NRMP results confirm, 981 positions were matched in General Surgery, of which 75.3% were U. S. seniors, a gap (24.7%) filled by international medical graduates. These trends suggest that program directors and surgical educators alike must not be complacent, for if the interest in the specialties with a "controllable lifestyle" continues, a negative impact on the workforce in General Surgery may result. Adding to this concern is the fact that about half of all General Surgery residents ultimately select fellowship training in a different specialty (Cardiovascular, Plastics, Vascular, Surgical Oncology, etc), thus further depleting residency training opportunities that focus on careers in General Surgery.² However, even some of these specialties may be in trouble, for example, cardiovascular surgery.

THE OPPORTUNITIES TO INFLUENCE SURGICAL CAREERS

In a recent survey by Meyer and Weiner,³ MS-2 students at the University of North Carolina were polled regarding factors that influenced their interest in Surgery as a career. Despite the low response rate to the survey (35%), results did not indicate a profound lack of interest in General Surgery. The authors note that some of the disinterest detected in MS-2 students was a result of entrant selection, a bias against a career in Surgery acquired during their first 2 years of medical school, or both. Of significance, these authors identified a lack of contact between surgical faculty and MS-1 and MS-2 students as the heart of the issue, accounting for as much as 80% of the negative impressions of General Surgery. These authors suggest that the "lack of development of (such) interest" in Surgery in the formative years of their career choices is of major importance to the recruitment effort.

We agree with the concerns raised by Hiram Polk⁴ who proposed multiple recommendations to abrogate the declining interest in Surgery for medical students. His suggestions include the following: (1) increase research opportunities in the surgical sciences during the summer months of MS-1 and MS-2; (2) establish an increased involvement by surgeons in the medical school classes that provide the intellectual foundation for surgical interest (eg, Physical Diagnosis and Physiology); (3) expose students to group practice and acceptable lifestyles of private surgeons; (4) allow the clinical surgical volunteer faculty to act as role models and organize mentor groups; and (5) encourage various surgical organizations to address the issue of reductions in reimbursement continually experienced by surgeons.

We have developed recommendations (Table) for program directors to assist in improving the recruitment of senior students into the profession.¹ These parameters to enhance the profession, to influence lifestyle issues, and to improve the employment opportunities in General Surgery must be emphasized at all levels for students pursuing a medical education.

ENHANCEMENT

Enhancement of career choices. Many successful nonsurgical specialties contact students upon acceptance to private and state-supported medical schools to identify those with a potential interest in their specialties (Family Medicine, Internal Medicine, Pediatrics, Emergency Medicine). This early stimulus to students formulating their professional goals with ambitious development of career plans are often drawn to (or in essence recruited by) a profession in which early contact has been established. In our view, the extension of invitations to MS-1 and MS-2 students by surgical educators to attend surgical grand rounds, special lectureships by visiting professors, and research and clinical conferences allows valuable opportunities to develop interest in the profession. Moreover, special students may be actively targeted (MD-PhD candidates) and offered the opportunity of research in surgical laboratories for their PhD thesis; such approaches are also valuable to non-PhD students who may formulate a major interest in General Surgery or surgical careers based on their laboratory or clinical exposure to surgical mentors.

An additional and valuable measure that evokes interest in surgical sciences is participation by surgical faculty in lectures for MS-1 and MS-2 students. Chairs should encourage faculty to

Table. Recommendations for program directors in the recruitment of medical students (MS1-MS4): Enhancement, lifestyle issues, and employment

I. Enhancement.

- A. Extend invitations to first- and second-year students to surgical grand rounds and special lectureships.
- B. Form clubs and interest groups with surgical faculty advisors and residents.
 - Meet regularly to educate students about surgery clerkships, residencies, fellowships, and the many rewarding career options in the specialty.
 - Hold seminars on techniques of suturing and wound care.
 - Hold tours of the operating room and other surgical work environments.
- C. Establish a web site to provide a locus for information not available with more “official” channels to assist students in coordinating their activities, classes, rotations, and projects.
- D. The clerkship.
 - Provide students with a solid knowledge base combined with best practice patterns for demonstration of the technical aspects of patient care management.
 - Maintain focus on acquisition of patient care and operative skills, not in overuse of students for soul work.

II. Lifestyle issues.

- A. Verify that residency programs comply with Residency Review Committee rules and regulations regarding resident work hours where patient care and resident education are not compromised.
- B. Differential of practice opportunities.
 - Differences between a surgical resident’s lifestyle and that of a private practice physician or academic surgeon needs to be emphasized to students in their clerkship training.
 - Students should be given the opportunity to “shadow” a private physician in the community to gain exposure to the realistic (and enjoyable) lifestyle pattern, or general surgery practice following residency.
- C. Approximately half of the applicant pool in surgery is female.
 - Issues regarding postponement of family leave need to be addressed, and maternity leave policies may need to be revised.
- D. Income, reimbursement, and professionalism.
 - Academic and clinical societies representing surgeons need to educate policy makers and legislators of the importance of providing competitive reimbursement for surgeons.
 - Students observe that surgeons frequently have greater work demands compared with other well-reimbursed specialists. Many students would not object to increased work if they are compensated accordingly or shown how the rewards of professional satisfaction outweigh the advantages of financial reimbursement.
 - Stress that competitive reimbursement for surgeons not only reinforces personal comfort but strengthens our society in sustaining a citizenry of skillful and independent professionals.

III. Employment.

- A. Students and residents should be fully informed concerning employment opportunities in general surgery, and in particular, about how this demand is affected by a growing elderly population.
 - B. The need for surgeons should be promoted in a manner commensurate with society’s support for primary care physicians. When needs are clearly articulated, students respond.
 - C. It must be stressed to students that a career in general surgery provides many desirable employment opportunities. These opportunities must be emphasized early in medical school to sustain interest in a career in general surgery.
-

Reprinted with permission from: Bland KI and Isaacs G. Arch Surg 2002;137:259-67.

participate in the basic science lecture series (Anatomy, Physiology, Pathology, etc) when the opportunity arises. Moreover, when organ system lectures are taught addressing pathophysiology and treatment, certain topics are particularly well suited for the surgeons who care for these areas of specific clinical interest (eg, Vascular Disease, Cardiovascular Disease, Surgical Oncology, Sepsis, Trauma, etc).

Surgical interest clubs and the surgical environment. Surgical interest clubs mentored by surgical faculty advisors and senior surgical residents provides one of the most proactive, visible, and successful forums for recruitment of MS-1 and MS-2 students. These approaches require a commitment

by the surgery staff and residents to meet on a regular basis to educate students about surgical clerkships, residencies, fellowships, career choices, and opportunities offered by the specialty. These efforts have been extended to provide seminars on techniques of suturing and wound care throughout the surgical clerkship. The early “recruitment” and identification of interest in surgery by MS-1 and MS-2 students may be enhanced by electronic media, which provides a communication medium to allow students to develop and sustain an interest in the technical and cognitive aspects of the surgical sciences, which can continue into the MS-3 surgical clerkship.

Many hospitals and departments of surgery have allowed MS-1 and MS-2 students who are on summer rotations the opportunity of working in operating rooms, research laboratories, and other employment in the surgical work environment. This experience can be invaluable to the MS-1 and MS-2 student who encounters the excitement of a successful research or clinical surgical environment and is encouraged to enter the profession by surgical educators and residents.

Web site contacts. In our cyber-based society, the provision of a dedicated, interactive Web site from the Department of Surgery that depicts departmental activities with comprehensive network access is very attractive to contemporary medical students at all levels. Moreover, upon acceptance to medical school, the matriculating MS-1 student will often "surf" the Web sites provided by the various departments in the medical school to which he/she has been accepted. This electronic media provides a source of information not provided by any forum other than that developed by a specific department. This official communication/information "channel" assists in the education of these matriculating undergraduate students. MS-1 and MS-2 students are given the opportunity to coordinate their activities, classes, rotations, and perhaps the development of special interest projects with designated surgical mentors. Early and successful contact with these students is essential for surgery departments to be competitive with the nonsurgical specialties.

The surgical clerkship. The surgical clerkship offered to the MS-3 and MS-4 students may be the most important predictor for the success or failure of student recruitment into the profession. Perhaps no mechanism of developing a proactive interest in surgical sciences is as important for surgical educators as to have the MS-1 and MS-2 student anticipate with enthusiasm a stimulating, educational, cognitive, and technically rewarding experience with rotation on the General Surgery clerkship. Therefore, a comprehensive, cognitively based experience that provides the best practice patterns for patient care management in surgery should be highly encouraged. Further, such positive experiences are immediately conveyed by MS-3 and MS-4 students to their underclassman and may prove to be either a rewarding clinical experience or a disappointing clerkship for the MS-3/4 student, regardless of the assessment by the surgical educator. Thus, an effective, educational, and exciting surgical clerkship is the most important recruitment tool available. It is the obligation of the program director and surgery student advisor

to ensure that MS-3 students are educated in the acquisition of patient care and operative skills in a constructive and focused manner. Further, the clinical experience in the operative and ward environment should not place undue demands on students for mundane tasks that provide little educational value (eg, scutwork, patient transport, phlebotomy chores, etc). There is no question that measures that enrich the clinical clerkship experience for rotating MS-3 and MS-4 students and that decrease the "service" demands are communicated to their underclassmates.

LIFESTYLE ISSUES

Surgical educators have stressed that issues of a "controllable" lifestyle represent one of the most dominant factors influencing career choices of medical students.^{1,3} Communication among students regarding lifestyle impressions and desires, principally in the MS-3 and MS-4 years, allow students to formulate their career choices. Since 1994, more than half of all medical students at UAB with initial interest in pursuing a General Surgery career ultimately pursued another specialty.¹ This compelling statistic generated from questions of the MSGQ during the years 1990 to 1996 suggests that early impressions of medical students in their formative years as underclassmen and MS-1/2 students have enormous influence on ultimate career choices in General Surgery.

The differential of practice opportunities. Encouragement by surgical mentors who develop programs for contact with MS-1 and MS-2 students is critical to the student considering residency in a surgical specialty. The opportunity to "shadow" a university faculty member or a private physician in the community allows exposure to what we all consider the realistic and "enjoyable" lifestyle opportunities in the practice of General Surgery after residency. Students are often irrevocably obsessed and become great advocates among their own peers for the specialty after a positive experience with exposure to surgical practice. Encouragement of such activity is obvious.

Encouragement of the female gender. As approximately half of MS-1 and MS-2 medical students are women, programs in General Surgery and surgical specialties are experiencing an increase in enrollment for this gender. Exposure of MS-2 and MS-3 students to university-based and private practice women surgeons is highly encouraged, as this early experience influences entry into General Surgery. Program directors are strongly encouraged to have an "open" (and equitable)

policy encouraging women to enter the specialty and to counsel these future surgeons regarding the opportunities to have families and still be engaged in an active surgical practitioner.

EMPLOYMENT

Students at all levels of medical school with interest in General Surgery and the surgical specialties should be informed by faculty and residents of the employment opportunities in General Surgery. Moreover, the increasing cognitive/technical demands in the care of surgical patients, especially with our aging population, need to be conveyed to students. This communication should be provided to students/residents in a manner commensurate with societal support for primary care physicians who develop patient care practices with surgeons. When surgical educators convey these needs for societal support, students respond in a highly proactive manner. The message articulated is a highly effective recruiting tool.

Finally, with increasing early retirements in the specialty and our aging society, the opportunities in General Surgery must be emphasized in the MS-1 through MS-3 years of medical school, as this interest will often be sustained by the MS-4 student with interest of a career in surgery.

CONCLUSION

Surgical educators and program directors have ongoing concern about the difficulties in at-

tracting the best qualified medical students of the current generation to careers in General Surgery. The immediate challenge of surgical faculty is to act with foresight in a proactive manner to convince medical students of all levels of the values and rewards of a surgical career. Educators should ensure that students at all levels of their medical education experience are properly encouraged, directed, and mentored for the study of surgical diseases. We need to convey the excitement and personal reward we all derive from patient management, mastery of technical skills, and the acquisition of an extensive cognitive experience. The rewards of a career in General Surgery must be emphasized in the MS-1 and MS-2 years of the medical school curriculum.

REFERENCES

1. Bland KI, Isaacs G. Contemporary trends in student selection of medical specialties. *Arch Surg* 2002;137:259-67.
2. Bland KI. Challenges to academic surgery: The impact of surgical fellowships on the choice of an academic career. *Bull Am Coll Surg* 2000;85:17-23.
3. Meyer AA, Weiner TM. The generation gap: perspectives of a program director. *Arch Surg* 2002;137:268-70.
4. Polk Jr, Hiram C. The declining interest in surgical careers, the primary care mirage, and concerns about contemporary undergraduate surgical education [editorial]. *Am J Surg* 1999;178:177-9.

Availability of Journal Back Issues

As a service to our subscribers, copies of back issues of *Surgery* for the preceding 5 years are maintained and are available for purchase from Mosby until inventory is depleted. Please write to Mosby Subscription Customer Service, 6277 Sea Harbor Dr, Orlando, FL 32887, or call (800) 654-2452 or (407) 345-4000 for information on availability of particular issues.