

Transition from Training to Surgical Practice



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KEYWORDS

- Surgical education • Transition to practice programs • General surgery careers
- Onboarding programs • Mentoring

KEY POINTS

- A subset of current surgery residency graduates does not feel confident or optimally prepared to enter directly into general surgery practice. Solutions to this vexing problem include redesign of the residency curriculum, credentialing during residency to encourage graded responsibility, effective onboarding programs for new surgeons, and development of transition to practice (TTP) programs in general surgery.
- Onboarding programs for new surgeons in larger health systems should include formal mentoring, career counseling, and operative case proctoring by senior surgeons as well as objective review of surgical outcomes.
- Onboarding programs for new surgeons in isolated practices may rely on former teaching faculty members, unaffiliated regional surgeons, or distance learning techniques to provide mentoring, proctoring, and case reviews.
- TTP programs have been developed in general surgery to provide a 1-year postresidency experience with independent decision making, operative procedure autonomy, personal mentoring by senior surgeons, practice management skill acquisition, and periodic review of performance and surgical case outcomes.

INTRODUCTION

The transformation of a surgeon from chief surgical resident or subspecialty fellow to attending does not take place in a single day nor does it occur without considerable effort on the part of the new surgeon or interested colleagues. For this transformation to successfully occur while ensuring patient safety requires far more of a planned program of TTP than a simple sink or swim model. The recent trainee is quickly thrown into the care of numerous patients for whom the clinical decisions more often involve

There are no conflicts of interest to disclose.

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Surg Clin N Am 96 (2016) 25–33

<http://dx.doi.org/10.1016/j.suc.2015.09.001>

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shades of gray rather than the black or white learned in residency. Nights on call bring patients with emergent surgical needs that require crisp decision making, leadership, and judgment, which rely on experience they may not yet possess. A new graduate may be asked to perform complex or unfamiliar operative cases for the first time without a teaching faculty member across the table. In addition to these clinical challenges, the new graduate must quickly master the many facets of the business side of surgery, including billing and coding, insurance contracts and authorization, purchasing of expensive medical equipment, and management of health care personnel. All of this often takes place in a completely unfamiliar institution with many colleagues who are both strangers and competitors and a novel electronic medical record. Variation in the preparation provided by different training programs as well as individual surgeon skill sets make this transition from trainee to staff surgeon unpredictable. For patients to be well served, a new surgeon to get off on the right foot and to be successful, and the surgical department that they join to be stable, this critical period in a young surgeon's career must be well orchestrated.

This article focuses on surgical residency graduates' preparedness for practice, important issues that currently revolve around the transition from training to practice, institutional methods of onboarding for new surgeons, the American College of Surgeons (ACS) TTP program, and future methods that might be used to assist in this transformational period.

ARE CURRENT RESIDENCY GRADUATES READY FOR SURGICAL PRACTICE?

Several recent trends concerning surgical education have resulted in significant challenges in the preparedness of current graduates.¹ Residency has de facto been shortened by nearly 12 months due to duty-hour restrictions. Although the total number of operative cases has remained stable, the number of emergency cases has diminished. Opportunities for autonomy and independent decision making during residency have become a rarity due to regulatory changes, medical-legal concerns, societal and ethical changes, and health care financing enforcement. The majority of surgical experience in most programs occurs on subspecialty surgical rotations and exposure to general surgeons is limited. Approximately 80% of graduates choose to pursue fellowship immediately after residency, leaving only 20% who enter surgical practice. Surgical workforce studies document a shortage of general surgeons, which is predicted to worsen, particularly in rural areas.

It is apparent that current surgery residency graduates report less confidence about their preparedness to enter surgical practice and their ability to independently perform many common procedures.² Some of this expressed lack of confidence may simply reflect a younger generation of surgeons who are more comfortable voicing their concerns. Fellowship program directors recently reported, however, that 30% of new fellows could not independently perform a laparoscopic cholecystectomy and 66% were not able to operate without direct supervision for 30 minutes of a major procedure.³ Napolitano and associates⁴ documented disparate findings concerning residency graduates' readiness for practice when comparing the opinions of young (≤ 45 years old) ACS fellows versus older (>45 years old) ACS fellows. Whereas 94% of younger surgeons thought that they had adequate surgical training and 91% felt prepared for surgical attending roles, only 59% of older surgeons believed that current surgical training was adequate and only 53% stated that graduates were prepared for the transition to surgical attending. Younger surgeons had concerns about business and practice skills during residency whereas older surgeons were troubled by paucity of training in communication, professionalism, and ethics during residency. In a survey

of Southeastern Surgical Congress members, only 40% of respondents believed that new surgical graduates were sufficiently trained and could independently take call.⁵

Some investigators have opined that 80% of residency graduates opting for a subspecialty fellowship is further evidence that these young surgeons do not feel ready to enter practice.⁶ This notion has been refuted by several recent studies of chief residents and new graduates in the United States and Canada in which the decision to pursue fellowship was rarely made on the basis of a sense of inadequate preparation for practice.^{7,8} Furthermore, 2 studies have documented surprising graduate confidence regarding procedural skills.^{8,9}

Although the magnitude of the problem of residency graduate confidence and preparedness for practice has not been definitively determined, it is clear that a subset of graduates each year does not feel confident in their abilities and does not feel ready for independent practice. It is likely that many more graduates have discomfort with some aspect(s) of the transition from training to practice. It is, therefore, incumbent on both surgical educators and senior surgeons in practice to develop effective programs to assist young surgeons in the early years of their practice with skills, such as operative judgment, practice management, running a clinic, communication, and work-life balance. This can be accomplished by personal mentoring, formal onboarding programs, or TTP educational experiences. In July 2012, the ACS Division of Education and the Accreditation Council for Graduate Medical Education cosponsored a conference to identify the most important issues surrounding the transition from surgical training to independent practice.¹⁰ They developed the following recommendations based on analysis of the issues that were identified: (1) surgical residency should be redesigned with refocusing the curriculum using Surgical Council on Resident Education, additional use of simulation, competency-based assessment and advancement, and more robust operative skills assessment; (2) review of operative skills assessment and operative outcomes when hiring new graduates; (3) mentoring, preceptoring, and proctoring for new staff surgeons; (4) potential use of distance-learning capabilities for mentoring, preceptoring, and proctoring when necessary; and (5) development of additional milestones and entrustable professional activities to evaluate surgeons after training.

INSTITUTIONAL METHODS USED FOR TRANSITION FROM TRAINING TO SURGICAL PRACTICE

It has been shown that surgeons are most likely to leave their practices in the first 3 to 5 years.¹¹ Onboarding programs with monitoring of professional satisfaction, formalized mentoring, and development of leadership skills have been proposed to reduce surgeon attrition from academic medical centers.¹¹ Attending surgeon retention is much less costly in both human resource and financial terms than recruitment and training of yet another new surgeon. Most large university and independent medical centers include up to a week of mandatory orientation activities for new surgeons. Most of this time is spent on billing and coding instruction, compliance programs, information technology and electronic medical record training, credentialing, mandatory clinical training, physician compact/handbook review, meeting with key administrative staff, and campus orientation.

Although these quotidian activities are important, the keys to success for a new surgeon revolve around excellent communication, exercising sound clinical judgment in and out of the operating room, achieving good surgical outcomes, developing practice efficiency, and achieving a healthy work-life balance. The presence of an engaged senior mentor is an invaluable resource for a young surgeon who may be well trained but lack confidence or experience in some of these areas. Most senior partners provide

guidance on an ad hoc basis; some provide more formal direction for their new colleagues. In the interest of patient safety and to allow a new partner to achieve a comfort level with operative cases, a senior partner may scrub on all procedures or a subset of more complex operations with a new partner for a period of time. How frequently this practice is applied is not known; it varies widely by institution and may be dependent on perceived skills of the new surgeon. In the survey of ACS fellows, younger surgeons reported that a senior partner assisted them on 9% of cases during the first year of practice; older surgeons estimated that they had scrubbed on 10% to 40% of operations performed by a new partner during the first year of practice.⁴ In another survey of senior surgeons, it was estimated that 75% of new surgeons required assistance with elective cases and 82% with cases on call; however, operative assistance for a new partner was rarely (2%–3%) necessary after the first year of practice.⁵ There is a great deal of variation based on the experience and confidence of the new partner as well as the interest in and commitment to mentoring or proctoring on the part of the senior partner.

Large academic medical centers and independent integrated health care systems have developed their own onboarding programs for new staff surgeons. Formal mentoring, career counseling, leadership training, and credentialing are common in university departments of surgery.¹⁰ U.S. Armed Forces hospitals offer administrative and leadership training and intensive clinical experience in combat trauma for new graduates.¹⁰ Integrated health care systems, such as Kaiser Permanente, require new physicians to study best practices and institutional care pathways.¹⁰ In addition, at least 12 cases performed by new surgeons undergo departmental monitoring and review. The Kaiser Permanente health care system in San Diego assigns new surgeons to act as first assistants for senior surgeons and senior surgeons often scrub with new surgeons during the first 6 months of practice (Daniel Klaristenfeld, personal communication, 2015). A less formal program of mentoring is used at Geisinger Health System (Danville, PA, USA) and Gundersen Health System (La Crosse, WI, USA) in which new surgeons are assigned a senior mentor who provides guidance in establishing a new practice (John Widger, personal communication, 2015). Senior partners are available to scrub on more complex procedures or provide consultation in the operating room regarding decision making. At Gundersen Health System, surgical outcomes are tracked and reviewed at 6 and 12 months for all new surgical staff and ACS National Surgical Quality Improvement Program metrics are reviewed and compared for all general surgeons.

Program development for mentoring and proctoring is particularly problematic for new surgeons in solo practice or in isolated rural practice locations. Residency teaching faculty may be valuable resources for remote discussions of evaluation and management of difficult patients as well as advice on the business aspects of practice. Hands-on case proctoring is rarely practical from former mentors. Young surgeons in an isolated location may be able to rely on a more experienced surgeon in their region to scrub with them on more complex operations. The success of this activity depends on the willingness and availability of a colleague who must put a practice on hold to provide this generous service. Perhaps this mentoring and proctoring role would be a good activity for retired or part-time surgeons and could be organized by regional or national surgical organizations.

Murad and colleagues¹² at the University of Florida described a formal program to help neurosurgical trainees transition from residency to practice. Senior neurosurgery residents participated as fully mentored junior faculty members during the last 6 to 12 months of residency. The program included autonomous operative experience, practice management skill acquisition, an independent outpatient clinic and a critical review of patient outcomes. Less comprehensive TTP programs have been reported in

other surgical specialties.^{4,10} Most recently, the ACS has developed a formal TTP program that promises to be a valuable pathway for surgery residency graduates desiring additional experience to make a smooth transition into the practice of general surgery.^{6,13}

THE AMERICAN COLLEGE OF SURGEONS TRANSITION TO PRACTICE GENERAL SURGERY PROGRAM

In 2012, the ACS, in conjunction with the American Board of Surgery, initiated a process to investigate development of a TTP program in general surgery to follow residency. The effort was intended to respond to concerns about residency graduates' readiness to enter practice, confidence in operative skills, lack of independence during training, and lack of exposure to a wide variety of cases. In addition, the worsening workforce shortage in general surgery was an additional motivation to enhance general surgery careers. The ACS TTP Steering Committee has been chaired by J. David Richardson from the University of the Louisville School of Medicine. After preliminary discussions and situation analysis, the ACS launched a 1-year TTP in general surgery program with the pilot testing of 6 sites in June 2013.¹³ Key elements of this postresidency experience were trainee autonomy, personal mentoring by senior surgeons, graded clinical responsibility, flexible curriculum based on intake assessment of past experience and future goals, practice management skills acquisition, and clinical outcomes measurement. This program was not designed to be remedial in nature and it was not the intention of the ACS TTP Steering Committee that the program be considered a prerequisite for general surgery practice. It was recognized that graduates of many general surgery residencies are well prepared for general surgery practice and do not need this additional experience.⁶

Two TTP associates completed programs in 2014 and an additional 11 finished programs in 2015. There has been significant growth in the number of ACS TTP programs and the ACS has formalized the process of program accreditation. A list of guiding principles was recently approved to assist institutions in program development (**Box 1**). The foundational concepts remain senior mentorship, TTP associate autonomy and graded responsibility, flexible curriculum, practice management skill acquisition, and careful assessment with clinical outcomes analysis. Components of a robust practice management curriculum are listed in **Box 2**. As of April 2015, the ACS has approved 18 TTP programs (**Table 1**). This represents a diverse group of institutions, including university hospitals and independent health care systems with urban, suburban, and rural training sites.

The ACS recently convened a workshop to which TTP associates and program directors were invited. Strengths of the TTP experience enumerated by the TTP associates are listed in **Box 3**. Although all the TTP program directors remained enthusiastic about their TTP programs, several challenges for institutions and program directors were identified (**Box 4**). Realistic feedback from these experiences should inform the ACS and individual programs about further development or refinement.

FUTURE PREPARATION FOR SURGICAL PRACTICE

It is hoped that surgical education can change to better prepare tomorrow's residency graduates for either general surgery practice or subspecialty fellowships.^{8,14} More practice management skills must be infused into the curriculum of all surgical residencies.^{15,16} Earlier exposure to surgical procedures, efficient use of simulation technology, and competency-based procedure evaluation may improve operative proficiency. Progressive autonomy may be possible using entrustable professional

Box 1**Guiding principles for American College of Surgeons transition to practice programs**

1. Dedicated TTP program chief should provide leadership, supervision, and quality oversight for the program.
2. One or more TTP senior associates in full-time surgical practice should serve as clinical mentors.
3. The TTP program must not interfere with the training of residents and fellows at the sponsoring institution.
4. A flexible curriculum with progressive responsibility/autonomy should be designed around the TTP associate to result in a well-balanced general surgery experience.
5. An intake assessment of the TTP associate's past experience and future career goals should be performed to design an individualized curriculum congruent with TTP associate needs.
6. An autonomous outpatient clinic experience with opportunities for graded responsibility must be provided.
7. A robust curriculum in practice management skills is required.
8. Outcomes of cases performed by the TTP associate must be tracked and reviewed – preferably using the ACS Surgeon Specific Registry.
9. Periodic formative and summative assessments must be completed by teaching faculty to evaluate TTP associate performance.
10. Periodic assessments of teaching faculty performance must be completed by the TTP associate.
11. The TTP program budget must be sufficient to cover program and associate costs.
12. Salary and benefits to include professional liability insurance with tail coverage, vacation, and continuing medical education programs must be supplied by the sponsoring institution.

activities and credentialing during residency.¹⁴ If these and other changes were universally adopted by all residencies in an optimal educational environment, then formal TTP programs might not be necessary. In the meantime, it remains to be seen if the ACS TTP in general surgery programs will gain traction among candidates as well as residency program directors.

Box 2**Components of practice management curriculum**

1. Billing and coding
2. Reimbursement principles
3. Contract negotiations
4. Professional liability insurance
5. Medical liability case preparation
6. Patient scheduling
7. Insurance preauthorization and billing
8. Quality improvement processes
9. Patient safety initiatives
10. Retirement planning

Table 1
Approved American College of Surgeons transition to practice programs as of April 2015

	Health System	Location
1	Kaiser Permanente – San Diego	San Diego, CA
2	University of Florida/St. Vincent's Health System	Jacksonville, FL
3	Mercer University School of Medicine	Macon, GA
4	University of Louisville School of Medicine	Louisville, KY
5	Louisiana State University – Shreveport	Shreveport, LA
6	Anne Arundel Medical Center	Annapolis, MD
7	Montefiore Medical Center	Bronx, NY
8	Carolinas Medical Center	Charlotte, NC
9	Wake Forest School of Medicine	Winston-Salem, NC
10	Ohio State University College of Medicine	Columbus, OH
11	Geisinger Health System	Danville, PA
12	Alpert Medical School of Brown University	Providence, RI
13	Medical University of South Carolina	Charleston, SC
14	University of Tennessee College of Medicine	Chattanooga, TN
15	University of Texas Health Science Center at San Antonio	San Antonio, TX
16	Mid-Atlantic Permanente Medical Group	McLean, VA
17	Eastern Virginia Medical School	Norfolk, VA
18	Gundersen Health System	La Crosse, WI

Regardless of the success of TTP programs, graduates of surgical residencies and fellowships will always require a period of adjustment as they transform from trainees to experienced surgeons. An effective method of making this a smooth transition is important for patient safety, success and retention of the new surgeon, and stability for mature practices. Larger health care systems should be able to develop effective in-house onboarding programs with attentive, proactive mentoring and case proctoring/supervision to allow a safe transition from trainee to staff surgeon. Small, isolated surgical practices may need to rely on outside mentoring and supervision or video-based case reviews to accomplish the same goal. National and regional surgical societies may be in a position to facilitate this process in states with many remote practices.

Box 3

Transition to practice program strengths highlighted by transition to practice associates

1. Autonomy/independence with safety net provided by TTP senior associates
2. Flexible curriculum to meet individual needs of the TTP associate
3. New technical skill acquisition
4. Mentoring relationship provided by the TTP senior associates
5. Clinical and procedural opportunities to build confidence
6. Independent outpatient clinic experience with "own patients"
7. Ability to practice with continuity of care
8. Chance to learn and use practice management skills

Box 4**Challenges encountered by institutions sponsoring American College of Surgeons transition to practice programs**

1. Competition for cases with other learners
2. Competition for cases with new surgical faculty
3. Less program acceptance by multiple surgical specialists who must provide training.
4. Less autonomy/independence on short specialty rotations
5. Difficult to provide graded responsibility over short time frames
6. Perception from potential applicants and residency program directors that TTP programs are "remedial" programs
7. Credentialing issues: Are TTP associates trainees or junior faculty? What are credentialing ramifications for reported performance concerns during these experiences?
8. Steep learning curve for the TTP associate to accommodate to new institution/health care system/electronic medical record

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