

Association of Women Surgeons: Career Development Resources

General surgery career resource

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Abstract General surgery residency training can lead to a rewarding career in general surgery and serve as the foundation for careers in several surgical subspecialties. It offers broad-based training with exposure to the cognitive and technical aspects of several surgical specialties and prepares graduating residents for a wide range of career paths. This career development resource discusses the training aspects of general surgery.

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General surgery training provides the foundation for many different surgical career paths. The training begins with a general surgery residency, which is usually followed by either entry into practice or additional training. General surgery residency programs provide broad-based training with exposure to the cognitive and technical aspects of several surgical specialties and subspecialties. In this career resource, we discuss general surgery residency training and options for additional training upon successful completion of the residency.

Medical students

Medical students consider surgical careers at varying times during their education. There are different options available for exploring surgery as a career depending where in the educational continuum students are. Students

who enter medical school with an interest in surgery and those who become interested early can become involved in their schools' surgery interest group (SIGs) as early as the first day of medical school at most institutions. Each local SIG has different offerings to help students explore and develop their interest in surgery as a career. The Association for Surgical Education, the American Medical Student Association, and the American College of Surgeons have information about SIGs on their Web sites.¹⁻³

In addition to SIGs, many schools have formal or informal programs led by the surgery residency program director or clerkship director to guide students interested in pursuing general surgery residencies. Shadowing programs or "exploratory experiences" are available at many institutions before the clinical years. Surgical research opportunities with enthusiastic residents and faculty members are also often available to medical students at all educational levels. Institutional department of surgery and medical school administrative staff members are resources to facilitate identifying these opportunities.

The American College of Surgeons encourages student membership and sponsors a comprehensive 3-day program for medical students during the annual Clinical Congress

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meeting. The program is designed to meet the needs of M1 to M4 students interested in learning more about pursuing surgery as a career choice.⁴ Excellent resources are also available online to help students navigate and make the most out of their surgical clerkships and M4 year and choose the best possible surgical residency.⁴⁻⁶

Students planning on surgical careers should structure their medical school curricula accordingly. Residencies use medical students' United States Medical Licensing Examination Step I and Step II scores to determine which students will be offered interviews and to rank applicants.⁷ Detailed information about individual residency minimum United States Medical Licensing Examination score requirements can be found online in the FREIDA database.⁶ Although academic success is imperative, residency program directors value students who are well rounded, with experience in areas they are passionate about, such as research, community service, and global health. Each medical school will have its own mandatory M4 requirements and the opportunity to do rotations at other programs, often referred to as "audition" electives or subinternships. These experiences are helpful both for medical students to evaluate potential residency programs while taking on significant clinical responsibility and for the faculty members at the programs to get to know the students. Most programs use the Visiting Student Application System⁸ for their 4th-year surgical externships, and it is important for a student to actively communicate with a desired program's secretary or coordinator to ensure that a rotation is set up before the allocated number of spots are filled. Additional M4 coursework should focus on achieving competency in those areas essential for a surgical intern, particularly medical knowledge and patient care. It is advantageous to participate in a surgical intern preparedness course, or "boot camp," if it is offered. Letters of recommendation from at least 3 faculty members who know a student well will need to be requested early in the application process and forwarded to the Electronic Residency Application Service site to complete the residency application.⁹ M4 students generally set aside a month (usually December or January) to interview and schedule additional interviews with faculty permission during an appropriate outpatient month, such as ambulatory care or emergency medicine. Medical students apply for general surgery residencies using the National Resident Matching Program.¹⁰ The timeline for the residency matching process includes submission of student program lists in February, with the supplemental match process (Supplemental Offer and Acceptance Program) and position announcement occurring in the third week of March.

It is advisable for students interested in careers in surgery to seek individual guidance from surgical faculty members early in their consideration of this career path. Faculty members should meet with students to discuss general surgery as a career choice, review the students' academic records, and provide options for faculty mentors to help the students maximize their chances for success.

This may include planning 3rd-year and 4th-year rotations, obtaining letters of recommendations, and developing strategies for the interview process.

General surgery residency training requirements

There are approximately 250 training programs in general surgery that are currently accredited by the Accreditation Council for Graduate Medical Education (ACGME)⁸ and the Residency Review Committee for Surgery. Additional details about each program can be found in the FREIDA database.⁶ A general surgery residency program is designed to prepare a resident to perform at the level of an American Board of Surgery (ABS)-eligible general surgeon and be competent to practice as a general surgeon or obtain additional specialized training through a surgical specialty fellowship.

A general surgery residency program provides extensive cognitive and technical training in the basic and clinical sciences of surgical disease as well as the technical skills needed to diagnose and treat surgical conditions. Per ACGME guidelines, a resident is trained to diagnose and treat conditions of the abdomen (hernia, gallbladder, liver, pancreas, and spleen), alimentary tract (esophagus, stomach, small intestine, large intestine, and anorectum), breast, endocrine organs, skin, and soft tissue. A general surgery residency will also provide exposure to surgical critical care and trauma, vascular, transplantation, thoracic, pediatric, plastic, genitourinary, gynecologic, and head and neck surgery, as well as surgical endoscopy. The Surgical Council on Resident Education portal, subscribed to by many general surgery residencies, provides a multimedia structured comprehensive curriculum with resources and assessment.¹¹ Additionally, simulation is used for the acquisition of skills and team training. Surgical residents are given progressive responsibility for patient and operative care as they advance through the residency. Although each residency has a unique evaluation structure, all residents can expect to be evaluated by faculty members, patients, peers, and hospital staff members and to take the ABS In-Training Examination every January.

The process to attain the appropriate knowledge, skills, and judgment takes place over 5 clinical years. Many academic programs afford 1 to 2 additional years of research to those residents who are interested. If permitted by a residency program, the 5 clinical years of residency training may be completed over 6 academic years. All extended training must be completed at a single program with advance approval from the ABS.¹² Resident work hours are strictly limited by the ACGME to 80 hours per week, with one 24-hour period off per week, averaged over 4 weeks. In addition, postgraduate year 1 duty hours are limited to 16 continuous hours, postgraduate year 1 and intermediate residents must have at least 8 hours off between duty shifts, and appropriate levels of

supervision must be in place for all residents.¹³ Nationally, surgical residencies have established a variety of on-call models to provide effective patient care and comply with mandatory duty-hour regulations, often including night float rotations and physician extenders. At the completion of the 5 clinical years, it is expected that a general surgical resident has attained competency in the 6 ACGME core areas, cared for enough patients, and performed the required number of operations to meet requirements to pursue ABS certification. A number of alternate training paradigms are available for subspecialties, such as plastic, cardiothoracic, and vascular surgery.^{14–16}

Fellowship and additional training

An increasing number of general surgery residents choose to seek additional training after completion of their residencies. There are many opportunities for additional training, commonly referred to as fellowships. Postresidency training that leads to additional board certification is actually considered a residency by the ACGME, and those that do not lead to additional board certification are correctly referred to as fellowships. The ACGME accredits residencies in colon and rectal surgery,¹⁷ pediatric surgery,¹⁸ surgical critical care,^{19,20} surgical oncology,²¹ thoracic surgery,¹⁴ and vascular surgery.¹⁶ Application to these residencies is through the National Resident Matching Program. Successful completion of any of these ACGME-approved residencies allows the trainee to seek additional board certification in each of these specialty areas through the ABS (pediatric surgery, surgical critical care, surgical oncology, vascular surgery), the American Board of Thoracic Surgery, or the American Board of Colon and Rectal Surgery.

The Fellowship Council²² was developed in 1991 to oversee minimally invasive surgery (MIS) fellowships. It has expanded to help provide high-quality fellowships in advanced gastrointestinal, bariatric²³; flexible endoscopy; hepatopancreatobiliary; MIS; MIS and bariatric surgery; MIS, bariatric, and flexible endoscopy; MIS and flexible endoscopy; MIS and foregut; and non-ACGME-approved colorectal and MIS and thoracic surgery. The Fellowship Council is endorsed by the American Society of Colon and Rectal Surgeons, the American Hepato-Pancreato-Biliary Association, the American Society for Metabolic and Bariatric Surgery, the Society of American Gastrointestinal and Endoscopic Surgeons, and the Society for Surgery of the Alimentary Tract. There is a universal application and match process under the direction of the Fellowship Council. Trainees completing these fellowships are recognized as having achieved additional expertise in these areas, and additional board certification is not currently available or planned.

The American College of Surgeons has developed the Transition to Practice Program in General Surgery for young surgeons who are leaving residency and entering into the practice of general surgery. The program is intended to

help fill perceived gaps in training and assist with the transition to independent practice in general surgery and is currently in place at 7 sites nationally.²⁴ Program participants obtain enhanced autonomous experience in broad-based general surgery, increase clinical competence and confidence, gain exposure to practice management, experience mentoring with notable practicing surgeons, and participate in experiential learning tailored to individual needs.

Board certification

Once general surgery residency training is completed, graduates must first take a qualifying exam and then a certifying exam to become certified as general surgeons by the ABS. Certification recognizes individuals who have met the highest standards of education, training, and knowledge specifically in the area of general surgery and its related specialties and is mandated for privileges by most health care organizations. The Qualifying Examination is a computer-based examination offered annually by the ABS and consists of nearly 300 multiple-choice questions that test knowledge of general surgical principles and the basic sciences applicable to surgery. The test is administered in computer testing facilities across the United States and lasts one 8-hour day. To sit for the Qualifying Examination, various requirements as outlined by the ABS must be satisfied.²⁵ After successful completion of the written Qualifying Examination, the oral Certifying Examination is taken. After successful completion of both exams, a surgeon is considered board certified. A surgeon who has completed residency has 7 academic years from that time to achieve certification. Recertification is required every 10 years, with ongoing maintenance of certification activities.¹² A similar process occurs for additional board certification in the subspecialty areas previously discussed.^{25–27}

Research opportunities and grant funding

The most common avenue for medical students and residents to identify research opportunities is through faculty members at their schools. If there are no faculty members participating in students' research areas of interest, there are many different sources to learn of research opportunities being conducted nationwide. The Howard Hughes Medical Institute²⁸ is a nonprofit medical research organization that is among the top philanthropies in the United States supporting the advancement of biomedical research and science education. The American College of Surgeons sponsors a 2-year resident research grant aimed at funding independent research projects of surgical residents who have completed 2 years of postgraduate training.²⁹ Specialty membership societies are also common sources of funding.

Residents interested in pursuing formal research opportunities that would extend their residency training beyond the 5 clinical years work with their program directors and

chairs to identify appropriate opportunities and funding. The Association of Program Directors in Surgery maintains a list of open residency positions and funded research positions that are posted by individual programs.³⁰

Professional societies

There are a multitude of local, regional, national, and international professional societies that may be of interest to general and specialty surgeons. The American College of Surgeons is the largest organization of surgeons in the world. It was established in 1913 to “improve the quality of care for the surgical patient by setting high standards for surgical education and practice.”³¹ A more comprehensive list of organizations of interest to surgeons may be found on the American College of Surgeons Web site.³²

Surgery practice

Surgeons have many avenues available to them with which to embark upon defining their scope of practice. During general surgery residency or fellowship training, an important decision is whether to pursue community-based/private or academic practice. Although the differences are not black and white between these options the choice ultimately depends on personal goals, dreams, aspirations, and desired lifestyle and level of autonomy.

Previously published career resources have discussed surgical subspecialties,^{14–21,23,33–36} military surgery,³⁷ and missionary surgery.³⁸ Additional practice types to consider include non-physician-owned practices, including hospital-based and health maintenance organization–based practices, physician-owned practices, the Indian Health Service, academic practice within the US Department of Veterans Affairs system, and rural surgery. Information on these practice types is available on the Association of Women Surgeons Web site.³⁹

Graduating general surgeons have many options available, from academic medicine to solo private practice in a rural setting, whether in general surgery or in a surgical subspecialty. It is important to explore all practice options and consider all potential career paths when setting forth into a surgical career. Thorough research and self-reflection are essential to making the best career decisions.

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