Colorectal Surgeons Teaching General Surgery Residents: Current Challenges and Opportunities

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Abstract

Keywords

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- professionalism
- graduate medical education
- medical ethics
- mentoring

Effective teaching for general surgery residents requires that faculty members with colorectal expertise actively engage in the education process and fully understand the current context for residency training. In this article, we review important national developments with respect to graduate medical education that impact resident supervision, curriculum implementation, resident assessment, and program evaluation. We argue that establishing a culture of respect and professionalism in today's teaching environment is one of the most important legacies that surgical educators can leave for the coming generation. Faculty role modeling and the process of socializing residents is highlighted. We review the American College of Surgeons' Code of Professional Conduct, summarize some of the current strategies for teaching and assessing professionalism, and reflect on principles of motivation that apply to resident training both for the trainee and the trainer.

Objectives: At completion of this article, the reader should understand the current context of graduate medical education, particularly as it applies to general surgery residency training. The reader should also understand the importance of professionalism as the core value for surgical educators, and its impact on teaching surgery residents.

Colorectal faculty members are central to the mission of teaching general surgery residents for several reasons. First, colorectal expertise itself is central to the domain of general surgery. As identified in the Surgical Council on Resident Education (SCORE) General Surgery Resident Curriculum Outline,¹ all surgery graduates are expected to be trained to manage many colorectal diseases, conditions, and procedures. The active involvement of colorectal faculty in transmitting this body of knowledge and skills to the next generation of general surgeons is critical. Second, a high proportion of surgery residents rotate on a colorectal service within the first 2 years of training. Because of their teaching load, many colorectal faculty members are considered "core faculty" during Accreditation Council for Graduate Medical Education (ACGME) accreditation site reviews. Third, in a study of colorectal residents' career decisions, it was found

that overall interest in colorectal surgery, the influence of colorectal mentors and teachers, and positive exposure to colorectal practice as a postgraduate year (PGY-) 3, 4, or 5 resident were the top cited factors influencing their career decisions.² Colorectal faculty members therefore serve as important role models and mentors as surgery residents explore their career options and also prepare for fellowship. Last but not least, colorectal faculty members are responsible (along with other faculty) for establishing a culture of respect and professionalism that should pervade both private as well as public actions. Meeting this responsibility is not easy. Vigilance and ingenuity are required, yet it remains perhaps the most important legacy a teacher can leave.

In this article, we focus on the colorectal faculty role in developing general surgery graduates to the highest standards. We begin by summarizing the larger context facing general surgery residency programs. We then contrast today's context for teaching with surgical education in the time of Dr. William Stewart Halsted, the father of modern surgery and of the system of surgical residency training in America. Often recalled with nostalgia, Halsted actually left a mixed legacy in terms of teaching and professionalism. We then review the meaning of professionalism as defined by an

American College of Surgeons (ACS) Task Force and discuss how we can best embed residents into a patient-centered ethos based on empathy and altruism—traits that have been shown to decline significantly during medical school and residency.³ Lastly, we consider how our teaching methods can work both for and against principles of intrinsic motivation and drive. Although questions surrounding these topics are indeed large and perhaps not easily answered in a single chapter, they are central to the colorectal faculty-general surgery resident experience, and critically important for effective patient care.

Current Context for General Surgery Residency Training

The current environment for training surgery residents is often described as “challenging” or “complex.” Indeed, today’s environment is more proscribed, more regulated, in some ways more demanding, and certainly more costly than it has been at any time in its history. Much of today’s complexity is often attributed to changes in societal expectations in the past 10 years, which led to the establishment of the ACGME core competencies in 2003 and resident duty hour restrictions in 2004. These events clearly spawned new and difficult challenges, e.g., outcomes assessment, new program requirements governing resident supervision and hand-offs.⁴ At the same time, these events have also led to creative advances in teaching. Consider, for example, the explosion of simulation-based training models and materials, or the rise in online education modules and website content.

As we write this review, our residency program is busy preparing for an accreditation site visit, mindful that we have to clearly demonstrate how we are meeting the new 2011 ACGME program requirements. We must now formally evaluate PGY-1 residents’ patient care skills (i.e., clinical and procedural), or risk a citation. We have also devoted significant time to ensure that more of our graduates pass both the American Board of Surgery (ABS) written and oral board exams on their first attempt. We do this because the ACGME Surgery Resident Review Committee has established a criterion of 65% combined first-time pass rate over the prior 5 years as a threshold for determining probationary status for programs. Nationally, approximately one third of programs were below this threshold for the 2006–2011 reporting period.⁵

As most faculty members know, more and more assessment is now being mandated. In 2009, successful completion of the Fundamentals of Laparoscopic Surgery (FLS) exam became a new graduation requirement for all general surgery residents. In 2010, the ACGME introduced its “Milestones Project,” which is a national effort to identify key benchmarks of resident progress. These milestones will also be used to evaluate residency program effectiveness. Satisfactory performance by residents on the ABS In-Training Exam will most probably become one of the identified milestones. The ABS is also contemplating adding technical proficiency requirements for board certification. Potential for even higher stakes assessment is pending at the federal level, with the Medicare Payment Advisory Commission (MEDPAC) reviews of financ-

ing for graduate medical education, and their proposals for education performance-based funding.⁶ Federal support for graduate medical education is likely to decrease in coming years.

Although all these pressures can seem overwhelming, it is important for colorectal faculty to contribute to these conversations, and to actively engage in the process of teaching and assessing their residents in formal as well as informal ways. Colorectal faculty members also need to be engaged when matters of curriculum content and rotation structure are discussed within their programs. Participation by colorectal surgeons is necessary to ensure that residents achieve the number of alimentary cases (72), abdominal cases (65), and colonoscopies (50) that the ACGME requires for graduation. Residents’ operative experience is based, in part, on each program’s rotation structure, the nature of each faculty member’s clinical practice and their willingness to work with residents, as well as other program features, such as the presence of colorectal fellows. As reported by Bell in a national study of operative logs, the absolute level of experience reported by graduating residents for many of the “common, essential procedures” is low, with large program variations and gaps.⁷ The mean number of cases reported for transanal rectal tumor excisions, for example, was 1.7 per resident. For anorectal fistula cases, the mean was 1.0; for rectal prolapse repairs, the mean was 0.8. The mode for all three procedures was 0.0, indicating that graduates had most commonly done none of the above. Whether such deficiencies in managing common colorectal problems should be tolerated in general surgery residencies is the subject of current debate. Similarly, determining whether and how such deficiencies can be corrected are topics worthy of thoughtful input from all surgical faculty members.

Faculty awareness of the SCORE Curriculum Outline (►Tables 1 and 2) and its general surgery resident website portal¹ is also very important. Supported by the ABS and five other major professional organizations involved with surgical education, this online curriculum portal functions as a “one-stop” repository of curriculum modules, learning objectives, peer-reviewed materials licensed from the major textbooks, procedural videos, and self-assessment quizzes. The curriculum can be used by faculty to review teaching topics relevant to their expertise, to organize core teaching conferences, to assign readings to residents, and to support “just in time” teaching sessions on rotation. Residents can use the portal for independent study and preparing for the ABS In-Training Exam.

It should be noted that the organization of topics within the SCORE Curriculum represents a consensus among a national panel, but it is widely acknowledged that “one size does not fit all,” and individual faculty and programs may certainly organize the colorectal teaching domain at their own programs somewhat differently than as shown in ►Tables 1 and 2. That said, one of the initial goal of the ABS was to align cases for their oral board exam with the SCORE Curriculum Outline. It therefore behooves all faculty members to be familiar with the Curriculum (which is subject

Table 1 Diseases and Conditions from the Surgical Council of Resident Education (SCORE) General Surgery Residency Curriculum that Relate to Colorectal Expertise¹

Score Category	Diseases/Conditions	
	Broad ¹	Focused ²
Alimentary Tract: Large Intestine	<ul style="list-style-type: none"> • Lower gastrointestinal bleeding • Large bowel obstruction • Acute appendicitis • Diverticulitis • Diverticular bleeding • Diverticular fistulas • Colonic polyps • Colonic cancer • Emergent management of ulcerative colitis • Emergent management of Crohn disease of colon volvulus • Miscellaneous colonic neoplasms • Appendiceal neoplasms • Emergent management of indeterminate colitis • Ischemic colitis • Antibiotic-induced colitis 	<ul style="list-style-type: none"> • Endometriosis • Irritable bowel syndrome • Functional constipation • Infectious colitis
Alimentary Tract: Small Intestine	<ul style="list-style-type: none"> • Small bowel obstruction and ileus • Emergent management of Crohn disease • Acute mesenteric ischemia: arterial, venous, and nonocclusive 	<ul style="list-style-type: none"> • Short bowel syndrome • Enteric infections and blind loop syndrome
Alimentary Tract: Anorectal	<ul style="list-style-type: none"> • Hemorrhoids • Anal fissure • Anorectal abscess and fistulas • Rectal cancer • Anal cancer 	<ul style="list-style-type: none"> • Pelvic floor dysfunction • Incontinence • Anal dysplasia/sexually transmitted disease • Rectal prolapse

¹A graduate should be able to care for all aspects of disease and provide comprehensive management.

²A graduate should be able to make the diagnosis, provide initial management/stabilization, but will not be expected to provide comprehensive management.

to ongoing review) and to register their comments with the SCORE Council.

Finally, colorectal faculty need to continue the conversation about whether the current 5-year general surgery training model, followed by the 1-year colorectal fellowship, provides the best structure for training general surgeons as well as colorectal subspecialists.⁸ To date, the colorectal field has not chosen to adopt either an early specialization, nor a fully integrated training model (as vascular and thoracic specialties have done). Compelling arguments both for and against restructuring exist.^{2,8} In the meantime, faculty who teach in university settings that offer colorectal fellowship programs have clear responsibilities for protecting the educational experience of both residents and fellows—not always an easy task.

Apprenticeship as Conceived in the Halsted Era

Reviewing our current training environment undoubtedly makes at least some long for “the good old days of apprenticeship training” developed at Johns Hopkins Medical School by Dr. William Stewart Halsted. For in Halsted’s time, there was, of course, no such thing as “regulated” duty hours (residents lived in the hospital and worked all the time). There was no accreditation process, patient safety movement,

or societal oversight to speak of. There was no proscribed curriculum to follow because there was as yet no standard for surgery that was in its infancy. Residents learned surgery principally by observation and adoption of Dr. Halsted’s methods, sheer experience, and research in the laboratory.^{9,10} The concept of the clinician-scientist and “evidence-based medicine” began with Halsted, whose ground-breaking research in anesthesia and aseptic technique made surgery both bearable and safe.

Halsted is most deserving of his reputation. Before his time, there were no formal training programs in surgery; in fact, most surgeons were self-taught.⁹ Basing his approach on the European model, Halsted established a term of service that for the average trainee lasted 8 years from intern to chief (6 years as an assistant, 2 years as house surgeon).⁹ This was the early formulation of the “pyramid” system of training, in which some assistants never made it to chief (and most chiefs had to leave Hopkins to become a faculty member).

Life within this system was not a democracy, however; Halsted was known for dictatorial hiring and firing people without warning. He was reportedly also known to operate only when a case interested him; otherwise, he usually left the chief alone to manage all patients in the house. In contrast to his colleague Sir William Osler, who was much beloved by medical students, Halsted often skipped lectures and left town when his courses were scheduled. He basically believed

Table 2 Procedures from the Surgical Council of Resident Education (SCORE) General Surgery Residency Curriculum that Relate to Colorectal Expertise¹

SCORE Categories	Procedures		
	Essential Common ¹	Essential Uncommon ²	Complex ³
Alimentary Tract: Large Intestine	<ul style="list-style-type: none"> • Open appendectomy • Laparoscopic appendectomy • Open partial colectomy • Laparoscopic partial colectomy • Colostomy • Colostomy closure • Ileostomy • Ileostomy closure 	<ul style="list-style-type: none"> • Subtotal colectomy with ileorectal anastomosis/ileostomy 	<ul style="list-style-type: none"> • Stricturoplasty for Crohn disease
Alimentary Tract: Small Intestine	<ul style="list-style-type: none"> • Open small bowel resection • Open adhesiolysis • Lap adhesiolysis • Ileostomy • Ileostomy closure 		<ul style="list-style-type: none"> • Stricturoplasty for Crohn disease
Alimentary Tract: Anorectal	<ul style="list-style-type: none"> • Banding for internal hemorrhoids • Hemorrhoidectomy • Subcutaneous lateral internal sphincterotomy • Drainage anorectal abscess • Anal fistulotomy/seton placement 	<ul style="list-style-type: none"> • Excision of anal cancer 	<ul style="list-style-type: none"> • Stapled hemorrhoidectomy • Repair complex anorectal fistulas • Incontinence/constipation • Open transabdominal operation for rectal prolapse • Lap transabdominal operation for rectal prolapse • Perineal operation for rectal prolapse • Transanal resection for tumor • Abdominoperineal resection • Pelvic exenteration for rectal cancer
Endoscopy	<ul style="list-style-type: none"> • Proctoscopy • Colonoscopy with or without biopsy 	<ul style="list-style-type: none"> • Colonoscopy with polypectomy 	

¹Specific procedure competency is required by end of training and should be attainable primarily by case volume.

²Specific procedure competency is required by end of training, but cannot be attained by case volume alone.

³Generic experience is required, but not competence in individual procedures; some residencies may provide sufficient experience for competence.

in a form of “teaching without teaching,” which for many was indistinguishable from neglect.

In today's world, Dr. Halsted would not be considered a role model of professionalism. Tragically, he became addicted to cocaine (and then morphine, the treatment of the day for cocaine) early in his career, while researching a better form of anesthesia. For much of his life, his practice was reportedly marked by unexplained absences, sudden departures from the operating room, and lack of communication. He apparently often could not remember who was on his staff and frequently failed to recognize people whom he knew when he encountered them in the hallways. He was known to forget to schedule patients who had spent long days waiting for an operation. His staff reportedly feared his intolerance, sarcasm, biting criticism, and disapproval—always delivered “unemotionally, in a quiet and withering tone, with an expressionless face and unyielding ice blue eyes.”¹⁰

Dr. Halsted was responsible for training the first generation of modern surgeons—a generation that subsequently became leaders in other institutions and proceeded to replicate a training model that continues to influence surgical education today. His brilliance, his innovation, his vision left an indelible and unique legacy. Unfortunately, part of that

legacy includes attitudes and behaviors that should not be replicated today.

Professionalism in Today's Context

Societal expectations of doctors have changed profoundly in the past 100 years. Simply put, patients have much higher expectations of their medical professionals in terms of safe surgery and personalized care. As surgical professionals, we are much more aware of the patient experience; notions of “patient-centered” care so prevalent today simply did not exist in Halsted's era. At the same time, patient's trust of physicians in this technologically and organizationally complex setting, and their tolerance for medical error, is often low. In today's litigious society, honest, empathetic communication between surgeon and patient/family is the expected manner of dealing with complications and untoward preventable events.

Over time, through processes both positive and negative, our profession has gradually recognized the need to formally define what professionalism means to us. The American College of Surgeons Task Force on Professionalism, in response to its charge to apply the general principles of professionalism to surgery, published its Code of Professional

Conduct in 2003.¹¹ This Code's 20 items (–**Table 3**) reflect two primary areas of physician responsibility: (1) to serve as effective advocates for our patients' needs, and (2) to accept accountability to our communities and to society.

Collectively, the articles of the Code confirm that professionalism encompasses not only ethical practice, but the surgeon's relationship with both patients and society as a whole. Technical expertise must be combined with moral understanding if surgeons are to represent the professional voice in public debate. Accepting the primacy of patient welfare, of patient autonomy and patient confidentiality, of maintaining appropriate relations with patients, of basic honesty and self-regulation, of recognition of social justice—all of these are underpinnings of surgical practice and are as important as basic surgical competency.¹² All professional organizations involved with health care—beginning with medical school, residency, and fellowship training and extending to hospitals and care systems—are acutely aware of the responsibility to specify, teach, encourage, and ensure the professional behavior of its members, because unprofessional behavior affects the profession as a whole in the public's eye.¹³

In practical terms, this means that every colorectal surgeon has a pivotal role to play in upholding the ACS Code of Professional Conduct, in being a proactive role model, and in

teaching and assessing professionalism in their trainees. Accepting these responsibilities for every patient, for every case, for every trainee, every day is not an easy task; it is important to acknowledge our own limitations. Sadly, however, accepting responsibility to advocate for our patients and to accept accountability for care has been difficult because of resistance from within our own profession. Since 2006, the topics of physician responsibility, “the disruptive (or impaired) physician,” or professionalism (for faculty or residents) have surfaced at every annual meeting of the American College of Surgeons, the Association of Program Directors in Surgery, and the Association of Surgical Education in the form of podium presentations, panels, or workshops.

Growing acceptance for the importance of professionalism can be demonstrated by a recent survey of department chairmen by the Surgical Professionalism and Interpersonal Communications Education Study Group (SPICE). This consortium program surveyed their department chairmen and found that of the 41 who responded, a majority felt that their departments had an overall “much better” view toward resident professionalism in 2011 compared with 2006.¹⁴ In recent years, residents have also shown increased awareness of professional behavior. In a 2008 study of surgical residents' peer evaluations, “professionalism” emerged as the “most important” distinguishing attribute of a role model (based on

Table 3 The American College of Surgeons Code of Professional Conduct (2003)¹¹

During the continuum of pre-, intra-, and postoperative care we accept responsibilities to serve as effective advocates of our patients' needs:
• Disclose therapeutic options, including their risks and benefits
• Disclose and resolve any conflict of interest that might influence decisions regarding care
• Be sensitive and respectful of patients, understanding their vulnerability during the perioperative period
• Fully disclose adverse events and medical errors
• Acknowledge patients' psychological, social, cultural, and spiritual needs
• Encompass within our surgical care the special needs of terminally ill patients
• Acknowledge and support the needs of patients' families
• Respect the knowledge, dignity, and perspective of other health care professionals
Our profession is also accountable to our communities and to society. In return for their trust, as Fellows of the American College of Surgeons, we accept responsibilities to:
• Provide the highest quality surgical care
• Abide by the values of honesty, confidentiality, and altruism
• Participate in lifelong learning
• Maintain competence throughout our surgical careers
• Participate in self-regulation by setting, maintaining, and enforcing practice standards
• Improve care by evaluating its processes and outcomes
• Inform the public about subjects within our expertise
• Advocate strategies to improve individual and public health by communicating with government, health care organizations, and industry
• Work with society to establish just, effective, and efficient distribution of health care resources
• Provide necessary surgical care without regard to gender, race, disability, religion, social status, or ability to pay
• Participate in educational programs addressing professionalism

both junior and senior residents' ratings). Professionalism was found to be more important than surgical knowledge or even teaching ability.¹⁵

Socializing Residents into a Culture of Professionalism

How do we become professionals? How do we "learn" professionalism? Structured interviews with residents and faculty that were conducted at two institutions for 2 years by Park et al have helped to clarify at least four socializing sources for professional conduct¹⁶: (1) personal values, upbringing, and experiences growing up; (2) learning by example from specific role models; (3) informal learning during residency by virtue of experience and interactions; and (4) formal instruction.

Although as educators there is not much we can do about residents' upbringing and formative experiences, we have not only the power, but the responsibility to fashion the three other sources. Sociologists and social learning theorists would agree with the above-cited study that role models have the greatest power to shape professional attitudes and behaviors. It is through the socialization process, as mediated by dominant peers and key leaders, that novices learn the unwritten norms, rules, and practices of their profession.¹⁷ This is as true in academics as it is for other members of other professions, such as the military and the clergy.¹⁷

Role Modeling

In the informal setting, colorectal surgeons can actively strive to promulgate a culture of professionalism by serving as an example to all who observe him or her. Simple actions, such as including the trainee during the informed consent process, or encouraging a patient to seek a second opinion, can build and reinforce the tenets espoused by the ACS Code of Professional Conduct. First and foremost, it is from us that residents learn how to disclose complications, lead end-of-life discussions, speak respectfully to (or about) consulting physicians or staff, and give corrective feedback to nurses or junior staff. It is from our behavior (not just our words) that residents learn the importance of preprocedure briefings, time outs, and debriefings. It is also from some of us that residents learn about accepting consulting fees from vendors without proper disclosures, about bias in reporting research, about crossing sexual or other personal boundaries with coworkers, or the use of self-medication via alcohol or drugs. By observing us, residents learn how to manage their own, very human feelings of professional envy, anger, frustration, or fatigue.

As surgeons, we have come to our calling often because of an aptitude for solving technical problems. Yet so much of true surgical competence requires "soft" (nontechnical) adaptive work based on a different set of skills.¹⁸ Acknowledging a patient's psychological, social, cultural, or spiritual needs can be difficult for even the most experienced practitioner. For example, colorectal surgeons working with a diverse patient population may have encountered the challenge of counseling some patients on a procedure as "simple" (to us) as an ostomy.¹⁹ For patients in some cultures, the prospect of

having to store one's feces outside one's body in disposable pouches is sheer anathema, contrary to their very sense of body integrity. They may not consent to the procedure, even though it may extend or save their life. In the end, our job is to advocate for these patients, to put them first, and to bring the collective team effort to the highest standards possible. Doing so through our actions will speak louder to our patients, our trainees, and others with whom we work than any lecture on respecting culture and individual choice.

Formal Training

As important as role modeling is, learning professionalism by example alone is not enough to ensure proper behavior in our trainees. To be blunt, this is because not all practicing surgeons are stellar examples of professionalism, and not all take the time to mentor trainees. Nor have all departments achieved a culture of professionalism that is overtly led from the top and reinforced through visible, public statements and policies. And last but not least, not all residents matriculate into training with maturity or "emotional intelligence."

As a result of the above situation, and given the ACGME's identification of professionalism as one of its six core competencies nearly 10 years ago, all residency training programs work to explicitly teach professionalism; they cannot afford to rely on role modeling alone to stay compliant. Some institutions have created specific professionalism rating tools to be used for both faculty and resident evaluations.²⁰ Others have created simulation-based curricula to teach their residents practice-based learning and improvement/interpersonal and communication skills/professionalism.²¹ There have been numerous publications regarding the use of the Objective Structured Clinical Skills Examination (OSCE) format both as an educational tool and an evaluation method.^{22–24}

Additionally, the literature also contains examples of PGY-1 orientation "boot camps,"²⁵ which overtly define professionalism and teach it via a mixture of didactic and role-playing exercises. To assess trainees well, however, programs need to understand the importance of evaluating both the "maximal performance" of trainees (i.e., as demonstrated in a focused examination format), as well as the assessment of "typical performance" (as assessed by faculty or peer ratings). This is important to truly paint an accurate picture of an individual's professionalism in the training environment.²⁶

Professionalism and Resident Responsibility

In assessing residents' professionalism, many programs consciously or unconsciously include attributes such as timeliness, conservative or "appropriate" dress, and overall "professional" demeanor. Some may also interpret such things as conference attendance, timely and accurate completion of duty hours, appropriate hand-offs or sign-outs, and additional measures of responsible administrative compliance as part of professionalism.

At our program, we recently revised our end-of-rotation "Faculty Evaluation of Resident" form. Our previous form simply asked faculty to assess each resident on each ACGME core competency on a 5-point scale. On the current, much

expanded form, only two of the 25 items address professionalism per se and only one item “by name.” It asks faculty to rate how well the individual “upholds professional ethics (informed consent, confidentiality, error disclosure, conflict of interest).” Many of the 24 other items, however, address core competencies through the lens of professional conduct (–Table 4). For example, we place a high premium on residents taking ownership for their own learning. We consider it an aspect of professionalism because an uneducated trainee cannot deliver competent patient care. We teach, preach, and assess self-directed, “self-regulated” learning because 95% of what is learned on a rotation is learned by the resident on rotation or at home.²⁷ We infer commitment to learning not just from a high ABSITE test score, but from residents’ behavior—coming to the operating room, patient rounding, or teaching sessions having read relevant textbooks and literature to better serve patients.

We argue that measuring these aspects of professionalism at the resident level is important. At the end of the day, the purpose of resident training is to produce a competent, efficient, and highly trustworthy surgeon. Discussing professionalism in these terms inevitably brings up the challenge of how to motivate residents to meet these kinds of standards. Five years of clinical training (plus additional years for research at some sites, and fellowship for a majority of graduates) make for a long period of apprenticeship. It

therefore is important for educators to understand how to motivate trainees who are in their twenties and thirties and ready in many ways to assume the full mantle of adulthood. The problem of “aging” trainees is exacerbated by increased regulation over their lives (e.g., duty hour restrictions, complex supervision guidelines, and billing and legal responsibilities, which conspire to delay their autonomy on the wards and in the operating room).

Although we do not profess to have all the answers, we are intrigued by the work of Daniel Pink. In his book, *Drive: The Surprising Truth about What Motivates Us*, Pink describes three different “versions” of motivation that have developed over human history.²⁸ He uses the operating system of a computer as a metaphor to explain these versions. In “Motivation 1.0,” individuals are driven by survival and attention to basic needs. In “Motivation 2.0,” individuals are driven by external rewards and punishments, and strive for the maximal creation of wealth. In “Motivation 3.0,” people are driven by the inherent satisfaction of their activity and strive to seek autonomy, mastery, and purpose.²⁷ He then further describes the distinction between the circumstances when each type of motivational strategy is optimal: Motivation 2.0 is suited for relatively rote and repetitive tasks, whereas Motivation 3.0 is more suitable for tasks requiring creativity or ingenuity. Persons engaging in the 3.0 level of work are typically motivated by such things as time, support, interaction with

Table 4 Items from the University of Minnesota Department of Surgery’s End-of-Rotation Faculty Evaluation of Resident Form

Faculty Raters Are Asked to Evaluate the Extent to Which Each Resident Does the Following:	
Medical Knowledge	Practice-Based Learning + Improvement
<ul style="list-style-type: none"> • Prepares for cases prior to coming to the OR • Prepares for rotation teaching sessions • Reads and acquires knowledge needed to care for patients on service 	<ul style="list-style-type: none"> • Is a self-directed, independent learner • Uses data (from practice experience, from literature) to guide patient care • Seeks, accepts, and acts on constructive criticism
Patient Care	Technical Skills
<ul style="list-style-type: none"> • Knows the patient’s medical problems • Understands the patient’s emotional needs • Creates appropriate care plans based on knowledge of the patient • Exercises good clinical judgment in urgent situations (knows when a patient is in trouble, when to operate, when to call for help) • Efficiently and thoroughly executes administrative tasks (dictation, orders, transfers) 	<ul style="list-style-type: none"> • Has essential basic skills (suturing, knot-tying, tissue handling, instruments, intubation, chest tubes, central lines) • Is effective in the role of 1st assistant (engaged, stays focused, anticipates actions) • Can manage intraoperative variations and complications • Can plan and conduct an entire procedure (chief)
Systems-Based Practice	Interpersonal Skills and Communication
<ul style="list-style-type: none"> • Helps patients navigate health care system barriers • Works to increase team efficiency and cost effectiveness • Promotes patient safety measures 	<ul style="list-style-type: none"> • Earns respect and trust from patients • Earns respect and trust from health care team members (other residents, nurses, ancillary support staff) • Earns respect and trust from surgical attending • Coaches, teaches, and mentors others • Can run a service through positive leadership (seniors/chiefs)
Professionalism	
<ul style="list-style-type: none"> • Upholds professional ethics (informed consent, confidentiality, error disclosure, conflict of interest) • Shows maturity in response to workload and stress 	

OR, operating room.

stimulating colleagues, autonomy in decision making, personal accountability, and recognition (both personal as well as public).

Pink primarily uses the context of the modern corporation to illustrate his ideas, describing scenarios in the business world where motivation produced unexpectedly good or bad results. But there are valuable lessons in his ideas as they pertain to resident training. Truthfully, many of the tasks at the junior resident and particularly the intern level can become fairly rote and mechanical. Indeed, such mundane tasks remain a component of work even for senior faculty members. Most educators address the problem of getting residents to complete necessary administrative tasks ("scut work") through exhortation, pleading, nagging, sarcasm, ostracism, or other relatively ineffective means. To get interns and juniors through this phase, faculty members need to help them keep their "eyes on the prize"—the patient. Faculty members can overtly role model positive compliance with their own administrative tasks. They can talk openly about the underlying purpose or importance of tasks, how the act of doing them actually does contribute to patient care and the residents' education and ability to lead others. Faculty should publicly recognize (thank) residents when the tasks are well done, and also notice and correct residents when they are not completed properly. The more significant the feedback, the more important it is that this feedback be delivered in private and focus on increasing the resident's self-awareness and insight.

Colorectal faculty who teach general surgery residents are in the unique position to be able to foster the development of their trainees throughout their developmental trajectory—to mold their professional behavior while they are still pliable. Simple gestures such as introducing residents in a respectful, collegial manner to other physicians or patients; asking their opinion and discussing their ideas; stopping by the call room to thank them; buying them a cup of coffee; or spending a few moments to learn about their lives outside the hospital can help bring trainees into the fold and make them feel like a valued part of the team. If all members of the team are truly respected for their individual contributions, then accountability to the team for the sake of the patient can become a powerful 3.0 motivator.

Summary

Colorectal surgeons contribute to the education of general surgical residents in countless ways and settings. The rewards for doing so vary widely. For some, teaching is an expected component (albeit generally without compensation) of their academic appointment in a medical school; but for many, it is a volunteer "labor of love." Regardless of the underlying drive to teach and mentor residents, each faculty member must understand the context in which training now occurs. The apprenticeship model of residency training has been replaced by a more rigid process with a more standardized curriculum, more specified operative experience requirements, more need for meaningful and transparent performance reviews, and more societal and institutional expectations for close oversight to assure

patient safety and optimize clinical outcomes. Fortunately, today's insistence on teamwork and professionalism is replacing a sad legacy of tolerating arrogant individualism and inappropriate behaviors.

Albert Schweitzer once reflected, "At times our own light goes out and is rekindled by a spark from another person. Each of us has cause to think with deep gratitude of those who have lighted the flame within us." The possibility of being the surgeon who lights the fire in a resident to transform him- or herself to be a truly great clinician is open to all, but doing so requires commitment. Each faculty member—from the department chair to the newest adjunct faculty member—must take individual responsibility for their role in developing the next generation of surgeons. This requires an internal assessment of one's own abilities and a commitment to continually upgrade one's own knowledge base, technical skills, communication effectiveness, and other core competencies. Modeling professionalism in day-to-day practice can have a profound and lasting positive impact on our trainees, our faculty colleagues, our own career, and our profession. Brad Warner, M.D., noted in his Society of University Surgeons Presidential Address that professionalism requires "putting patients above ourselves and striving to do everything possible to make things better for them."²⁹ The colorectal surgeon who models and embeds that philosophy into a general surgical resident will experience the enormous gratification that has motivated educators of all stripes for millennia...leaving a legacy of excellence for the next generation. This can be your legacy.

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