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How Do We Prevent Burnout in Surgery?

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Keywords

• Burnout • Surgery • Professional satisfaction

Key points

- Our profession should fit our lives, rather than the contrary approach as designed into the monastic surgeon paradigm.
- Improving professional satisfaction and decreasing the high rate of burnout among surgeons is a critical task facing all of us in surgery, but especially those of us who have chosen to assume some administrative responsibility for the field.
- The list of potential interventions here is long, and can include everything from simple ways to better respect surgeons' time off, such as email-free weekends, to employment policies that provide for temporary or permanent part-time work, parental leaves, and intermittent retraining opportunities to acquire new skills.

INTRODUCTION

Burnout among attending surgeons in and out of academic settings is a prevalent condition, and its treatment and prevention are a societal imperative if we are to maintain an optimal surgical workforce. Intervention requires understanding the causes of burnout, and how we came to be in this position, before we can make plans to alleviate or preclude it. The premise of this article, based on the personal and managerial experience of the author, is that surgery is young, the visionary leaders who created the field were fully engaged in surgery as their life's passion, and they came from a social era different than the current. The professional structures and expectations that they erected reflected themselves. Over the past 30 years, surgery has changed, and surgeons

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have changed, but the professional orthodoxies have not. This has created discordance in surgeons' satisfaction with their professional and personal lives, leading to the constellation of symptoms that we reflect as burnout. Alleviating this requires changes in what we expect from ourselves, our colleagues, and our employers.

HOW DID WE COME TO BE WHERE WE ARE AS A PROFESSION?

Although the arc of surgery as a modern therapeutic endeavor is short, it has spanned several generations of careers, which makes it difficult for new trainees to form a perspective on the pace of change. The dependence of surgical education on mentor/mentee relationships, and the transfer of clinical management skills as a complex and habit-based craft, contribute to the sense that surgeons are entrusted with special knowledge. They must behave in exceptional ways to maintain the line of continuity from year to year, chief class to intern class, and senior surgeon to junior partner. All of this is true and useful; surgical problems happen at inconvenient times, discipline around details of care affect patient outcomes, and the judgment and skills of master surgeons are highly valuable. However, the model surgeon developed in this developing field to address these truths (the monastic surgeon) may not be the only, or best, way forward.

Surgery is a young field in the midst of transition

To those who enter surgery, whether in training or for treatment, it likely seems as though this is a mature field, and that our predecessors have tried all potential arrangements and settled on our current plan as the best. Many lectures on surgery begin with our ancestry tying back to ancient Egyptian surgeons and before, through the barber surgeon era, and so forth. However, surgery as a modern discipline, reflecting the wide application of operations to correct ills, is a new phenomenon, dating to the late nineteenth century at the earliest. Only with the introduction of general anesthesia and principles of antisepsis could surgical technique be developed to the point that it could be applied routinely. Even then, it started slowly. The Peter Bent Brigham Hospital (PBBH) was founded in 1913, and the first surgeon-in chief was Harvey Cushing, a surgical pioneer who helped to develop neurosurgery. In the first full year of operative statistics, 1915, PBBH surgeons performed 1526 operations on 1328 patients, a number that would now be a busy fortnight for the successor institution, Brigham and Women's Hospital (BWH). This did not change quickly. By 1935, PBBH surgeons performed 2135 operations on 1838 patients. In 2018, BWH surgeons performed 41,275 operations. Just this growth implies that the field changed dramatically over less than 100 years.

Other data also reveal this change. We have a human tendency to expand the history that has occurred during our memories, and to compress what preceded us. Dr Cushing appears from that lens to be ancient history: an established icon who developed entire fields of surgery, and established a

premiere hospital and surgical training program based on the Johns Hopkins model from which he was recruited. However, there have been just five surgeons-in-chief at the Brigham (PBBH or BWH) since Dr Cushing, including the incumbent (and author). This is clearly too few principals for us to assume that every recommendable arrangement has been trialed, and that the current one is clearly best. This also allows for the idea that each of these people capably addressed the changing field of surgery and hospitals as appropriate for their time, but that none of those constructs are relevant to our current circumstance. Although we may believe as we enter surgery that the field is fixed and optimized, in fact, the field is young and still in significant flux.

Training in surgery, as developed in improved form for this modern era under Dr Halsted at Johns Hopkins in the late nineteenth century, is based on an extended period of committed didactic and practical study of the field after medical school. As originally arranged and often recounted, these house officers were nearly always unmarried men who lived in the hospital for a period of years, and served to support the 24/7 needs of the hospitalized and ambulatory patients (or out-door patients, as they are termed in the early PBBH reports). Once they had completed this training, under the observation of equally devoted mentors who were simultaneously developing surgery, they joined the practice of surgery with the same expectations of devoted service. Our historic ideal of the monastic surgeon, completely committed to their profession with all other obligations being secondary if acknowledged, I believe, descends from these beginnings.

Over time, we have improved many aspects of this training to reflect current expectations of a field that has become more routine. Recent examples include the work-hour changes developed through the Accreditation Council on Graduate Medical Education over the past two decades, and the standardized expectations of training program experience. These reflect an institutionalization of a field that has become less idiosyncratic as it has matured. The challenge now is to reflect that change across the arc of a surgical career.

Surgery has changed

Over the past 30 years, surgery has also changed. Medical care has advanced in many ways, nearly always to the benefit of patients. Disruptive technologies have been introduced that changed our practices. These include the advent of camera-based laparoscopy, allowing multiple operating room personnel to observe the intracorporeal contents, and for the surgeon to use two hands and multiple ports to perform more complex procedures. Imaging has changed the evaluation of trauma patients and eliminated the need for many laparotomies. Acid-suppression therapy and *Helicobacter pylori* treatment has virtually eliminated the need for ulcer operations, just as sentinel lymph node biopsy has greatly reduced the indications for lymph node dissections in melanoma or patients with breast cancer. Percutaneous vascular interventions have changed coronary and peripheral revascularization procedures, and cardiac valve procedures.

These advances have been accompanied by a blurring of boundaries among specialties. Previously, intervention for many conditions had required the involvement of those with surgical training. Novel approaches disrupted that, and have led to nonsurgeon interventionalists, rare 30 years ago, but integral to high-quality care now. Some of these specialists even work in the operating room, with the support of anesthesiologists and specialized nurses, but without training in surgery, something that essentially never happened not so long ago. The differentiating features of surgeons, interventions and the operating room, are no longer entirely exclusive. Thus, surgery has changed, and "outsiders" have demonstrated that they can participate, and effectively so, in the territory previously only accessible to the monastic surgeon.

The effects of these changes have been varied. In some cases, as surgeons have developed or adopted new techniques, as in vascular surgery, the surgeons have migrated to new sites of practice, and incorporated new approaches. In other areas, as for many cardiac procedures, surgeons have struggled to remain involved in the care for problems that were once solely in their domain.

In general, these approaches have involved less intensive care for patients, including shorter or no hospital stay, limited wounds that do not often require the specialized care learned in surgical training, and care for fewer complications that have occupied so much attention from surgeons and training programs. This has led to significant change in surgical practice, as many more patients and their conditions are managed outside of the hospital, or with limited stays. That has enabled many more patients to cycle through the same number of hospital beds, and increased the need for outpatient operating room facilities. With many of the previously low-acuity hospitalized patients now at home, the patients who are in the hospital are much more precarious, or in need of more laborious care. At the same time, the patients at home require more contact and ambulatory follow-up than previously.

This process has created increased productivity; more patients and more conditions treated in the same span of time and space. However, it has taken the busy surgeon or surgical service, and hustled it to an unsustainable pace, without redesign of the care team and system. Although some groups have been successful by changing their approach, others have struggled with the process changes necessary. And a major reason may be that persistent paradigm of the monastic surgeon: always personally available, with no inviolable commitments outside of patient care.

Pellegrini has delivered a characteristically useful analogy for the current state of change in surgery [1]:

> For many years, however, the pace at which innovation occurred allowed for intervals of time to test and validate the new idea and, when useful, to design educational and training methods that ensured its safe adoption. In some ways it resembled a trip down a river with rapids interspersed with waters of relative tranquility in which to recover. The pace of change has

> increased substantially over the last few years, and I predict that this pace will only accelerate in the future: the equivalent of navigating permanently in white waters.

This analogy may serve equally well for the pace of innovation and the pace of practice. As it has become possible to be more efficient at patient care, that increase in efficiency has also become expected. The only way to exceed last year's standard is to do even more next year. As we measure clinical productivity with ever increasing precision, we steadily increase the expectations of improvement.

Surgeons have changed

Over those same 30 years, surgeons have also changed. The prototypical surgeon then was a partnered male surgeon in a single-income household. Of course, there were exceptions, and the prevalence of the prototype was inconsistent around the country, but that was the prototype on which the medical system, and the life of the surgical attendings and residents, was built. By 2010, for male surgeons, 47% were in dual-income households, and 83% of female surgeons had a partner working outside of the home [2]. There are also more female surgeons overall compared with previously, and currently about half of surgery residents are women. This change in who we are as surgeons must affect our expectations of what we want from our profession. Our system, built for that previous archetype, the prototypical male, monastic surgeon, was not designed for the diversity of our current or future surgical workforce.

Finally, those surgeons from 30 years ago often came from privileged backgrounds. Even for those of us from comfort but not wealth benefitted from an era with lower tuitions and favorable student loan terms. In 1986, when I graduated from medical school, the mean student loan debt of a graduating medical student was $36K ($70K in 2018 USD) [3]. I personally had $43K in student loan debt, which seemed daunting then. In 2016, the median student loan debt for a graduating student from a US medical school was $197K. For general surgery-bound interns, 61% owed more than $100K in student loan debt. In addition, the terms of the current student loan debt are generally less favorable than what we faced 30 years ago, often with interest that accumulates during training.

Today's surgeons are different and in dissimilar circumstances than were faced previously; there are more women, with more partners in the workforce, and the student loan burden is substantially greater. These conditions may lead them to have different expectations of their professional lives.

Our career structure and expectations have been static

Although the practice of surgery has changed substantially, and surgeons have changed who we are, the structure of surgery and our expectations of ourselves have remained settled. This may be understandable. The attributes that contribute to a highly functional surgeon include diligence, commitment, maybe even some stubbornness to give up in difficult circumstances. Those

behaviors are rewarded with better outcomes for patients. Why would these same people behave in a more agile way with respect to their career environment? Added to that is the length of training in surgery, typically 5 years minimum, but often 7 to 10 years by the end of research and specialty training. By that point, the trainee may be so invested in the current system, that their propensity to change is limited.

Surgery has changed, and in important ways, such as the Accreditation Council on Graduate Medical Education duty hours renovation. In fact, however, that was a change mandated by the threat from an outside agency as external forces planned imposition of work rules for residents. Internally driven change has been more limited. We have few features of a professional employment model. Options for part-time employment, on-going training to develop new opportunities, or clear career-planning through retirement are often limited. Our approaches to the increased number of female surgeons have been erratic, including our provisions for childbirth, nursing, and child-rearing for parents of both genders [4–7].

BURNOUT IS A PREVALENT AND THREATENING ISSUE

Our awareness of burnout among physicians and surgeons has become more widespread and more acute over the last several years. The measurements seem clear and consistent across institutions. Tait Shanafelt, now at Stanford University, has been a pioneer in these measurements. He and his group have surveyed US physicians nationally, and compared them with the general US population, regarding evidence of burnout and professional satisfaction as measured by the Maslach Burnout scale [8]. They have demonstrated that more than half of US physicians show evidence of burnout, and that those symptoms became more prevalent between 2011 and 2014 (Fig. 1). The prevalence also varies by specialty. Subsequent evaluations at the institutional level, including our own institution, shows that burnout is more prevalent, and professional satisfaction is lower, than one would expect or prefer in such a highly educated, well-compensated group.

How does this affect us? Clearly, it makes us less happy with our professional choices than we should be. It also makes us less effective in our roles as clinicians, teachers, mentors, and role models. The Shanafelt data show us that some specialties in particular have high levels of burnout, and low levels of professional satisfaction, and some of those are surgical specialties for which we must bear some personal responsibility to address. Our institutional data also show that women experienced symptoms of burnout at a higher rate than men at each phase of career, whether grouped by age or academic rank. We clearly have a burning platform that must be addressed. These findings have also been extended to the experience of residency training.

As Dr Pellegrini has described, there have always been times when professional demands were "over the top," causing stress with the clash between personal relationships and professional demands (the "rapids"), but these periods

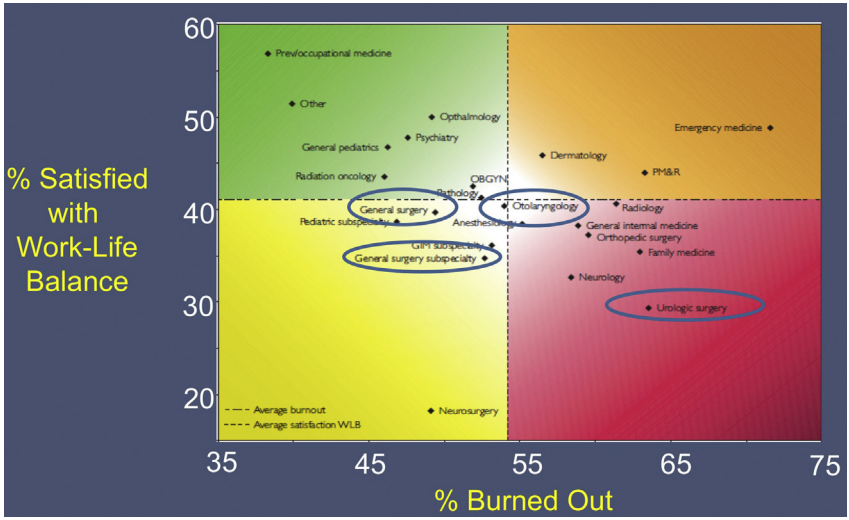

Fig. 1. Physician burnout, by specialty, as measured through surveys in 2014. (*Adapted from* Shanafelt TD, Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. Mayo Clin Proc 2015;90(12):1600–13; with permission.)

were separated by intervals of relative calm and routine, which provided space for recovery (the tranquil water of Pellegrini's metaphor). Now, however, the pace of practice has increased to approach continuous whitewater.

In the worst case, this has led to surgical practice assessment being reduced to its most basic revenue-producing essence: the surgeon as technician, functioning as a cog-in-a-wheel, reduced to a set of operative productivity numbers. The corporatization of medicine, with the frequent focus on measuring surgical productivity, hospital supply chain costs, revenue cycle performance, and relative surgeon efficiency, is necessary in our complex environment for us to meet all of our institutional goals. However, that emphasis and effort in measuring these items can leave the impression that efficient clinical productivity is the only important ambition. One can imagine the pinnacle of this as the surgeon who has determined how to practice with the utmost efficiency, year after year, and increasing by 3% per annum. This can inevitably lead to professional dissatisfaction for many who were attracted to the profession by the joy of forming therapeutic relationships with patients and families, the prospect of multidisciplinary interaction and decision-making to optimize patient care, and the opportunity to provide their best to each situation, all of which may be placed at jeopardy by the productivity demands of the corporate approach.

The key question is why? Why do our administrative systems place such emphasis on surgeon productivity? In the answer to that lies a key to addressing the burnout and professional satisfaction challenge facing our profession.

Interventional activity, and surgical activity in particular, is critical to hospital and health system financial performance. Not only is interventional work reimbursed at high rates, but also the infrastructure costs to enable interventional activity are high. Surgeons influence the use of these resources directly, and so we are measured precisely because we should be; our work has a direct effect on the institutional financial performance. As surgeons have increasingly become employed by the institution, directly, or indirectly through institutional subsidies, we too have become assets to be managed and optimized. To be responsible stewards of all of their human and physical resources, health care systems should measure and manage our work. But we as administrators must also take responsibility for the care and maintenance of our surgical workforce. The recent illumination of the state of burnout and workforce satisfaction should tell us that we have room to improve.

The impetus to address this is enhanced by an impending imbalance between the supply of surgeons in the workforce, and the demand for surgical services in the United States over the coming decade. As our population grows and ages, there will be substantially more demand for surgeons, but less supply growth compared with other specialties [9]. Although the overall supply of physicians will increase, as projected by the American Association of Medical Colleges, the projections for surgeon supply is flat across a variety of modeling scenarios. These scenarios include the projected retirement dates for surgeons, and the effect of slightly earlier or later retirements, and the anticipation that younger surgeons may choose to work at a slower productivity pace than their predecessors (millennial hours in based on some survey data of younger physicians. Finally, there is little opportunity for graduate medical education expansion to affect this by 2030 given the length of time required to fully train a surgeon.

At the same time, the demand for surgical services will increase, and there is little if any opportunity to replace surgeon work with alternative workers (nurses, nurse practitioners, or physician assistants). The projected shortfall of surgeons in 2030 in the United States will likely fall at about 25,000 full time equivalents. Thus, although current surgeons are showing symptoms of burnout that may be related in part to the pace of our required work, our future surgeons will be faced with even more work to be done, and no additional surgeons with whom to share it. Thus, our motivation to address burnout and professional satisfaction is only amplified by the anticipated future state. This increased demand also creates our opportunity; we as a profession and as health care institutions have no choice but to address this.

WHAT AFFECTS PHYSICIAN SATISFACTION?

Our plans should be guided by what we know about physician satisfaction. In 2013, the RAND Corporation prepared a report sponsored by the American Medical Association, to define the factors that affect physician satisfaction in the United States (factors affecting physician professional satisfaction and their implications for patient care, health systems, and health policy) [10]. The report

addresses professional satisfaction broadly across specialties, geography, practice settings, and physician demographics. This may provide us some guidance as to where we can effectively change to address surgeon burnout. The full report contains substantial detail, but some common themes of what affects physician satisfaction can be gleaned, and can be ordered by their influence (Box 1).

The most impactful feature affecting physician satisfaction was their self-perception of the opportunity to provide high-quality care. This is reassuring, and indicates that the humanitarian values that attracted many to medical practice continue to be influential during practice. Conversely, barriers to providing high-quality care were strongly perceived as professional dissatisfiers, and included an unsupportive practice environment, blockages to preferred care by payors, and too high of a practice pace.

The electronic health record (EHR) was a complex issue. Physicians recognize the value of the EHR as a concept, and some of the ways that it improves professional practice and patient care, mainly around the immediacy of access to information. However, the execution of the EHR is perceived as flawed, and the input and curation of data in the EHR as a barrier to quality care and satisfaction. In particular, the EHR was perceived to clutter the patient record with notes that are not helpful for care, introducing a lot of material that is useful for billing, but that obscures the information needed for patient care.

Physician autonomy was an important satisfier. Not all physicians want to lead a practice but all want to be heard, and want to believe that their input impacts their environment. Conversely, the absence of this input leads to feeling helpless and disgruntled. In a related item, alignment of the physician goals with the practice leadership goals is important to the satisfaction with the professional setting. It seems straightforward to imagine that the opportunity to influence the practice, and the alignment of one's goals with the practice goals, must be related.

People are social by nature, and the opportunity to experience a positive social environment at work has a positive effect on physician satisfaction. Expressed as collegiality, this includes affirmative interactions in multiple

Box 1: Determinates of physician satisfaction

- Quality of care
- Electronic health records management
- Autonomy and work control
- Practice leadership
- Collegiality, fairness, and respect
- Work quantity and pace
- Work content, allied health professionals, and staff
- Payment, income, and practice finances

relationships, such as within the practice itself, but also including the relationships with patients and with referring physicians.

Work quantity affects all physicians, but in different ways for varied specialties. Surgeons and other procedural specialties tend to have the most complex relationship with work quantity, because they prefer too much work to too little work. For too little work, surgeons are concerned about practice viability and stability, which tends to be less of an issue with a practice that is too busy and can be expanded. For nonprocedural specialties, the relationship was generally simpler, with less work being preferable.

The content of the clinical practice is an important professional satisfaction actor. Physicians prefer to do work that is "top of license," that is, work that can only be done by physicians. They prefer to develop patient relationships that enable continuity in their practice. It seems that this is a particular dissatisfier for groups that have contact through limited episodes without reaching resolution, such as emergency medicine, or primary care practices that exclude management input during acute issues, such as hospitalizations. For specialists, the development of some niche of expertise supports physician satisfaction with their practice. Finally, for all groups, the opportunity to work with trusted staff is critical.

Practice finances are important to physician satisfaction. This includes their personal compensation, but also includes their perception of the stability of practice finances. Personal compensation satisfaction is affected by the stability of compensation over time, the compensation compared with the expectations of the individual, and the perception of fairness of compensation compared with others in the practice. Overall, there was decreased stress regarding compensation for employed physicians.

WHAT WE SHOULD DO TO ALLEVIATE AND PREVENT BURNOUT

Knowledge of our past including how we came to be where we are, and information about the present including what physicians tell us is important, should inform our plans for the future of our profession. We have an obligation to approach this thoughtfully to protect our surgeon workforce, and its important service to society.

We face some issues that are systemic and some that are self-inflicted. In the author's opinion, we must eliminate the latter, and position ourselves to best accommodate the former; we should fix what we can control and advocate for the rest. Synthesizing the information presented here into one plan is difficult, and we should anticipate that we will make changes that will work, and some that will not. Fear of the few failures should not stop us from action, because the status quo is untenable. Some suggestions are shown in Table 1.

Align with patients

The most important professional satisfier is the ability to provide high-quality care. Fortunately, that is also what patients prefer. We should align our goals of

Table 1
The way forward

- Align with patients
  - Use patient-reported outcome measurements to guide care
  - Promote quality = professional satisfaction
  - Support universal health care access to eliminate barriers to quality care
- Develop expertise in diseases, not techniques
  - Discipline of surgery not operating
  - Be adaptable and valuable
  - Find and develop a niche of expertise
- Practice redesign
  - Surgeon supply prevents us from doing clerical work
  - Care redesign with allied health care professionals to extend us
  - EHR customization to support work
  - Scribes or other documentation enhancement
  - Do not cede role of primary patient advisor or perioperative care to others
- Progressive employment policies
  - Profession needs to fit life
  - Respect time away from work: build ''calm between the rapids'' (eg, email-free weekends)
  - Part-time work
  - Parental leaves
  - Mid-career retraining opportunities
  - End-of-career practice adjustment
  - Focus on career development; support our professional talent as in other industries
- Respect choices
  - More than one definition of success
  - Space for different paths

providing care directly with what patients perceive as high-quality, and doing so requires knowing what that is. The emerging science of measuring patient-reported outcomes should dominate our judgment regarding the quality of our care. As with the business-related metrics that we commit so many resources to measuring, giving primacy of place to patient-reported measures will signal the importance of patients, and enable us to optimize the system for this metric in addition to the financial ones.

Develop expertise in diseases, not techniques

We have pursued the discipline of surgery, not the discipline of operating. We must resist the tides that might push surgeons toward financial optimization solutions that decrease our patient interactions. The discipline of surgery includes the operative and nonoperative management of a spectrum of diseases. Obvious examples include trauma care, but less obvious examples might be cancer care or heart disease. We must not cede our role as a primary advisor to patients and families in the care of these issues. Helping patients and families work through the options for management of their complex vascular disease, for example, might result in a plan to pursue nonoperative therapy. The professional satisfaction that comes with this level of involvement is important to us; however, to preserve that we must make

sure that the service that we provide is also important to the patient and the care team. We need to maintain and value that decision-making, and patient-advisory expertise that makes our involvement useful. In short, remain an expert in the management of the disease, with a deep understanding of the operative issues, rather than becoming focused on merely the technical aspects of our craft.

Practice redesign

Surgeon supply and demand projections will prevent us from taking on clerical or administrative tasks, those that are away from the "top of license" tasks of counseling patients and performing operations. Care redesign will be critical, with allied health care professionals involved to extend our work, not to replace us in the patient counseling or technical tasks. Examples of this might be staffing a clinic to screen anorectal patient complaints to identify those who need our direct services, or engaging staff to perform portions of a visit that are important but clerical, such as medicine reconciliation. Management of the time spent documenting in the EHR can include such approaches as scribes to generate drafts of notes, or customization of the record entry with templates to abbreviate common tasks. However, these approaches should not include surrender of perioperative care to other specialists. For example, we should not move responsibility for postoperative care to specialties, such as anesthesiology or hospitalist medicine, because those maneuvers that separate the surgeons from the continuity of the patient recovery are dissatisfiers. Although those specialties may have important roles in the perioperative care, we would cede this responsibility at the risk of our own professional satisfaction.

Progressive employment policies

Our profession should fit our lives, rather than the contrary approach as designed into the monastic surgeon paradigm. Medicine in general and surgery in particular have been slow to adapt to modern concepts of work-life balance, and the employment compacts that underlie that. These compacts can be considered as ways to build "calm water between rapids." We cannot change surgical diseases, which in many cases arise at unpredictable times, and evolve over short cycles, but we can design our approach to providing the necessary availability and continuity of care in ways that provide individual surgeons with space to recover. The list of potential interventions here is long, and can include everything from simple ways to better respect surgeons' time off, such as email-free weekends, to employment policies that provide for temporary or permanent part-time work, parental leaves, and intermittent retraining opportunities to acquire new skills. These opportunities are common in other industries for professionals of our prominence. It is time for them to become common in surgery as well.

Respect our own choices

Finally, too often in surgery, we have valued one definition of success to the exclusion of others that might be more important to an individual. The

monastic surgeon archetype of being singularly devoted to work, and for whom a career might not be defined as successful unless some position of administrative responsibility is obtained, does not sufficiently allow for many other paths to personal success. Those might include part-time work and focus on family or other pursuits, or an extended commitment to laboratory research, or a surgeon who wishes to practice full-time and not take up administrative roles. To the extent that we fail to respect these other choices as legitimate definitions of success, we hurt ourselves and our profession. We must allow space for people to follow different paths and to define success on their own terms.

Improving professional satisfaction and decreasing the high rate of burnout among surgeons is a critical task facing all of us in surgery, but especially those of us who have chosen to assume some administrative responsibility for the field. We owe it to ourselves and our successors to make conscious changes to the ways that we live and work, and succeed or fail, as surgeons and as people. We owe it to ourselves, our patients, our trainees, and our families to choose our way forward carefully and wisely.

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