Beyond burnout: Nurturing wellness and resilience

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Earlier this year, I described the many advantages of having San Francisco, CA, serve as the host city for Clinical Congress 2019. In this column, I showcase the outstanding educational programming and networking opportunities we have planned for this year’s conference.

The American College of Surgeons (ACS) Clinical Congress remains the premier annual meeting for surgeons, surgical residents, and other health care professionals who provide care to surgical patients. The hallmarks of the Clinical Congress are a range of hands-on and didactic educational programs and timely discussion of relevant surgical practices and research, along with unparalleled access to peers, mentors, and lifelong friends.

The theme of this year’s meeting, selected by ACS President Ronald V. Maier, MD, FACS, FRCSEd(Hon), FCSHK(Hon), FCCS(Hon), is For Our Patients. The Program Committee, chaired by Henri R. Ford, MD, MHA, FACS, FAAP, FRCSEng(Hon), and the ACS Division of Education, led by Ajit K. Sachdeva, MD, FACS, FRCS, FSACME, have developed a cutting-edge Scientific Program that addresses critical education and training needs in the ever-changing health care environment.

Can’t miss ceremonies
Two highlights of the annual Clinical Congress are Convocation and the Opening Ceremony. The Convocation, 6:00–8:00 pm Sunday, October 27, at the Moscone Center, includes conferral of Fellowship upon surgeons who have successfully met the College’s full membership standards. The ceremony also includes recognition of the Honorary Fellows, presentation of the Distinguished Service Award, installation of the ACS Officers, and the Presidential Address.

The Opening Ceremony, 8:00–9:00 am Monday, October 28, will feature a short video highlighting the new President’s theme for the year, introduction of the Honorary Fellows, the recipient of the Distinguished Philanthropist Award, Past-Presidents, College Officers and Regents, Special Invited Guests from national and international health care organizations,
Named Lectures
Immediately after the Opening Ceremony, Nina Totenberg, a correspondent for National Public Radio, will deliver the Martin Memorial Lecture: The Health of the Supreme Court. Ms. Totenberg has agreed to stay after the lecture for a meet and greet, 9:30−10:30 am at the Moscone Center.

Among the 10 other Named Lectures that should be of interest to all ACS Members are the following:

- ACS President Ronald V. Maier, MD, FACS, FRCSEd(Hon), FCSHK(Hon), FCCS(Hon), will deliver the I.S. Ravdin Lecture in the Basic and Surgical Sciences: Response to Injury: The Genomic Storm and Precision Medicine, 4:15−5:00 pm Monday, October 28.
- M. Margaret Knudson, MD, FACS, Medical Director, Military Health Systems Strategic Partnership, ACS Division of Member Services, will give the Scudder Oration on Trauma: A Perfect Storm, 12:45−1:30 pm Tuesday, October 29.
- ACS Past-President Andrew L. Warshaw, MD, FACS, FRCSEd(Hon), will deliver the Commission on Cancer Oncology Lecture: Progress and Prospects, 12:45−1:45 pm Wednesday, October 30.

All Named Lectures will take place at the Moscone Center.

Scientific Program
The Clinical Congress is the perfect venue to learn about leading-edge technology and best practices in surgery. This year’s conference comprises 14 Surgical Skills Courses, including the following:

- Advanced Skills Training for Rural Surgeons: Laparoscopic Common Bile Duct Exploration and Image-Guided Interventions of the Chest and Abdomen
- Advanced Robotic Surgery for Complex Abdominal Cancer Cancers
- Minimally Invasive Approach to Rectal Cancer: Transanal Total Mesorectal Excision
- Transoral Thyroidectomy
- Ultrasound-Guided Resuscitation for Trauma and Critically Ill Patients
- Two courses on oncoplastic breast surgery—one on the fundamentals and one that shows participants how to use this approach in their practices

Didactic Courses, 19 of which are offered this year, that may be of interest to many Clinical Congress attendees include the following:

- Global Health Competencies for Surgeons: Cognitive and System Skills
- Ethical Issues in Geriatric Surgical Care
- Beyond Cutting for Cure: Tools for Enhanced Pain and Symptom Management, Communication, and Delivery of High-Quality, Patient-Centered Care
- Successful Management of Your Private Practice
- Put PEP in Your Step: Empowerment Practices in Leadership Development

More than 110 Panel Sessions on timely topics will be offered, and the Scientific Forum will include many exciting research presentations and e-Posters. All e-Posters will be available for viewing for the duration of the Clinical Congress. Video-Based Education Sessions will showcase surgical procedures. Meet-the-Expert and Town Hall Meetings will provide more casual and spontaneous learning environments.
Meet your requirements
Attendees may earn up to 50 AMA PRA Category 1 Credits, 38 of which are available for nonticketed sessions. On-site claiming of Continuing Medical Education (CME) will be available at the MyCME booth and kiosks located throughout Moscone Center. Claims for CME Credit will be accepted through December 1.

In addition, attendees will have opportunities to earn Self-Assessment Credit as necessary and credits to meet state licensing board mandates, as well as credit to address ACS Accreditation/Verification requirements. The ACS requires that staff at College-accredited institutions earn these credits to meet compliance and site survey standards in metabolic and bariatric, breast, cancer, geriatric, pediatric, and trauma surgery.

Get to know your colleagues
As in years past, the Clinical Congress will provide a number of Special Interest Sessions where you can interact with other attendees who share your clinical and nonclinical interests. Want to learn more about ACS chapters and building lasting connections? Come to the Chapter Speed Networking session to meet with members of the Board of Governors Chapter Activities Workgroups. Are you a medical student interested in a program specially designed for those of you considering a career in surgery? Register for the three-day Medical Student Program and explore lifestyle issues, community outreach, and navigating the residency application process. These sessions also address issues that are specific to rural surgeons, Resident Members, Associate Fellows, and Young Fellows, and feature posters, research awards, and more.

The ACS will be offering a variety of wellness activities during the week, including running and walking tours that will offer the opportunity to explore San Francisco and early morning yoga to start your day.

ACS Taste of the City, the last night of the Clinical Congress, is an opportunity to experience a sampling of San Francisco’s unique and diverse dining and cultural scene while networking with your colleagues.

We encourage all levels of interested ACS members, from residents through late-career surgeons, to visit the ACS Career Fair.

Bring your appetite and guests to enjoy live music, fun activities, and camaraderie with ACS leaders, staff, and friends.

The annual ACS Career Fair is a unique recruiting event that brings together hospitals, private practices, and health care organizations from around the country looking to meet top-level candidates from a variety of surgical specialties. We encourage all levels of interested ACS members, from residents through late-career surgeons, to visit the ACS Career Fair.

As always, I urge you stop by ACS Central and meet some of the ACS leaders and staff. In ACS Central, you can update your member profile, order the latest educational products, and learn about our programs and services. This year, you will even have the chance to visit a video booth and talk about your experiences with the organization. ACS Central also houses the ACS Theatre, which will feature daily discussions of College innovations and other efforts to improve the experience of our members.

See you there
I anticipate that this year’s Clinical Congress will provide you with professional and personal experiences that you will remember for years to come. And for those of you who still have doubts about traveling to San Francisco, I suggest you check out the website that Albert I. Alexander, MD, FACS, developed after a scouting trip to the city: aialex4.simplesite.com. He has also posted in the ACS Member Communities about his experience. I look forward to seeing you in San Francisco. ♦

If you have comments or suggestions about this or other issues, please send them to Dr. Hoyt at lookingforward@facs.org.
Nurturing wellness and fostering resilience during a surgical career:
An introduction

by Rebecca L. Hoffman, MD, MSCE
It’s no secret that a surgical career is challenging, grueling, demanding, and emotionally and physically exhausting. We know that surgeons experience burnout at a significantly higher rate (37 percent to 53 percent) than both the general population and physicians of all specialties. Burnout occurs for a variety of reasons, including challenges maintaining a work-life balance, the ever-changing health care landscape and associated bureaucracy, and prolonged training and delayed gratification. Furthermore, surgical trainees and young, new-to-practice surgeons are at particularly high risk for burnout.

Nonetheless, every year, surgical residency positions are overloaded with medical school graduates drawn to the discipline. It sometimes can be hard to describe to a nonsurgeon the allure of the operating room environment, the technical beauty of a procedure, or the gratification of providing quality patient care—all of which make this vocation so rewarding at such a high, personal cost. In this issue of the Bulletin, the Resident and Associate Society of the American College of Surgeons (RAS-ACS) expands the focus beyond surgeon burnout to topics related to cultivating and nurturing surgeon wellness and resilience.

What is wellness?

It is tempting to define wellness as the antithesis of burnout; however, we should challenge ourselves to think more critically about what being well really means. What are we seeking, both personally and professionally, that would provide us optimal levels of emotional and intellectual fulfillment? Does it mean perfect work-life integration with equal time spent at work and time with family or friends? Does wellness mean daily workouts and a healthy diet? Does it mean always feeling like your work is meaningful and purpose-driven? A state of wellness undoubtedly has a different meaning to each surgeon, and so to provide a definition is a challenging endeavor. Physicians at the family medicine residency program at Oakland University William Beaumont School of Medicine, Rochester, MI, developed this shared definition of wellness when embarking on a culture change at their institution: “Wellness is defined as a dynamic and ongoing process involving self-awareness and healthy choices resulting in a successful, balanced lifestyle.”

Promoting wellness among surgeons must be a conscious effort in the workplace, as well as a personally driven effort. Bohman and colleagues define three major reciprocal domains of well-being: efficiency of practice, culture of wellness, and personal resilience, noting that the first two are primarily organizational responsibilities, and the latter the responsibility of the individual surgeon. Each domain inevitably has an effect on the other, and expecting physicians to improve their self-care or build resilience without accompanying cultural improvements in the workplace environment, or vice versa, is illogical.

In recognition of the increasing evidence for a multipronged approach to wellness, the Accreditation Council for Graduate Medical Education issued revised standards in 2017 that, for the first time, include wellness as a training priority. These standards essentially identify self-care, meaning/purpose, mentorship, and education as pillars of well-being that should be cultivated as part of a physician’s professional development.

As of May 2019, Shapiro and colleagues have further clarified meaningful practical interventions for physician wellness. The result is the Health Professional Wellness Hierarchy. Modeled after Maslow’s hierarchy of needs, it defines key levels and factors at those levels that can be addressed in the workplace using a systematic approach to support wellness. Importantly, the structure of this hierarchy places physician autonomy, patient connection, contributions to the field, and the delivery of optimal care at the highest level, and suggests that the best patient care occurs when physician wellness, in terms of basic human needs, safety, respect, and appreciation, is promoted and nurtured.
The role of the ACS
As a result of the efforts of the ACS Board of Governors Physician Competency and Health Workgroup, the College has played an active role in promoting wellness among its members by providing an interactive, anonymous Physician Well-Being Index, available at facs.org/wellbeing. This index allows you to benchmark yourself against other physicians nationally, as well as yourself over time. In addition, it provides local and national resources to help address your specific needs. Furthermore, the ACS maintains a repository of resources, which can be found on the Surgeon Well-Being Resource page under facs.org/wellbeing.

The RAS-ACS, in many respects, represents the group of surgeons who are both most likely to suffer from burnout and also most likely to incorporate and perpetuate a wellness cultural change within surgery for generations to come. As such, we chose to dedicate this year’s August issue of the Bulletin to wellness and resilience in surgery. We approach this topic from diverse perspectives to provide readers with a well-rounded understanding of the subject matter, and we anticipate that readers will find these articles thought-provoking and insightful.

The articles emanate from each RAS-ACS standing committee and address themes such as perceptions of wellness across the history of surgery, the role of positive self-talk in nurturing wellness, membership and community as mediators of wellness, and the influence other industries have on promoting wellness and resilience in surgery. These articles are written primarily with trainees in mind, but we anticipate that the information presented will be useful to clinicians at all stages of their career.

REFERENCES

It is tempting to define wellness as the antithesis of burnout; however, we should challenge ourselves to think more critically about what being well really means.
Resident wellness and its opposing state—burnout—are common themes in today’s graduate medical education discourse. There is growing recognition that burnout contributes not only to poor patient care,\textsuperscript{1,2} but also to personal and professional dissatisfaction, as well as attrition, depression, suicidal ideation, and suicide.\textsuperscript{2-4} Though burnout occurs in many occupations, it is much higher among medical professionals, with rates in U.S. physicians increasing from 45 percent in 2011 to 54 percent in 2014.\textsuperscript{3}

Psychologist Herbert Freudenberger, PhD, originally defined burnout in 1974 as “the consequences of severe or prolonged stress and anxiety experienced by people working in the healing professions.”\textsuperscript{5} In 1981, Maslach and Jackson coined burnout’s three defining features: emotional exhaustion, depersonalization, and a decreased sense of personal accomplishment.\textsuperscript{5} Surgical trainees particularly are at risk for burnout and difficulty maintaining well-being as the result of sustained levels of excessive stress, high acuity of patient diseases, extensive work hours, inadequate time for personal life, prolonged training with little autonomy, and a culture of professional shaming.\textsuperscript{2,6-9} Interestingly, all of these factors are inherent to the environment of surgical training rather than characteristics of individual trainees. Some personal factors (such as personality traits, emotional intelligence, and grit/resolve)\textsuperscript{6,10,11} may influence the risk of burnout, but by its very definition, burnout reflects a disorder tied to the workplace rather than a personal disorder or dysfunction.

Some surgeons may argue that the training environment has improved over the last 50 years, especially with the advent of duty-hour restrictions. Given these enhancements, the increasing pervasiveness of burnout may seem unusual. In an effort to evaluate this paradox, this article examines the defining features of historical and modern surgical training and then explores changes in the surgical training model over time and the potential impact of each adjustment on resident wellness.

The good old days: A historical perspective
Residents often hear disheartening statements, such as, “In my days of training, things were so much harder,” from more seasoned surgeons regarding burnout management. Perhaps a more appropriate response would be, “Things were so different.”

The term “resident” originates from the era of William S. Halsted, MD, FACS, when physicians-in-training inhabited the hospital, toiling and sleeping in the workplace.\textsuperscript{12} Training under this pyramidal model, which was designed to fashion an elite group...
Residents often hear disheartening statements, such as, “In my days of training, things were so much harder,” from more seasoned surgeons regarding burnout management. Perhaps a more appropriate response would be, “Things were so different.”

of surgical leaders, had no set time frame for completion. The Halstedian model lauded dedication to work and patient care over resident well-being. Weakness, complaints, or personal problems were not discussed openly. Marriage was discouraged, and we now know that single status during surgical residency is associated with psychological risk and depression. This archaic, intimidating, and hierarchical design of surgical training fostered certain behaviors that should have made surgeons in training susceptible to burnout. For example, repeated exposure to individually targeted shame and blame as a method of resident training is shown to result in high levels of depersonalization.

This Halstedian model has evolved for myriad reasons, although it did have its advantages. For the resident, the continuous interaction between hospital staff and trainees increased camaraderie and rapport, thereby boosting communication. Importantly, this training model also fostered an all-in venture in mentorship. Mentorship influences the mentee’s work ethic, academic pursuits, social network, and reactions to adversity. Mentors who are dedicated to and invested in their mentees engender confidence and productivity, generating a legacy of formidable surgeons.

Another advantage of Halsted’s system was its positive effect on patient care. In-house residents benefitted patients because they were able to lead every step in perioperative management. The accessibility of the resident boosted patient confidence in a trainee’s ability to operate, and if the patient had concerns or an acute decompensation, the resident (usually the same individual who performed the operation) was immediately available. Furthermore, miscommunication was less common because residents practically never left the hospital, which eliminated potential errors during handoffs.

This model also maximized learning. There were no missed opportunities for clinical pearls or developing mature decision-making abilities because residents worked around the clock and rarely took vacations. Furthermore, maximizing all operative opportunities accelerated surgical dexterity. Alfred Blalock, MD, FACS, former American College of Surgeons (ACS) President, understood the balance between paternalism and autonomy and granted his residents independence on the wards and in the operating room (OR). Consequently, there was little perceived need for surgeons to pursue a fellowship or other additional training.

Although these working conditions were severe, the extent and volume of training during this time ultimately afforded a well-rounded surgeon capable of independently handling a multitude of operations.

Modern training: Transitioning to today’s model

In 1937, the American Board of Surgery (ABS) was formed to standardize the training and education of aspiring surgeons. After its creation, the ABS asserted that “technical training under supervision in an institution must replace unsupervised experience obtained in private practice at the expense of an unsuspecting public.” However, multiple factors, including the litigious and profit-driven nature of health care, the advent of the electronic health record (EHR), and pressures from hospital administration, can hinder the modern-day resident’s quest to become a board-certified general surgeon. Furthermore, in comparison with less than a century ago, a significantly larger proportion of the U.S. population lives with multiple chronic conditions, including obesity, hypertension, and diabetes, making surgical care more complex and time-consuming.

In part, the increasing prevalence of these conditions, as well as the drive to remain competitive and satisfactorily reimbursed, has driven surgeons to specialization. Consequently, more surgical specialists than generalists now train general surgery residents. Some surgeon educators may argue that subspecialists are less invested in trainees because of the mentality that any relevant training deficiencies can be corrected during fellowship. Why teach a surgical resident how to do a peroral endoscopic...
myotomy for achalasia, or robotic portal lymph node dissection for gallbladder carcinoma when the individual will rarely, if ever, perform the procedure as a breast surgeon? Nevertheless, the decreasing preparedness and dwindling confidence of graduating chiefs has been cited as one reason more residents are pursuing fellowships and new apprenticeship models.27 However, with longer training and growing debt, trainees may become financially hampered and jaded.28

In addition to these modifications in surgical education and training, new technology has changed how operations and procedures are performed (that is, open, laparoscopic, robotic, and endoscopic). To standardize the product of general surgery residency with these innovations, the Accreditation Council for Graduate Medical Education and the ABS have instituted requirements to apply for the qualifying and certifying exam in general surgery. Chief residents must complete and maintain certification in Advanced Cardiovascular Life Support and Advanced Trauma Life Support®, pass the Fundamentals of Laparoscopic Surgery and Fundamentals of Endoscopic Surgery courses, take the ABS In-Training Examination, meet the appropriate threshold for the subjectively graded surgical milestones, participate in at least six operative performance assessments and six clinical assessment and management exams (outpatient), all while meeting the quota for operative cases in each defined category.29

Although today’s residents perform in total an equal number of operations as their counterparts in the Halsted era, chief residents perform fewer operations with less autonomy in part because of the supervision requirements from governing bodies.30 The only increases in volume that residents experience are in the clerical responsibilities that remove them from clinical training. As use of the EHR becomes more widespread, more resident hours are spent outside of the hospital, performing nonscholarly activities. A recent study shows that 30 percent of resident hours in the hospital are used for documentation, and one-third of total EHR usage time is done outside of in-hospital work hours.31

Many surgical training programs and organizations have pushed for more simulations to avert surgical training deficiencies, but the technology and infrastructure surrounding this movement are still in their infancy. These changes are designed to prepare residents for practice, but they also serve as significant burdens that did not always exist.

**Historical training and wellness**

Considering the lack of work/life balance in the Halsted era, burnout should have been a bigger issue for physicians then; however, no evidence is available to support that perspective. Perhaps surgical trainees at that point in time were more resistant to stress, more dispassionate, and better able to tolerate the severe training environment.16,32 More plausible, however, is that stress related to medical bureaucracy seen in the modern age of surgical training simply was not a factor during the Halsted era.33 For example, paper charts containing the patient’s bare essentials were acceptable during this period.34 Surgeons were not expected to document a visit diagnosis or update the problem list. Furthermore, no accrediting body had been established in the early 1900s to evaluate the knowledge and abilities of a chief surgical resident. National standards for competency and safety were nonexistent and requirements for Fellowship in the ACS were rudimentary:23

- A year’s internship, usually rotating
- Two years as an assistant under a preceptor
- Visits to surgical clinics
- Submission of a list of 50 consecutive operations

Graduation from an approved medical school became a requirement for Fellowship in the ACS as late as 1920.23

Reis and colleagues offer a different explanation regarding why trainees during the Halstedian era
Zhang and colleagues have shown that effective formal mentorship programs in surgical residency may alleviate stress and burnout, and facilitate personal satisfaction and a better quality of life.

REFERENCES

Training and burnout
The attrition rate for general surgery residency is approximately 20 percent, placing it higher than other specialties. Several studies have suggested that an increased workload, including longer hours, more days on call, and more patients, is the reason. Combining this excessive workload with other educational and societal pressures, resident work hours were restricted to 80 hours per week. However, according to Lindeman and colleagues, the new duty-hour regulations have had a limited impact on the quality of life for residents. So, if not long hours or fatigue, why do 69 percent of U.S. general surgery trainees meet the criteria for burnout, while 44 percent have contemplated dropping out?

Family physician, chief executive officer of TheHappyMD.com, and Burnout Proof mobile phone application developer Dike Drummond, MD, offers the following five common causes of burnout.

avoided burnout. The authors state that well-being is sustained by three elements: autonomy, competence, and relatedness. Successful achievement of a particular surgical skill (competence) on one’s own terms or direction (autonomy) promotes well-being, and modern research has shown burnout decreases when people can point to personal accomplishments and competencies. Halsted’s model was stringent, but it centered on autonomy and independent action, perhaps mitigating burnout.

Furthermore, previous-era trainees had renowned mentors. Mentoring relationships promoted job satisfaction, self-confidence, motivation, companionship, and elevated personal aspirations. Edward Delos Churchill, MD, FACS, believed that these time-honored academic pairings were dangerous because residents would idolize only one surgeon who might be anti-intellectual and anti-scientific. There was little room for deviation from the mentoring surgeon’s dogma in these “quasi-parental, self-aggrandizing, and authoritarian tutelages,” which potentially wasted the creativity and passion of vibrant, young trainees. More recently, however, Zhang and colleagues have shown that effective formal mentorship programs in surgical residency may alleviate stress and burnout, and facilitate personal satisfaction and a better quality of life.
• The practice of clinical medicine (great responsibility with little control)

• The specific job (call schedules, salaries, politics)

• Having a life (family and social pressures)

• The conditioning of medical education (to never show weakness)

• The leadership abilities of supervisors

The first three reasons are intuitive, but the latter two merit exploration. The personal characteristics that once led to success in medical education also may predispose residents to burnout. Whether one is the workaholic, the superhero, the perfectionist, or the lone ranger, the stress of caring so aggressively for patients eventually will end in fatigue, chronic defensiveness, or guilt.39

The quality of a supervisor and mentor also has a direct effect on burnout. Van Vendeloo and colleagues support this claim and cite supervisory support, accessibility of supervisors, and mutually supportive relationships with supervisors as key factors to prevent burnout.40 Schönrock-Adema and colleagues have shown that the ability to identify positive role models and the ability to receive direct feedback correlate with resident burnout.41 Unfortunately, because of the increased clinical and academic demands affecting the surgical trainee experience,42 mentorship has, in many respects, devolved, and these formative relationships are in short supply.36

Increased administrative duties are another major source of stress for surgical trainees. Electronic charting consumes much of the time of a surgical resident, which often thwarts physicians from directly caring for patients.43 In a previous era, the physician-patient relationship provided satisfaction for both physicians and patients, but research shows that contemporary physicians spend more time working on EHRs than with their patients.44 Furthermore, the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 imposed financial penalties for providers who do not use the EHR. Since the Centers for Medicare & Medicaid Services began implementation of this legislation,
Direct patient care, rather than administrative work or research, is often cited as the most meaningful part of a physician’s occupation.

REFERENCES, CONTINUED


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and purpose) is disrupted, in the contemporary training system, all three often are jeopardized.

**Rekindling the fire without burning out**

Several factors have been implicated in trainee burnout, including the length of training, extensive working hours, imbalance between career and family, and poor mentorship. Despite these factors, general surgery resident education has continued to evolve in many notable ways. Residents are able to live outside the hospital, and the system is now geared toward having all residents, rather than just an elite few, successfully finish a training program. Furthermore, the culture has shifted toward more reasonable treatment of trainees and the health care team as a whole. Surgeons are expected to treat individuals with respect, and the culture of safety encourages all team members, regardless of their perceived position in the hierarchy, to be patient advocates. Nonetheless, it is important to continue to examine the state of surgical education.

Because residents must meet more regulatory requirements but experience less time in the hospital, we must find solutions to maximize clinical and educational opportunities to achieve adequate training. As with any complex problem, many separate routes can be taken to improve the system. For example, resident autonomy previously stemmed from residents operating without the attending’s presence in the OR. Perhaps resident autonomy could be improved with implementation of a formal system of graded independence in the OR. More flexibility in the work-hour restrictions may facilitate more comprehensive perioperative management, while still maintaining reasonable expectations as to the time commitment of residents. Modifying the EHR to improve workflow and decreasing the administrative burden on physicians is an opportunity to develop wellness and reduce the risk of burnout in both resident and attending physicians.

Because resident wellness is negatively affected by an increased administrative burden and decreased autonomy, burnout could be mitigated by prioritizing the educational tactics that support self-actualization among surgical trainees. Above all, altering surgical education can only occur in a manner that maintains the patient at the center of care.

**REFERENCES, CONTINUED**

Walk in the shoes of a junior surgery resident for a day. Wake up at 4:30 am to another dark morning and drive to work. Do a chart check and note the pertinent data on the list for the team. The chief resident, exhausted after being called in overnight, is irritated that information is missing from the list and chides you to be more thorough. Pre-round with the team. The nursing staff is annoyed that their 6:00 am pages and orders have yet to be addressed. Rush to the preoperative holding area to receive consent from a patient who is vexed that he hasn’t spoken to the attending and wants assurance that the attending, not a resident, will perform the operation. Scurry to write notes and place orders from pre-rounding as the patient is rolled into the operating room (OR).

As you finish up and respond to pages, the attending walks in and is peeved that the patient isn’t positioned and prepped yet. During the procedure, your attending allows you to perform some portions of the operation but takes over at the critical portion without explaining why or offering suggestions on how you could improve your technique. Your pager goes off multiple times, and the sighs emanating from the circulating nurse make it clear that he is irritated about answering your pages. Scrub out and rush to finish the brief postop note and orders while returning several more pages. The anesthesia team is now irritated that you are sitting at the computer instead of helping to transfer the patient to the postoperative acute care unit (PACU) bed. You leave the paperwork incomplete and go to PACU with your patient.

Next, you run off to a consult and check on a few floor patients, complete the preoperative consult on the next patient, and return to the OR in time to prep and position the patient to avoid upsetting the attending again. Notify your chief resident of the consult and plan, but you don’t hear back until you’re scrubbed in; scrub out. Your chief is annoyed that you didn’t meet her to see the consult. Your attending wants to round, so you tell the chief and finalize the consult plan together after rounds. The night float intern sends you a text at 7:00 pm, expressing concern that he is getting paged about patients whom you have yet to discharge. Respond to the pages and finish your notes and orders. At 9:00 pm, you finally sign out. Head home in the dark with reading to do for the next day. Never mind food, exercise, or any other method of self-care. Never mind that you need to vent, haven’t spoken to your friends and family in a week, and have neither the time nor energy to make those phone calls. Instead, you finish your reading,

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**HIGHLIGHTS**

- Describes the effect of positive communication on resident wellness
- Summarizes evidence-based solutions to encourage transparency in the workplace
- Highlights potential barriers for physicians seeking help, including the stigma associated with mental illness
and get four hours of sleep until the alarm wakes you at 4:30 am. Rinse and repeat.

These daily slights, whether nonverbal (sighs or eye rolls) or verbal, are noticeable. How we communicate within our teams, among our fellow residents, with our attendings, the OR staff, and our patients, directly affects every aspect of our professional lives. Brief, negative interactions add up. As medical students, many of us were taught that the patient’s needs should take priority over our own. This mantra is reinforced throughout surgical training. Expressing our needs—whether physical, emotional, or spiritual—can result in backlash from our colleagues within the surgical community.

In her 2018 Academic Surgical Congress presidential address, Taylor S. Riall, MD, PhD, FACS, discussed the fallacy of how we romantically or heroically view our surgical culture of “strength and invincibility,” commenting that “it is even more flawed in its assertion that a surgeon who allows himself or herself to be vulnerable is unworthy of being a trusted and respected colleague.”¹

This article reviews the effect of communication on resident wellness and offers evidence-based solutions to encourage transparency and disrupt the culture of silence in a positive manner.

### The power of positive self-talk

One of the foundations of cognitive behavioral therapy is self-instructional training—the process of identifying negative self-talk and reframing these statements into positive thoughts.² This method of cognitive behavioral modification has been used to treat many mental health conditions, including anxiety, attention deficit disorder, and depression. Neuroimaging studies have shown that forms of self-talk, such as third-person self-talk, can help an individual regulate emotional responses to stressful situations.³ In sports psychology, positive self-talk has been associated with improved performance. In a 1995 study, Van Raalte and colleagues instructed participants to say, “You can do it,” “You cannot do it,” or nothing at all before throwing darts. Study subjects who said “You can do it” displayed a statistically significant more accurate performance than individuals who said “You cannot do it” or those who said nothing.⁴ Recently, the idea of positive self-talk has been further classified into two distinct categories: motivational self-talk, such as “I’ve got this,” and instructional self-talk like “watch the finish line.”

A meta-analysis of the effect of self-talk on sports and task performance identified three points that translate well to surgical residency. First, instructional self-talk has a greater impact on fine motor skills than on gross motor tasks. Second, although it leads to improvement in both well-learned and novel tasks, self-talk has a higher impact on novel task performance. Finally, training subjects in positive self-talk results in more immediate results and a larger effect (see Table 1, this page).⁵ Because operating requires fine motor skills, the ability to adapt to unexpected findings, and an expectation of leadership during stressful situations both in and out of the OR, surgical residents may benefit from training in positive self-talk.

### Interpersonal communication

Despite the 80-hour per week duty-hour limits, surgical residents still spend most of their time at work. We often spend more time with our colleagues than with our families and friends. As most practicing surgeons can attest, this way of life extends well beyond residency. Therefore, our daily interactions at work certainly can affect our well-being both in and out of the hospital.

One of the more frequent interactions residents have is with nursing staff and other nonphysician team members. Several studies explore interprofessional communication between physicians and other health care professionals, including physical

### TABLE 1. IMPACT OF POSITIVE SELF-TALK

- Improved fine motor skills
- Improved novel task performance
- More immediate results with a larger effect
therapists, occupational therapists, and social workers. In one case study comparing hospitalists and consultant internists at community hospitals, three themes were identified as playing a significant role in positive communication dynamics. First, in-house hospitalists were more available, leading to improved, more efficient communication. In contrast, consultants were less likely to have developed long-term relationships with the other health care team members, leading to more formality and even reduced communication. Finally, team members felt that consultant units were physician-centered and did not foster a collaborative environment. 6

In a similar study of two urban teaching hospitals, interprofessional communication was found to be poor between physicians, nursing, and allied health staff. Intraprofessional rounds were prioritized over interprofessional rounds, and during these rounds the most frequent communication was between physicians and other team members, without mutual discussion of patients. Unscheduled interactions that occurred outside of rounds were infrequent and tended toward abrupt question-answer formats between physicians and nurses rather than the more extensive exchange of ideas between nurses and allied health care professionals. 7

Multiple studies have examined the communication patterns between surgical residents and nurses. In a 2016 study of 31 nurses and 18 surgical trainees at two Canadian academic medical centers, researchers reported multiple themes that impaired interprofessional communication. The surgical residents experienced nurses as territorial and disrespectful of their clinical knowledge, whereas nurses felt residents were inattentive to their clinical concerns and had a poor understanding of the nurses’ role on the team. 8 However, another 2016 study of 38 surgical interns and 11 nursing students found that participation in an eight-hour interprofessional training session improved attitudes toward collaboration in both groups. Postsession interviews revealed that both groups gained clarity regarding the roles of both interns and nurses on the team. 9 These studies shed light on several ways that we, as residents, can improve communication and engage in more positive and effective interactions with our colleagues, including the following:

• Be available and attentive
• Develop positive relationships
• Foster a collaborative team environment
• Respect others’ training and expertise

Several studies have explored communication patterns between surgeons and other physicians, with general surgeons tending to exhibit more aggressive verbal communication. 10,11 As a result, there has been a push for culture change. 12 A 2015 qualitative study of communication between surgeons and intensivists defined “good” and “bad” communication. 12

Good communication occurred when both team members felt they were heard and were working toward a mutual goal for the patient. This communication was possible despite multiple barriers that can exist between surgical and intensive care unit (ICU) teams, including cultural differences and the presence of closed ICUs, wherein decisional authority is limited to the intensivist.

Poor communication occurred when team members felt their knowledge and experience were undervalued and seemed to stem, in part, from discrepancies between how clinicians rated their own experience versus how other health care professionals viewed their experience. In an outpatient setting, a survey of primary care physicians (PCPs) and specialists demonstrated disparate perceptions as well. 13 Specialists believed they effectively communicated results back to PCPs but did not receive adequate information in the referral, whereas PCPs believed...
they effectively communicated information regarding the consultation but did not receive follow-up information from the referrals. Through continued research and identification of discordant perceptions that surgeons and physician colleagues have of each other, we can begin addressing the problem through team-building simulation and training.

One of the most significant examples of surgeon-team communication occurs in the OR, where surgeons are viewed as leaders. Using a validated scoring system, a 2017 retrospective review of surgeon behavior during complex operations shed light on how a task-focused leadership style is less effective than a team-oriented approach. Different types of behavior affected scoring of surgeon leadership, including exhibiting specific voice behavior, allowing a safe space for team members to vocalize concerns, encouraging cooperative behavior, fostering a collaborative environment, and sharing knowledge. The highest-scoring surgeon engaged all team members in the room upon entering the OR, discussed the plan for the case with the anesthesiologist, allowed the surgical resident to offer input on the case, and maintained enthusiasm throughout the operation.

In a conceptual model of disruptive surgeon behavior in the OR, participants (nurses, scrub technicians, medical students, residents, and anesthesiologists) identified four coping strategies:

- Speaking with others for support
- Externalizing the behavior so that it is taken less personally
- Avoiding the surgeon
- Warning others as an altruistic effort to prevent similar episodes of disruptive behavior

Similar to the study of interprofessional training for surgical interns and nursing students mentioned previously, Awad and colleagues instituted medical team training using multiple instructional modalities and followed implementation of the learned skills on preoperative briefings. Surgery and anesthesia personnel rated improved perception of communication between team members after four months of enacting these preoperative briefings. Numerous other publications have highlighted interventions to improve the atmosphere in the OR and team dynamics. The key to all of these enhancements is communication.

Ultimately, communication has the most meaningful impact on the patient. By far the most important interaction that surgical residents have on a daily basis is the time spent with patients and families. However, as all residents know, patients and their families commonly assume that “the doctor” has not rounded on them until the attending shows up, despite how often a resident has rounded on the patient throughout the day. How residents communicate with patients can affect the treatment they receive from patients, nurses, attendings, and other members of the health care team. Multiple simulated models assess and intervene on resident-patient interactions. Senior residents tend to score higher on these evaluations, suggesting that communication skills improve over time. Objective, structured clinical exams with standardized patients are commonly administered in medical school and during the Step 2 Clinical Skills portion of the U.S. Medical Licensing Exam; however, these assessments are no longer performed when surgical residency begins. Published simulation models and validated patient-centered assessment tools clearly demonstrate the importance of early education and continued assessment of resident-patient communication skills.

Surgical residents often are reluctant to speak up and may fall prey to the culture of silence because of the hierarchical nature of our field. In an attempt to address this code of silence and encourage residents to voice their concerns, one group studied the
“two-challenge rule” as a method for residents to communicate concerns in a nonthreatening manner during a debriefing session. Anesthesia residents were subjects in two simulated cases in which a faculty anesthesiologist, an attending surgeon, and a circulating nurse introduced communication challenges. After the first case, a debriefing session allowed residents to reflect on their responses or lack thereof. They were then taught the two-challenge rule, which calls for using advocacy-inquiry language, such as, “I see that you want to administer succinylcholine to this patient. She has a 40 percent total body surface area (TBSA) burn. Can you clarify the choice of medication?” If the first challenge is ignored or insufficiently answered, the resident is encouraged to repeat with their critical thinking. “I see that you want to administer succinylcholine to this patient with a 40 percent TBSA burn. I have learned that this medication is contraindicated and may cause fatal hyperkalemia. Should we use vecuronium as an alternative?” The analysis was notable for increased verbalization on the behalf of the resident using “crisp advocacy-inquiry language” to relay concerns to the attending surgeon and faculty anesthesiologist following the debriefing session between Case A and Case B, with no significant change in communication patterns between the resident and nurse. This finding highlights the benefits of the two-challenge rule as an effective means of improving communication between trainee and faculty by overcoming potential hierarchy-related barriers to improve teamwork when patient safety is the concern.

As stated previously, how we communicate throughout the day affects every aspect of our lives. The positive interactions we have with others can lead to a sense of personal fulfillment and community; conversely, negative interactions lead to a sense of frustration, anger, loneliness, or despair. Training residents in evidence-based communication and leadership skills, with amplification of the resident voice, can improve morale, provide a sense of belonging, and remind residents that they are valued members of the patient care team.

**When communication fails**

When team communication breaks down, patients are the first to be affected, and residents often are next. When plans are made during morning rounds, the most junior resident typically is tasked with completing the orders, writing the notes, and seeing the consults, despite the fact that he or she may have the least knowledge regarding the drugs ordered or the procedures performed. Often, even if there is a question about the utility of a certain drug or the reason for the treatment plan, no time is allotted to critically think and discuss the situation with the senior resident. Similarly, senior residents are too busy managing rounds and rushing to the OR to engage in a discourse with the attendings. This lack of communication can lead not only to a failed learning opportunity, but also to patient harm or provider self-harm.

Rates of major depressive disorder (MDD) and death by suicide are higher among physicians than in the general population. It is estimated that 300 to 400 physicians die each year from suicide, double the rate of the general population. Risk factors for MDD and suicide include work demands, sleep deprivation, poor nutrition and fitness, desensitization to illness and death in the workplace, increased administrative oversight, access to medication, and burnout. A survey of members of the American College of Surgeons demonstrated that suicidal ideation is associated with burnout, symptoms of depression, and perceived medical error in the last three months. Unfortunately, of the 7 percent of survey respondents who expressed suicidal ideation in the previous 12 months, only 26 percent sought help. Barriers to physicians seeking help include the stigma of mental illness, concern for negative
consequences on medical licensing and insurance coverage, and the perception that others will find them less competent. Consequently, many physicians, including surgeons, suffer in silence, missing out on the opportunity to connect with colleagues who are having similar experiences, as well as the opportunity to engage with people who may be able to connect them with available resources. Studies have shown that 40–50 percent of patients who die by suicide have seen a primary care physician within one month of their death, and 17 percent within one week; however, they did not discuss their symptoms, suicidal ideation, or plans.

Communication is paramount for identifying and addressing burnout, depressive symptoms, and suicide risk. Prompting conversation, commiserating, and sharing experiences is the first step toward identifying distress and reducing stigma within the medical community. Once the doors of communication are opened, referrals to the appropriate resources can follow.

When communication is valued
Wellness among trainees and faculty has become a major discussion point in surgery, and more studies are needed to determine root causes and appropriate interventions. Several surgical residency programs are paving the way and leading by example.

After a beloved surgical colleague committed suicide just months after completing residency, the Stanford University, CA, surgical residency program director and multiple residents collaborated to develop the Balance in Life program in 2011 to address key factors affecting resident physician well-being. In this program, residents are provided with the following resources: 24-hour access to healthy snacks and drinks, an after-hours guide to the city, scheduled group counseling, a senior-to-junior resident mentorship program, elected class representatives who express concerns to the program director at

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Promoting conversation, commiserating, and sharing experiences is the first step toward identifying distress and reducing stigma within the medical community.

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confidential expression of stress and negative emotions, while also providing the skills to recognize and address symptoms of burnout and depression. The program seeks to destigmatize seeking counseling from mental health professionals.

Conclusion
Communication is the common thread that is intricately woven into every aspect of our daily lives as physicians. From evaluating the impact of positive self-talk to examining the methods in which we positively (or negatively) communicate among ourselves and with other health care professionals, it is clear that the effects on our well-being cannot be ignored. Failure to effectively communicate on one level can compound on multiple additional levels, with significant and long-lasting consequences. Understanding and appreciating the value of effective communication is, without question, an important factor in physician wellness and, ultimately, in maintaining career satisfaction and minimizing burnout. Ensuring the ready availability of training resources for teaching effective communication skills and implementing wellness-focused initiatives are paramount to moving the needle forward in this increasingly important area in order to preemptively address small issues before they manifest into larger and potentially fatal outcomes.

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As residents and surgeons in training, the topic of wellness and resiliency resonates in our minds. The startling statistics of physician burnout are ever-present as we press on to finish surgical training and pursue our professional careers. Resident engagement in physician groups, national societies, and local organizations may serve as a way for trainees to remain connected to the practice of medicine, both practically and emotionally. Working alongside fellow trainees and colleagues on projects that we feel passionate about may lead to timeless bonds and help alleviate the burdens associated with busy clinical practice. Furthermore, having mentors and peers with whom to commiserate and to whom we can offer a helping hand or listening ear may keep our motivation strong and spirits high. Maintaining a focus on wellness and resiliency during training through membership in professional societies and community involvement can serve as a good foundation and preventative measure against burnout, and it may prove key to developing enduring resiliency.

Physician burnout: Causes and effects

Burnout is characterized by a state of emotional, mental, or physical exhaustion in response to stress. Changes in our health care system have led to increased demands on clinical productivity, decreased funding opportunities, limited resources, more extensive workloads, and longer hours spent completing administrative tasks, all of which make surgeons and surgical trainees prone to burnout. In fact, the rate of burnout among physicians is rising at an alarming rate and has been reported to be as high as 69 percent among surgical residents and up to 60 percent among practicing physicians. Burnout negatively affects people both personally and professionally.
Professionally, burnout can lead to decreased quality of patient care, as it is associated with poor career satisfaction, decreased effectiveness, substandard prescribing patterns, increased medical errors, and medical liability lawsuits.\(^5,6\) Personally, burnout is associated with depression, substance abuse, attrition, and suicide.\(^9,11\)

Several studies have examined risk factors for burnout among surgeons. A survey completed in June 2009 of the American College of Surgeons (ACS) membership included responses from 7,905 surgeons who identified the following independent predictors of burnout: younger age, female gender, parenthood, area of specialization, number of nights on call per week, hours worked per week, and compensation based entirely on billing.\(^3,12-14\)

As public awareness of surgeon burnout has increased, new methods of prevention and intervention have emerged. Identifying those colleagues at risk and facilitating solutions are essential to averting the ramifications of burnout. Many residency programs are developing wellness programs to provide trainees with the necessary skills to effectively respond to stress and prevent burnout. These programs are designed to foster resilience and improve emotional intelligence.\(^15,16\) Some studies also suggest that mentoring relationships can aid in recognizing burnout and developing strategies to alleviate stressors.\(^6\) In addition, a good support system can be invaluable to maintaining emotional and physical wellness. The development of educational/wellness programs that promote skills and behaviors that strengthen compassionate interactions may be key to managing stress and avoiding burnout.\(^17\)

**Community and group support**

Haslam and colleagues have noted, “Groups that provide us with a sense of place, purpose, and belonging tend to be good for us psychologically. They give us a sense of grounding and imbue our lives with meaning. They make us feel distinctive and special, efficacious and successful. They enhance our self-esteem and sense of worth.”\(^18\)

Many surgeons have been fed a steady diet of rugged individual determinism—of pulling oneself up by one’s bootstraps, forging one’s own destiny, and being the captain of one’s own ship. Perhaps more than any other specialty, the surgical profession naturally self-selects individuals who embody these ideals.\(^19\) We tend to believe that we are self-sufficient and essentially invincible.\(^20\) When we are honest with ourselves, however, we must admit that every step of the journey to becoming competent, independent surgeons has been facilitated by other people. The instruction we receive in medical school and the mentoring provided in the operating room would not be possible without someone else’s involvement. One way or another, surgeons have a fundamental need for community and comradery, as these factors have been part of their development over the years.\(^21\) Family, civic or religious organizations, interaction with colleagues in the workplace, involvement in professional societies, or some combination thereof offer the human connection we all need to thrive—to build resilience and grow.

In their study of resilience among U.S. Navy SEALs (sea, air, and land teams) and World War II veterans, Everly and colleagues include “interpersonal connectedness” among the seven qualities that characterize resilient people.\(^22\) Peer support can be an effective antidote to potentially crippling adversities that surgeons routinely face, including the stress of long work hours, the risk of litigation, and coping with bad outcomes.\(^23\) Organizations that build such support into their programming structure can have a significant effect on the wellness of their physicians. This support can include changes in schedules and reductions in intensity of workload, increased supervision to decrease work demand, and enhanced job control, all of which have been demonstrated to significantly affect the wellness of physicians. In
Many surgeons have been fed a steady diet of rugged individual determinism. We tend to believe that we are self-sufficient and essentially invincible.

their meta-analysis of 19 randomized control trials examining the impact of interventions to reduce burnout among physicians, Panagioti and colleagues found that interventions initiated at the organizational level had a greater effect than interventions that physicians initiate themselves, suggesting that a systems-level approach to physician wellness is both feasible and effective.

In another meta-analysis of randomized trial and cohort studies to prevent physician burnout, West and colleagues reviewed 2,617 articles studying 3,630 physicians, and likewise found that organizational strategies were effective in achieving a clinically meaningful reduction in burnout among physicians. A combined approach that targets both the individual and the system is likely to achieve the most promising results.

Wellness and resilience are valuable not only to the individual physician but also to patients and colleagues. Individuals and organizations that take self-care and organizational care seriously initiate a domino effect that has far-reaching benefits beyond the immediately perceptible effects. Surgical societies like the ACS—which exist to preserve the highest standards of the profession through research, education, and advocacy—are important not only for the services they provide, but for the impact they have on the broader community. By engaging with these societies, surgeons expand their opportunities to advance personally and professionally and inspire the next generation of surgeons. There is evidence to suggest that membership in surgical societies contributes to greater academic productivity.

Of equal importance, academic societies provide a platform for the exchange of ideas, innovations, and expertise.

Recently, professional societies have played a more active role in improving physician well-being. The College, for example, provides numerous resources focused on physician wellness, such as the Physician Well-Being Index, which is a tool to help physicians track their well-being over time and compare their results with colleagues. Similarly, the American Medical Association offers a collection of modules called STEPS Forward, to help understand and improve physician wellness. Medical students and residents can access similar resources through the Association of American Medical Colleges, which offers articles, conferences, programs, and courses pertaining to well-being.

Perhaps one of the largest efforts to address physician well-being is the National Academy of Medicine’s Action Collaborative on Clinician Well-Being and Resilience, which comprises more than 150 organizations that are working to improve physician well-being. The three goals of this collaborative are improving understanding of challenges to clinician well-being, raising the visibility of stress and burnout, and elevating evidence-based solutions. Most of the programs described in this article are in their infancy; thus, identification, design, and improvement of targeted support that mitigates burnout need to be a high priority.

There is good evidence to suggest that membership and engagement in professional societies such as the ACS is an important step toward overcoming physician burnout. Beyond the benefits of educational resources, mentoring, and networking, group membership has been shown to boost psychological well-being and self-esteem.

Why is group membership so important and beneficial? Psychologically speaking, groups provide us with a sense of belonging and meaning and are a source of grounding and support. In other words, they help us understand ourselves and our role in the world, and they help us feel better about both. Group membership provides us with a common perspective, a lens that shapes our view of the world and moves us from isolation toward connection—from “me” to “we.” Active membership in groups, such as the Resident and Associate Society (RAS) committees, provides members with intellectual stimulation, opportunities for collaborative learning, social companionship, and emotional bonding.
Group membership repeatedly has been shown to provide significant health benefits. The evidence suggests that belonging to social groups can protect against depression, alleviate symptoms of depression, and reduce the risk of depression relapse. An evaluation of more than 9,000 participants demonstrated this effect even when individuals joined one group alone.

Life transitions make one particularly susceptible to burnout. For instance, the transition from medical school to residency and from residency or fellowship into practice can pose particular challenges to personal well-being. Fortunately, research has shown that group membership can help buffer individuals from the negative consequences of change by providing a strong source of personal identity. The even better news is that the effect is additive; membership in more groups appears to enhance the benefits of belonging.

Social media and venues to build resilience

Social media connects surgeons around the world and provides a large community with which to network, mentor, and collaborate. The use of social media among physicians, and particularly among surgeons, has increased rapidly over the years. More than 90 percent of physicians are involved in social media for personal or professional use. At its inception, Twitter and blogs were the preferred platforms, but as the use of social media became widely accepted, additional platforms blossomed, including video- and photo-sharing sites and professional online networking sites targeted to physicians. Today, widely used platforms include Twitter, YouTube channels, Facebook, SnapChat, and Instagram, among others. The use of social media in health care can enhance

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Group membership repeatedly has been shown to provide significant health benefits. Professional networking, improve marketing for individual physicians and organizations, disseminate patient education, and serve as a tool for professional and patient advocacy. However, social media engagement also poses certain risks because of the potential sharing of misinformation, violation of patient privacy, or breach of institutional social media guidelines. For surgery residents, one potential benefit of social media engagement is the opportunity to strengthen a sense of community through interaction with trainees who share similar professional and personal experiences. It is well established in the literature that social and organizational influences contribute to a decrease in burnout. The ability to engage with others via social media allows for the sharing of expertise and the capacity to devise solutions to ease stress and enhance wellness. The widespread distribution of literature shared on social media platforms like Twitter allows users to learn from the challenges and successes of physician wellness programs that have already been implemented. Social media provides a possible antidote to burnout insofar as it provides a virtual community where communication, support, and collaboration can develop.

Conclusion While joining an ACS chapter or the RAS may not be the ultimate solution to burnout, membership in societies has been well documented as a deterrent to burnout and a contributor to physician resiliency. Membership in these groups provides an opportunity to access resources on physician wellness and burnout and to collaborate with peers and mentors who have similar experiences and interests. Ongoing engagement in societies and groups not only provides support for the individual, but also drives the individual’s

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engagement in the organization, resulting in ongoing contributions because of the fostered sense of community.

Engaging physicians in group participation during times of transition—from resident or fellowship to practice or from student to residency, for example—is critical because of their vulnerability and susceptibility to burnout. This sense of community is well fostered in the age of social media, which provides a forum in which members may be engaged from a distance, contemporaneously, or in a delayed fashion.

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The goal of medical training is to equip future physicians and surgeons with the skills and knowledge they need to support the health and well-being of their patients. Paradoxically, the demands associated with the U.S. medical education system can have well-documented negative effects on the health and well-being of trainees.\textsuperscript{1-3} Despite the fact that college graduates who are matriculating into medical school have significantly lower levels of depression and burnout than their age- and education-matched peers who are entering other fields, by the time they graduate from training, levels of depression and burnout in medical students are nearly twice that of nonphysician professionals.\textsuperscript{1,3} Levels of burnout continue to rise as trainees enter residency.\textsuperscript{4-6} This trend is especially apparent in general surgery residents, with approximately 70 percent of these individuals meeting the criteria for burnout.\textsuperscript{5,6} Additionally, nearly one in five general surgery residents leave residency before...
completing their training. Reasons cited for attrition include a lack of work-life balance and the high personal cost of residency training. In addition to the tremendous personal cost of residency attrition, these losses in the surgical workforce further tax an already under-resourced health care system and erode its ability to provide appropriate care to patients.

Perhaps most concerning is the fact that as trainees advance from residency into professional practice, they generally continue to display signs of burnout. It is reasonable to say that burnout among U.S. physicians has reached epidemic levels. The effect on patient care is substantial. In a study of 7,905 practicing surgeons in the U.S., approximately 10 percent reported that they had made a major medical error within the preceding three months. These errors were significantly associated with the presence of burnout. Furthermore, symptoms of both burnout and depression were revealed to be independent predictors of reporting major medical errors.

The gravity of this issue is further compounded by the effect of burnout on the mental and emotional health of physicians. One survey of 25,073 U.S. surgeons found that approximately 14 percent of men and 26 percent of women met criteria for alcohol abuse or dependence and that the presence of symptoms of burnout or depression were significant risk factors. A similar study of 7,905 U.S. surgeons showed that surgeons who met the criteria for burnout were nearly twice as likely to exhibit suicidal ideation in the last 12 months as surgeons who did not meet the criteria for burnout after controlling for personal and professional characteristics. These stark findings demonstrate that addressing surgeon burnout is imperative for our professional and societal well-being. A call to action has been issued, and surgical organizations are searching for solutions to this troubling trend across all levels of training and experience.

Addressing burnout in surgical training

Initial efforts to address physician burnout largely focused on improving resilience by providing support for individual wellness and stress management through activities such as meditation and yoga. Yoga and meditation are shown to reduce stress hormones, as well as improve relaxation response and parasympathetic functions, which can help instill a feeling of greater control over situations. These strategies provide benefits for practitioners, with multiple studies offering moderate-quality evidence to support the role of yoga in mitigating depression, anxiety, and fatigue.

Mindfulness-based therapies also have been shown to alleviate a variety of mental and physical conditions associated with chronic stress. One study involving primary care physicians used mindfulness-based techniques such as meditation and self-awareness exercises to train health care professionals to deal more effectively with unpleasant thoughts and feelings, to better manage conflict, to more effectively set boundaries, and to prioritize self-care. This intervention resulted in both short-term and sustained improvements in well-being. Although these results have been promising, a meta-analysis of interventions to reduce burnout showed that though individual-level interventions successfully reduce burnout, the benefits are modest. This finding illustrates that additional institutional-level interventions are needed to sufficiently address burnout.

Duty-hour restrictions

Some of the first attempts to tackle burnout in health care at a systemic level were instituted in 2003 with the implementation of the 80-hour resident workweek. Although this intervention did result in a measurable reduction in burnout, it did not eliminate the issue and had almost no effect on attrition rates. In 2011, the Accreditation Council for Graduate Medical Education (ACGME) attempted to improve on these advances with the initiation of duty-hour limits aimed at reducing burnout and its complications. In
a two-year evaluation of these new policies involving 213 surgical interns, 82 percent of residents reported a neutral or good overall quality of life, but approximately one-third of the respondents continued to report symptoms of burnout. 23

Duty-hour restrictions are not linked to notable improvements in patient outcomes, patient safety, or resident satisfaction in terms of well-being. 24 In fact, it is possible that the increased frequency of hand-offs associated with duty-hour restrictions leads to additional opportunities for mistakes, decreases educational opportunities, and interferes with continuity in patient care, thereby creating an additional burden for residents who are forced to choose between professional values of patient care continuity and regulatory compliance. 25 Duty-hour restrictions, while well-intentioned, ultimately demonstrate that burnout, wellness, and patient care are predicated on more than the number of hours worked.

Departmental wellness programs
To further promote an institutional culture of wellness, many residency programs have begun to implement curricular interventions into their program infrastructure. Researchers at Stanford University, CA, designed a multifaceted Balance in Life program that addresses six components of resident well-being, including a resident mentoring program, counseling sessions, healthy food options, and resource guides. 26 Although this intervention yielded little statistical improvement in psychological well-being or burnout, implementation did correlate with increased “grit” scores, increased resident-reported sleep, and increased rates of resident-reported exercise and physical activity. 26

Other programs have responded to low resident morale by organizing monthly social events, such as family-friendly activities, and support groups to encourage sharing of common experiences to foster a sense of relatedness and belonging. 27 Other residency programs have taken these interventions a step further by attempting to apply additional objective measures to their wellness programs. The department of neurosurgery at the Medical University of South Carolina, Mount Pleasant, employed activity monitors and psychological and physical testing to track health measures, including resident weight, blood pressure, and sleep habits. 28 This information was shared with residents, and trainees were provided with wellness lectures, group exercise sessions, and an increased availability of healthy food options. To date, this intervention has shown modest improvements in weight loss and an increase in self-reported team comradery. 28

Multipronged approaches to addressing wellness often use a combination of training in mindfulness, teambuilding, stress-reduction techniques, and emotional intelligence. Other novel strategies that have been implemented to enhance resident well-being include dry cleaning service for surgical residents, mandatory quarterly or monthly half-days to attend to personal needs, and even meal delivery for residents returning to clinical duties after parental leave. Many residency programs host annual resident retreats during which residents are free of clinical duties for the entire day to participate in teambuilding activities.

Despite these innovative approaches and the progress that has been made, we are far from achieving optimal wellness in the field of surgery and surgical education. What will the next chapter of wellness interventions look like, and how can we as learners and educators influence this work?

Learning from other high-stress fields
Research examining the major domains that contribute to physician well-being have identified efficiency of practice, an institutional culture of wellness, and personal resilience as key factors for avoiding burnout and professional fulfillment (see Figure 1, page 39). 29 This work demonstrates that both individuals
and health care institutions must be equal partners in addressing surgeon burnout in order to create a culture of wellness. To highlight novel strategies for moving to the next phase of burnout prevention, we examined comparable professions—specifically high-stress fields that require near-perfect levels of performance—to see what interventions and techniques have been used to maintain a culture of wellness and resilience.

Lessons from the field of aviation

Many parallels have been made between aviation and the health care fields, which have led to advances in promoting passenger and patient safety, including checklists, simulation training, team-based work, performance analysis, and incident reporting. Similar associations can be made when considering the management of pilot and health care professional well-being and fatigue. In both aviation and health care, fatigue and burnout can lead to errors, reduced reaction time, poor communication, and an overall increased risk to individuals who count on professionals to deliver safe outcomes. For instance, long days with multiple short flights and quick ground turnaround times are comparable to performing multiple short operations with fast turnover times, leaving little time for nutrition and hydration. Night flights and night duties contribute to disrupted circadian rhythms and rest periods during normal awake hours. Analogous to what has been seen in surgical residency, duty hours in the aviation industry have limitations that often paradoxically aggravate or compound fatigue. Ideal minimum break periods between shifts—defined as nine hours in aviation and eight hours in surgery—do not account for factors such as travel time to home, meal preparation, and family responsibilities, which cut into the amount of time remaining for sleep and recuperation.

To combat pilot fatigue and the associated negative consequences, the airline industry has introduced the fatigue risk management system (FRMS) as an alternative to prescriptive duty limitations. An FRMS is a data-driven, flexible process of monitoring and
managing fatigue risk to maximize operational efficiency.\textsuperscript{31,32} The minimum components of an FRMS include a managing policy published by the governing or regulating body, education and awareness training, nonpunitive identification and reporting systems for fatigue-related incidents, and enforcement at all levels within the organization.\textsuperscript{32} The four main objectives of an FRMS are used to establish policies for plan enforcement, manage pilot workload through predictive scheduling models, require safety data collection through air safety and flight reports, and provide sleep and fatigue assessments using in-flight observations and self-generated feedback. The FRMS also ensures that pilots receive regular training on the physiologic consequences of fatigue and learn strategies for recovery, planning, and optimized break time.\textsuperscript{31} As more research has been conducted to assess reduced break times before shifts in the aviation industry, researchers have found that the longest duty times do not always correlate with the highest number of adverse events, suggesting that team cooperation and automation are more heavily relied upon during the longer shifts to compensate for individual fatigue.

The aviation industry’s FRMS initiative has significant implications for surgical residencies and duty hours. Shifting from a prescriptive, time-based approach to a more strategic fatigue management system might better mitigate the effects of acute and cumulative fatigue. Moreover, the promotion of restorative break times that incorporate a good balance of family time, meals, and rest would allow for greater alertness and better mood during duty time. When longer duty hours are required, as in the instance of overnight call coverage, incorporating automation, such as cell phone reminders and electronic health record notifications, as well as increased emphasis on teamwork, may reduce the number of safety incidents secondary to fatigue and diminished well-being. Most importantly, an FRMS intervention emphasizes the importance of creating a culture of wellness at the institutional level and enhances ease of practice—two essential components in a holistic model of surgeon wellness.

Lessons from the field of education
Another decidedly influential and demanding field in the U.S. is teaching. High daily stress frequently leads to educator burnout, with 40–50 percent of teachers leaving the profession within the first five years.\textsuperscript{33} Educators regularly face increasing job demands, including increased number and frequency of standardized exams, student behavioral issues, and parental concerns. This trend directly parallels the all-too-familiar struggle of surgical residents and new-to-practice surgeons, who are expected to develop an exponentially
increasing medical knowledge base, engage more patients with compassion, and tackle ever-increasing documentation requirements. Physicians, who regularly assume the role of teacher to colleagues, residents, and patients, face similar stressors and may benefit from interventions that are being used in education.

Interventions to improve the wellness of our nation’s teachers and educational system as a whole have been divided into three levels: individual, organizational-individual interface, and organizational. Individual-level interventions, such as cognitive behavioral techniques, have been shown to enhance awareness development, provide a coping mechanism for managing difficulties, and increase emotional well-being by reducing anxiety and depression. In randomized controlled trials of educators, contemplative practices like yoga and meditation were found to decrease burnout, lessen the impact of negative emotions, decrease the physical symptoms of stress, increase mindfulness, improve emotional well-being, increase positive emotions, and improve teaching efficacy. Interestingly, these interventions also resulted in improved overall quality of teaching.

Organization-individual interface interventions, which focus on building workplace relationships and support, have been found to result in significant improvements in teacher well-being. Longitudinal mentoring programs for novice teachers have proven particularly effective in increasing educator satisfaction and retention and bolstering student achievement. Workplace wellness programs, focused on nutrition or exercise, have been found to reduce health risk, health care costs, and absenteeism. Although many organizational initiatives are directed at the culture of wellness in education, little data is available to indicate the impact these interventions have had on educator wellness and performance.

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Four key factors have been identified as major contributors to teacher stress: school organization, job demands, work resources, and social and emotional competence. These findings echo the conceptual framework outlined in job demands-resource theory, a model for understanding burnout that is used in occupational psychology and has direct implications for understanding burnout in surgery (see Figure 2, page 40). From a systems perspective, a collegial, supportive environment is paramount to high performance, as well-being requires both a sense of belonging as well as the ability to contribute as an individual. The creation of a supportive environment involves strong leadership with a clear sense of direction, trustworthy colleagues, and suitable working conditions. Institutional support in the form of ease of practice and a culture of wellness plays a key role in maintaining and enhancing teacher well-being.

Analogous to findings from the medical field, educator wellness is heavily influenced by the work environment, which encompasses factors such as institutional culture, resources, and support. Though much of the early research in educator well-being focused on interventions at the individual level that are aimed at enhancing personal resilience, current studies are now moving toward an increased focus on the importance of policy and program changes in improving educator wellness.

**Recommendations for moving forward**

Frequently the focus is on individual-level interventions to promote surgeon well-being; however, both the aviation and education professions demonstrate that concurrent systemic changes are necessary to foster a surgical culture that encourages and actively enhances physician wellness. Fortunately, leaders in surgery and
education are making great strides in this regard. The American College of Surgeons now offers access to a Physician Well-Being Index that allows members to complete an online self-assessment and track various measures of well-being over time, with free resources tailored to respond to the risks identified in the self-assessment. The ACGME also has taken steps to address wellness through more explicit wording in the common program requirements and through the use of resident feedback in the Clinical Learning Environment Review program. The American Medical Association offers an innovative STEPS Forward program, designed to educate physicians about evidence-based individual- and organizational-level interventions to improve physician wellness. These and other initiatives empower surgeons at all levels to alleviate burnout through increased engagement in shaping the culture of medicine and creating interventions to enhance ease of practice at both the local and the national level.

Recent research has suggested adapting Maslow’s hierarchy of needs as a framework for addressing physician wellness. This hierarchy provides a guideline for thinking about a progressive approach to addressing wellness. It suggests that as needs are met at each level, individuals are motivated to progress upward toward higher-order needs and achievement. This model is exceedingly practical; it assumes that ultimately surgeons will be most fulfilled when their higher-order needs—such as finding joy in practice—are met. It acknowledges, however, that to reach this state, surgeons must first have their basic physiologic needs met, such as hydration, sustenance, and sleep.

Moving forward, strategies to promote wellness and mitigate burnout should focus on approaches that address both institutional issues, such as a culture of wellness and efficiency of

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practice, as well as personal resiliency. As demonstrated in other high-stress fields such as aviation and education, these strategies need to be responsive and creative—not prescriptive. Surgeons can expand our understanding of the factors that drive burnout by studying applications of occupational psychology. This approach explores how ideas such as job-crafting—the process of actively engaging workers in defining their scope of work and providing them with structural job resources while minimizing negative job demands—may move us even further toward achieving a true reduction in resident and surgeon burnout.

Involvement of all stakeholders, including policymakers, individual institutions, faculty, and residents, is imperative to making real, sustainable change. The national and international dialogue about how to address the epidemic of burnout in the field of surgery should continue, and trainees and health care professionals at all levels should be empowered to be change agents in shaping the process of moving from burnout to wellness.

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Shift work surgery: Loss of continuity or sensible balance of responsibility?
The Advocacy and Issues Committee of the Resident and Associate Society of the American College of Surgeons (RAS-ACS) hosts the annual RAS Symposium at the Clinical Congress. During this session, a panel discusses an issue affecting surgeons and surgical residents. The 2019 symposium will explore the topic of shift work surgery and whether this trend erodes continuity of patient care or allows residents to achieve a sensible balance of responsibility. The RAS Symposium will take place Sunday, October 27, at the Moscone Center, San Francisco, CA.

Introduction
Surgical residency training programs have implemented dynamic scheduling and curricula changes in recent decades. Perhaps the most remarkable of those changes was the move by the Accreditation Council for Graduate Medical Education (ACGME) in 2003 to standardize the 80-hour workweek.1 These duty-hour restrictions were implemented in response to concerns about physician fatigue, medical errors, communication-related errors, and physician burnout.2 After implementation of these standards, researchers involved in the Flexibility in Duty Hour Requirements for Surgical Trainees (FIRST) trial suggested that tractable work hours better promoted patient continuity of care and resident education without associated negative patient outcomes.3 Even so, the FIRST trial highlighted concerns regarding work-life integration. Ultimately, this trial has energized a debate over how duty-hour restrictions have changed not only resident physician scheduling and patient outcomes but also surgical culture.

The historical model for surgical training included unrestricted hours. Residents stayed at the hospital to finish cases and start new ones, attended to patients throughout the entire perioperative period, and worked home-call shifts for nights and weekends without designated time off. However, duty-hour restrictions spawned structural changes toward a shift work model, with 12-hour schedules, designated days off, and limitations on hours within call shifts. This arrangement has been incorporated into several surgical specialties, including trauma and acute care surgery. Other surgical specialties have initiated shift work arrangements too, with dedicated coverage to prevent 24/7 call responsibilities for an individual surgeon.

This shift work model has been so widely adopted, initially because of the ACGME mandate, that it has caused a cultural shift, with movement toward heightened awareness of physician wellness and burnout; efforts to improve communication, particularly during handoffs; and the establishment of reasonable limitations to arduous schedules. These trends have had a positive effect on the surgical culture but have also ignited concern that this shift work approach has ushered in a change in surgeon mentality—namely, that surgeons undervalue continuity of care and patient ownership—as well as hands-on educational opportunities.

This concern has led to debate within the profession regarding the optimal way to implement surgical shifts or whether surgery should avoid moving toward shift work entirely. The 2019 RAS Symposium participants will debate whether shift work surgery should be encouraged to foster a sensible balance of responsibility and promote surgeon wellness or whether it should be discouraged, as it reduces continuity of patient care and exposure to educational opportunities.

This article outlines the history of shift work surgery, explores the possibility that this model acts as a detriment to patient care and resident education, and examines whether it functions as an appropriate response to work-hour restrictions with improved resident wellness and a sensible balance of patient responsibility.

The transition to shift work
Scheduled shifts were first introduced in the 1980s in the form of night float teams in obstetrics/gynecology residencies, as a result of the Council on Resident

HIGHLIGHTS
- Summarizes the early adoption and ongoing evolution of the shift work surgery model
- Describes the challenges associated with shift work scheduling, including diminished continuity of care
- Highlights the benefits of shift work, including improved job satisfaction and enhanced resident education opportunities
Education in Obstetrics and Gynecology’s focus on reducing hours spent in the hospital. A transition to shift work scheduling came in the wake of the work-hour restriction laws instituted in the state of New York after the March 1984 death of Libby Zion, an 18-year-old college student who tragically died in the emergency room while in the care of overworked residents. In logical fashion, the ACGME imposed similar work-hour restrictions on accredited residencies nationwide. The night float system subsequently became widespread across residency programs to accommodate these new regulations.

The demands for work-hour restrictions led to debate concerning the effect of shift work on resident education. Initial reports examining resident education in the night float system suggested residents on night float interact less with faculty, receive less feedback, are absent from daytime didactic sessions, and have less operative experience. Despite these potential drawbacks, the night float system persisted and programs have made adjustments to ensure that educational quality is maintained. The benefits to patients and residents with a night float system have been reported. In a 2019 study of more than 7,000 surgical patients comparing night float with overnight on-call residents, Yu and colleagues found decreased postoperative bleeding and shorter response time to emergent consultations in the night float system.

Goldstein and colleagues reported results of a resident survey after implementation of a night float system at a New York general surgery program. Residents reported decreased fatigue, better resident-nurse communication, more time for sleep at home, and increased time spent on independent study. Despite these benefits, faculty in this same study reported decreased continuity of care as a result of the night float system. This concern has been echoed in other studies, highlighting concern about the shift work model and its link to a decreased sense of patient ownership.

The debate around continuity of care, communication errors in sign-out, decreased physician fatigue, and improved physician wellness in the context of the night float system has regained momentum in the shift work era. Shift work surgery is virtually synonymous with acute care surgery, the specialty that has most widely adopted this structure. This construct allows a dedicated attending to be available for 12- or 24-hour shifts, free of clinic and elective caseloads. This structure was created to improve health care outcomes, maximize surgical resources, and increase cost savings for hospitals, but it also has attracted more physicians to surgery as a result of the lifestyle benefits derived from a more controlled schedule and nighttime responsibilities.

The shift work structure has been compared with previous call models and the literature reports decreased time to the operating room (OR), decreased complication rates, and decreased length of stay for common acute care pathologies (such as appendicitis and cholecystitis) because an acute care surgeon is in-house on shifts. However, recent literature has highlighted the concern within this model about physician fatigue and chronic sleep deprivation, which may result from demanding shifts and duties that often extend beyond designated hours. Furthermore, some surgeons have voiced concern about continuity of care and communication within this fragmented model of shift work, as many acute care surgery models still lack formal sign-out procedures. Other specialties have adopted shift work and have thereby expanded the discourse regarding the pros and cons of this structure.

**Shift work surgery: Loss of continuity**

Shift work mentality can be seen as a threat to the professional tenets that define the core values of a surgeon. These values are grounded in the concept of patient care ownership, which translates into the primary surgeon being available and responsible for all events and decisions in the perioperative care of the patient at all times. Patient care ownership has been described as “a central tenet of surgical professionalism dating back decades and is fundamental when facing critical patient care decisions.”
Shift work mentality can be seen as a threat to the professional tenets that define the core values of a surgeon.

The ACGME, which established the standards for duty-hour compliance, has also recognized the importance of continuity of care, stating that “continuity of care must take precedence—without regard to the time of day, day of the week, number of hours already worked, or on-call schedules.” The ability to provide continuity of care can be beneficial to both the patient and the surgical trainees. Many surgeons agree that signing out a patient to a different provider is a poor substitute for knowing the important details of that patient’s clinical course and can lead to communication errors. Patient management by the same individual ensures a thorough understanding of all nuances of their perioperative course. The resident providing this continuous care also benefits from opportunities to see how a patient’s disease evolves, which can be an invaluable educational experience.

Teman and colleagues surveyed 239 attending surgeons and found that 14 percent of the respondents cited shift work mentality, decreased patient ownership, and sense of responsibility as factors preventing residents from achieving graduated autonomy in the OR. Despite duty-hour restrictions, evidence has shown that surgical residents often continue to work after their designated shift as a result of beliefs about patient ownership and professionalism, indicating a reluctance to succumb to a shift work mentality.

In parallel to work-hour restrictions affecting the structure of surgical residency, changes at the level of surgical staffing have occurred as well. The acute care surgery model has been structured as shift work since its inception, but shift work may be ill-suited for training in other surgical specialties. Most acute care surgery cases involve new patients who are receiving care for a new urgent or emergent surgical condition. Surgeons who provide elective operations historically have been responsible for continuous management of their patients. This practice ensures that the surgeon who evaluated the patient in the clinic and performed the initial procedure also is the one who makes decisions regarding postoperative care. An important, established relationship forms between the surgeon and the patient, especially in surgical oncology—one that can span months to years. To many surgeons, this relationship justifies the expectation that a patient’s surgeon continues to be responsible for any surgical issues that arise.

Although structured shifts exist across resident training programs, and different variations of night and weekend coverage are increasingly common outside the realm of the acute care surgery model, there is evidence that many residents and attendings alike often modify or work outside of the hours of their scheduled shifts. Unfortunately, any shift work arrangement opens the door for adoption of a shift work mentality, especially as the culture of previous surgical generations begins to fade. If a shift work mentality becomes more widely adopted with these changes, it could lead to decreased quality of patient care, professionalism, and resident education.

Shift work surgery: Sensible balance of responsibility

While concerns about shift work mentality have emerged in recent years, that discussion detracts focus from the motivating factor for adoption of shift work surgery. Surgical trainees are at an ethical impasse where they must choose between discontinuity in patient care and personal exhaustion. Neither option is innocuous, so many residents attempt to resolve this dilemma by fabricating their duty hours or finding loopholes in documentation. Despite surpassing the 80-hour limit, some residents will continue to work even after leaving the hospital or on designated days off by charting and tracking patients via the electronic health record. Many modern trainees are so stalwart in their commitment to patient care at the sacrifice of their well-being that they unfalteringly attend work when physically ill.

Shift work has emerged in part as a result of surgeon concerns about work-life integration, including time for sleep and recovery. Rest is crucial for humans, particularly those individuals charged with caring for the lives of others. For example, the Federal Aviation Administration limits the time for a single pilot...
voyage to eight hours. Likewise, the Federal Motor Carrier Safety Administration regulates driving time to no more than 11 hours per day and 60 hours per week. The American Academy of Sleep Medicine has gone as far as to support drowsy-driving legislation, which states that a person who has been awake for more than 22 of the previous 24 hours is functionally impaired by sleep deprivation. Working while exhausted is hazardous, so why are surgeons expected to perform without time to recuperate?

With respect to surgical trainees, sleep deficit negatively affects monotonous tasks and can jeopardize safety when residents drive home after shifts. Residents have been shown to make more technical errors and take longer to complete simulated laparoscopic tasks after a night on call. Literature demonstrating the need for rest among attending surgeons has been published. Rothschild and colleagues demonstrated a 1.7-fold increased rate of complications in post-nighttime cases among attendings who had six or less hours of sleep opportunity compared with attendings whose sleep opportunity exceeded six hours. Patient safety is of paramount importance, such that the Sleep Research Society has drafted legislation requiring that surgeons who have been awake for 22 of the previous 24 hours inform their patients of the safety impact of sleep deprivation before performing any operation.

Shift work may have a negative undertone to many seasoned surgeons, but as Coleman and colleagues have reported, lifestyle is an important factor in the modern-day trainee’s choice of specialty. Similarly, Santry and colleagues reported that among 18 prominent acute care surgery leaders, key reported benefits of this specialty were improved job satisfaction, increased operative volume, and a better lifestyle. The acute care surgery shift work model offers pager-free periods yet still entails responsibilities on certain nights and weekends. This practice pattern facilitates rest and family time, and promotes

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continued enthusiasm for the profession.\textsuperscript{34} This model also facilitates career advancement, allowing unhindered time for research, quality improvement endeavors, and teaching.

Acute care surgeons are not the only health care professionals benefitting from the shift work approach. Surgical hospitalists, often referred to as surgicalists, have attempted to assuage the lack of surgical coverage that afflicts 75 percent of U.S. emergency departments.\textsuperscript{40,41} Maa and colleagues studied the impact of a surgical hospitalist service at the University of California San Francisco Medical Center, which employed three full-time board-certified general surgeons who staffed the service on a rotating weekly basis.\textsuperscript{40} The surgeons had a minimal number of elective procedures or clinic hours during their service week and were responsible for rounding daily, supervising residents, and seeing all emergency department and inpatient consults. By having more time as a result of not being continuously met with elective cases, administrative duties, and clinic patients, these surgeons could appropriately bill for services rendered during a patient’s hospitalization. By maximizing documentation and coding, the hospital’s revenue generation from surgical services increased 415 percent. Furthermore, from the time an emergency room physician placed a consult, the patient was seen by a surgicalist within 20 minutes rather than several hours, which was common prior to shift work implementation.\textsuperscript{40} Similar shift work delivery systems have led to greater satisfaction among referring physicians and hospitals,\textsuperscript{19,34} increased resident supervision,\textsuperscript{40} and decreased hospital costs and lengths of stay.\textsuperscript{42} Many training programs see the benefit of shift work and have implemented night float systems, and as Kohlbrenner and colleagues have demonstrated, this approach leads to better compliance with duty-hour restrictions, improved resident education, and higher quality of life.\textsuperscript{43} Shift work surgery will always have its

REFERENCES, CONTINUED


continued on next page
critics, but as sleep medicine physician Michael Farquhar, MD, stated, “There is no shame in being ordinary, in acknowledging we have the same human needs as our patients for comfort, for rest, and for sleep. Without them, we cannot function. The shame is in allowing systems to depend on us routinely being extraordinary because ultimately, we—and they—will fail.”

Conclusion
In the era following work-hour restrictions, shift work surgery has become increasingly adopted within the acute care surgery model and other surgical specialties. The resulting debate centers on patient outcomes, resident physician well-being and education, and the surgical culture at large. Commitment, accountability, and consistent quality remain cornerstones of optimal patient care; however, the ability of any human being to deliver on these qualities at all hours has raised concerns regarding dilution of these traits due to physician fatigue and decreased quality of personal life. The shift work model provides an alternative pathway whereby surgeons are relieved by colleagues to allow a revitalized workforce. At the same time, increased transitions between health care professionals prompt concern about decreased continuity of care predisposing to increased medical errors and decreased perception of ownership.

The RAS Symposium at the ACS Clinical Congress will explore the topic of shift work surgery with a debate on whether this model represents a loss of continuity in patient care or offers a sensible balance of responsibility. Join other residents, Associate Fellows, and leaders in the field at the symposium to discuss the optimal approach to providing continuous, uncompromised patient care and resident education. ♦

REFERENCES, CONTINUED
Medical Student Program at Clinical Congress has lasting impact

by Sarah J. Armenia

Editor’s note: Each year, the American College of Surgeons (ACS) Division of Education offers students from all four years of medical school the opportunity to participate in a special three-day Medical Student Program at the ACS Clinical Congress. Programming varies from day to day, and students may attend all or selected portions of this three-day program. The program is provided at no charge to ACS Medical Student members who register in advance, and is augmented with financial support from the ACS Foundation. In the following column, a fourth-year medical school student describes her experience as a regular participant in the Medical Student Program and the impact it has had on her career trajectory.

It can be very intimidating to arrive at Clinical Congress as a medical student. The conference center is packed with people who have made it—people who have worked hard and are now thriving in the profession we so desperately want to join. As you walk through the convention center, you pick up on bits and pieces of conversations around you—discussions of challenging cases and lighthearted jokes about hospital protocols. It would truly be a challenging environment to face if the ACS did not support a program specifically for medical students. Not only does the Medical Student Program provide a haven for students interested in surgery who may not have otherwise attended the conference, but it provides an exceptionally curated experience to cultivate that interest.

Surgeon faculty put you at ease
I began attending the Medical Student Program as a first-year medical student in 2015, and I have attended every year since. I was admittedly a bit apprehensive as I walked into the first session because medical students interested in surgery can certainly be intense, and I did not know any other attendees. However, as the session began and the faculty from the ACS Committee on Medical Student Education (CMSE) began introducing themselves, I instantly felt at ease. Amid the daunting formality of some aspects of Clinical Congress, the faculty injected refreshing levity and approachability into these initial introductions and subsequent sessions. It was apparent that the faculty members were very experienced in working with medical students and had a keen understanding of our needs and concerns.

As someone who began attending the Medical Student Program early in medical school, the elephant in the room for me had persistently been: What if I don’t make it? What if I came to this amazing program every year and don’t even make it into surgery? However, every year at the program, panelists and speakers have shown a sense of vulnerability in discussing their personal failures, never once pretending to uphold the impossible image of perfection we often assign to the profession.

The first year I attended the program, I was particularly struck by a session that Diana L. Farmer, MD, FACS, FRCSC—an internationally renowned fetal and neonatal surgeon; chair, department of surgery, University of California Davis Health; and immediate Past-Chair, ACS Board of Governors—gave early on the first day. As she came to the podium, I anticipated a cautionary speech about how competitive and rigorous the
Not only does the Medical Student Program provide a haven for students interested in surgery who may not have otherwise attended the conference, but it provides an exceptionally curated experience to cultivate that interest.

upcoming process would be, but I was immediately engaged in the focus of her discussion. She cast aside the image we perpetuate of the person who knows exactly who she wants to be from a young age and who simply executes that vision without obstacles. Instead of leading with a discussion of her renowned work in fetal and neonatal surgery, Dr. Farmer spoke humbly about how she began following her interests in marine biology without any thought of ultimately winding up in medicine. She spoke candidly about her experience navigating residency and shared a unique vulnerability with us that was particularly powerful, given our understanding of her groundbreaking career.

Networking opportunities
The casual conversations medical students can have with faculty members from all across the country are one of the most beneficial components of the Medical Student Program. For example, one of the program sessions is a presentation of awards to the winners of the Medical Student Poster Session. One year at the awards presentation, Robert Cowles, MD, FACS, associate professor of surgery, Yale School

PUTTING TOGETHER THE PROGRAM
In 2018, the Medical Student Program attracted more than 475 medical students and more than 200 surgeon volunteers over the course of the three days, not including the 13 members of the CMSE, who met monthly with Division of Education staff to plan and present the program.

Members of the Committee on Medical School Education
Susan Steinemann, MD, FACS, Chair
Stephen C. Yang, MD, FACS, Vice-Chair
Adnan A. Alseidi, MD, EdM, FACS
Sarah J. Armenia, medical student member
Celeste M. Hollands, MD, FACS
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Jacob A. Quick, MD, FACS
Paul J. Schenarts, MD, FACS
Rebecca L. Williams, MD, PhD

ACS Division of Education staff responsible for developing the Medical Student Program
Ajit K. Sachdeva, MD, FACS, FRCSC, FSACME, Division Director
Patrice Gabler Blair, MPH, Associate Division Director
Kim Echert, Senior Manager
Katrina McKenzie, Administrator
My greatest takeaway from the program overall is that surgeons are simply people who have their frailties just like the rest of us.

SUPPORTING THE MEDICAL STUDENT PROGRAM

Help a student like Sarah participate in the Medical Student Program at Clinical Congress by donating to the ACS Foundation—the philanthropic arm of the College.

Your tax-deductible gift of $250 will ensure the participation of one medical student in this career-enhancing program, which helps aspiring surgeons build their knowledge of surgical career options and enhances their engagement with the College.

To support this program, donate online to the ACS Foundation at facs.org/donate, text MEDSTUDENT to 41444, or call 312-202-5338.

Dr. Cowles is a pediatric surgeon and he was there to support a medical student from his lab. We struck up a conversation about the Medical Student Program while we waited for the program to begin, as he was curious about the program’s structure. This seamlessly led into a more in-depth discussion of my goals for medical school, and we touched upon his lab’s specific research interests.

After returning home from the conference, I e-mailed Dr. Cowles, referencing our conversation at the Medical Student Program, and expressed interest in working in his lab, despite being at a different institution. From this single conversation at the program, I ultimately spent a summer, and subsequently a full year, working in his lab, and Dr. Cowles remains one of my most influential mentors to this day. The Medical Student Program truly offers an opportunity to network with faculty members in a way unlike any other setting.

My greatest takeaway from the program overall is that surgeons are simply people who have their frailties just like the rest of us. These senior surgeons are open to sharing their stories, triumphs, and failures candidly and offer realistic advice about how to navigate similar situations. There are no outdated PowerPoints, and no antiquated advice is given during these exchanges. The panelists speak from their personal experience and openly encourage questions. They work with students in a hands-on manner—particularly during surgical skills sessions and mock interviews—and truly want you to succeed in this process. The faculty member who worked with me at my first suturing session at the program is now someone who I will see in the hospital this summer at an away rotation.

In the end, my best advice to my fellow medical students is to set aside your apprehension and push yourself to attend Clinical Congress, because the Medical Student Program will instill in you a renewed sense of inspiration as you continue along the journey to becoming a surgeon.

For more information

For more information about the Clinical Congress 2019 Medical Student Program, see the sidebars on page 53 and this page, or visit facs.org/clincon2019/events/special/medical-student.
Although the incidence of gastric cancer in the U.S. is slowly declining, it still is a deadly diagnosis for many patients. In 2018, an estimated 26,240 people in the U.S. were diagnosed with gastric cancer, and 10,800 died of the disease. The five-year overall survival (OS) is 68.1 percent for patients with localized disease but is much lower for patients with regional lymph node (LN) involvement (30.6 percent) or distant disease (5.2 percent).1

Two classic randomized control trials in gastric cancer, the Intergroup (INT-0116) trial and the Medical Research Council Adjuvant Gastric Infusional Chemotherapy (MAGIC) trial, have formed the basis of multimodality therapy for gastric cancer for nearly two decades. INT-0116, published in 2001, demonstrated an improvement in OS among patients randomized to receive perioperative chemoradiation with three cycles of epirubicin, cisplatin, and 5-FU (ECF) preoperatively and three cycles postoperatively, compared with patients treated with surgery and observation (36.3 percent versus 23 percent).3

However, both of these studies had major limitations, which has led to controversy regarding the optimal management of resectable gastric adenocarcinoma. In contrast to current operative practice, most of the patients in INT-0116 (54 percent) underwent a D0 dissection, which is a less than complete resection of N1 nodes, and only 10 percent of the study cohort underwent a D2 LN dissection (that is, lymphadenectomy of the perigastric, celiac, splenic, hepatic artery, and cardiac LNs). Many critics have suggested that the survival benefit of chemoradiation was only observed due to inadequate surgical therapy. In contrast, a major criticism of the MAGIC trial was the poor compliance with chemotherapy. A high proportion of patients (58.4 percent) assigned to the perioperative chemotherapy arm were unable to complete all six cycles because of progression of disease or cancer-related death (15.6 percent), postoperative complications (4 percent), or treatment toxicity (6 percent), leading to concerns about the generalizability of this treatment regimen to clinical practice.

Recent evidence
Despite the benefit of both adjuvant chemoradiation and perioperative chemotherapy based on the best available evidence, the optimal treatment for gastric cancer has remained controversial in the absence of a direct comparative trial. The recently published CRITICS (Chemotherapy Versus Chemoradiotherapy After Surgery and Preoperative Chemotherapy for Resectable Gastric Cancer) trial from the Netherlands (2007–2015) sought to address this issue.
Despite the benefit of both adjuvant chemoradiation and perioperative chemotherapy based on the best available evidence, the optimal treatment for gastric cancer has remained controversial in the absence of a direct comparative trial.

By randomizing nearly 800 patients with resectable gastric cancer to either perioperative (pre- and postoperative) chemotherapy (epirubicin, cisplatin or oxaliplatin, and capecitabine) or perioperative chemotherapy combined with postoperative chemoradiation (45 Gray [Gy] in 25 fractions with capecitabine and cisplatin), median survival was 43 months in the chemotherapy arm and 37 months in the chemotherapy plus postoperative chemoradiation arm (p = 0.90), failing to demonstrate an added survival benefit of postoperative chemoradiation following perioperative chemotherapy and resection. Notably, only 59 percent of patients in the perioperative chemotherapy-alone arm and 62 percent of patients in the chemotherapy plus chemoradiation arm initiated the protocol-specified adjuvant therapy after gastrectomy. The persistently observed poor compliance with postoperative therapy has encouraged the development of studies that focus on the optimization of preoperative treatment strategies.

Perhaps one of the most notable studies in gastric cancer is the recently presented Perioperative Chemotherapy with Docetaxel, Oxaliplatin, and Fluorouracil/Leucovorin (FLOT) Versus Epirubicin, Cisplatin, and Fluorouracil or Capecitabine (ECF/ECX) for Resectable Gastric or Gastroesophageal Junction (GEJ) Adenocarcinoma (FLOT4-AIO) trial, which was a multicenter, randomized phase III trial from Germany. Given the high toxicity of the MAGIC regimen (ECF), this study compared an alternative perioperative chemotherapy regimen, involving 716 patients with at least a T2 tumor and/or clinically node positive disease. Only 37 percent of patients in the ECF/ECX study arm completed therapy, versus 50 percent in the FLOT arm. In addition to the reduced toxicity, FLOT improved both progression-free and OS, with a median survival of 50 months in the FLOT arm compared with 35 months in the ECF/ECX arm. Based on these findings, docetaxel, oxaliplatin, and FLOT has become the preferred perioperative (pre- and postoperative) chemotherapy regimen at most high-volume centers in the U.S.

Updated in surgical approach
In addition to the emerging evidence focused on systemic therapy in gastric cancer, new evidence regarding surgical management of this disease is emerging. Based on the results of the randomized Dutch D1D2 Trial (Dutch Gastric Cancer Group Trial) showing a survival benefit of D2 LN dissection after 15-year follow-up, National Comprehensive Cancer Network guidelines recommend D2 LN dissection for gastric cancer. According to Japanese guidelines, the extent of D1 and D2 LN dissection may vary depending on tumor location. If distal gastrectomy is performed, neither D1 nor D2 include station #10 (splenic hilar LNs); therefore, splenectomy should not be performed. In the setting of a total gastrectomy, D2 LN dissection, including station #10, is recommended; however, the role of routine splenectomy for proximal gastric cancer remains controversial.

The Japanese Clinical Oncology Group conducted a multicenter randomized control trial investigating the survival impact of prophylactic splenectomy in patients with proximal cT2–4, nonlinitis gastric cancer without greater curvature involvement. From 2002 to 2009, the study enrolled 505 patients who underwent total gastrectomy with D2 lymphadenectomy, either with or without splenectomy, at one of 36 specialized institutions, defined as gastric cancer surgical units with perioperative...
### TABLE 1. RECENTLY COMPLETED AND ONGOING TRIALS IN RESECTABLE GASTRIC CANCER

<table>
<thead>
<tr>
<th>Trial/study</th>
<th>Country, year</th>
<th>Study size</th>
<th>Study population</th>
<th>Standard arm</th>
<th>Study arm(s)</th>
<th>Results</th>
<th>Key findings and criticisms</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRITICS1</td>
<td>Netherlands, 2018</td>
<td>788</td>
<td>Stage IB-IVA resectable gastric or gastroesophageal junction (GEJ) cancer</td>
<td>Perioperative chemotherapy with epirubicin, cisplatin or oxaliplatin, and capecitabine</td>
<td>Perioperative chemotherapy + postoperative chemoradiation</td>
<td>Median overall survival (OS) of 43 months in chemotherapy arm versus 37 months in chemotherapy + chemoradiation arm (p = 0.90). No survival benefit of adding chemoradiation to perioperative chemotherapy. Poor overall compliance with postoperative therapy, suggesting increasing role of preoperative therapy.</td>
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<tr>
<td>FLOT4-AIO5</td>
<td>Germany, 2017</td>
<td>716</td>
<td>≥ clinical T2 and/or N+ gastric or GEJ cancer</td>
<td>Perioperative chemotherapy with epirubicin, cisplatin, and fluorouracil (5-FU) (ECF)</td>
<td>Perioperative chemotherapy with docetaxel, oxaliplatin, leucovorin, 5-FU (FLOT)</td>
<td>Median OS 35 months (ECF) versus 50 months (FLOT). Similar perioperative complication rates (50% versus 51%). Perioperative FLOT improved OS compared with traditional ECF regimen.</td>
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<tr>
<td>JCOG 01109</td>
<td>Japan, 2017</td>
<td>505</td>
<td>cT2-4, any N, non-linitis proximal gastric cancer not involving greater curve</td>
<td>Total gastrectomy + D2 lymphadenectomy including spleenectomy</td>
<td>Total gastrectomy + D2 lymphadenectomy (spleen preservation)</td>
<td>Postoperative complication rate increased in splenectomy arm (16% versus 30%). No difference in five-year OS (76.4% versus 75.1%). Prophylactic splenectomy should not be performed in the setting of a total gastrectomy and D2 lymphadenectomy because of an increase in morbidity without improved survival.</td>
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<tr>
<td>TOPGEAR11</td>
<td>International, 2017</td>
<td>120 (interim analysis)</td>
<td>Stage IB-IIIC gastric or GEJ cancer</td>
<td>Perioperative chemotherapy with ECF</td>
<td>Perioperative chemotherapy and preoperative chemoradiation</td>
<td>Proportion of patients proceeding to surgery is similar (90% versus 85%). Completion rates of postoperative chemotherapy (65% and 53%). On interim analysis, preoperative chemoradiation and chemotherapy showed high-compliance rates with preoperative therapy, but low compliance with postoperative therapy. Results highly anticipated.</td>
<td></td>
</tr>
<tr>
<td>CRITICS II12</td>
<td>Netherlands, 2017</td>
<td>Actively enrolling</td>
<td>Stage IB-IIIC gastric cancer</td>
<td>4 cycles docetaxel, oxaliplatin, and capecitabine (DOC)</td>
<td>A) 2 cycles DOC + chemoradiation B) chemoradiation alone</td>
<td>Primary endpoint: event-free survival. Secondary endpoints: R0 resection rates, recurrence, OS. Goal to identify optimal preoperative treatment regimen that can be compared with standard therapy in a future phase III trial.</td>
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mortality of less than 2 percent. An R0 resection was achieved in nearly all patients (only four R1 resections). Among patients who underwent splenectomy, the postoperative complication rate doubled (30 percent versus 16 percent; p <0.001) because of an increased incidence of pancreatic fistula (13 percent versus 2 percent) and abdominal abscess (8 percent versus 4 percent). Postoperative mortality was similar (0.4 percent versus 0.8 percent; p = 0.62). At a median follow-up of 72 months, no difference in five-year OS was detected (75.1 percent in splenectomy and 76.4 percent in spleen-preserving arm). Based on these data, the authors concluded that prophylactic splenectomy should be avoided in total gastrectomy for proximal gastric cancer that does not invade the greater curvature.

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Based on these findings, docetaxel, oxaliplatin, and FLOT has become the preferred perioperative (pre- and postoperative) chemotherapy regimen at most high-volume centers in the U.S.

**Ongoing trials in resectable gastric cancer**

Although the use of preoperative chemotherapy has sharply increased over the past 10 years in the U.S.,\(^\text{10}\) the role of preoperative radiation remains unknown. The ongoing TOPGEAR (A Randomized, Phase III Trial of Perioperative ECF Chemotherapy with or Without Preoperative Chemoradiation for Resectable Gastric Cancer) phase III international trial is investigating the benefit of preoperative chemoradiation in addition to perioperative chemotherapy.\(^\text{11}\) In this trial, the chemotherapy-only group receives pre- and postoperative ECF (three cycles for each), and the chemoradiation group receives chemoradiation (45Gy in 25 fractions with concurrent 5-FU) in place of the third cycle of ECF. A planned interim safety analysis of 120 patients (planned accrual 752) reported high compliance rates with preoperative therapy (>90 percent) and expected low compliance rates with postoperative therapy (53 percent in chemoradiation group and 65 percent in chemotherapy-only group), as well as an equivalent toxicity profile. The final results from this ongoing trial are highly anticipated.

Similarly, the Dutch CRITICS-II (A Multicenter Randomized Phase II Trial Of Neo-Adjuvant Chemotherapy Followed by Surgery Versus Neo-Adjuvant Chemotherapy and Subsequent Chemoradiotherapy Followed by Surgery Versus Neo-Adjuvant Chemoradiotherapy Followed by Surgery in Resectable Gastric Cancer) phase II trial is investigating the optimal preoperative treatment regimen by comparing preoperative chemotherapy (docetaxel, oxaliplatin, and capecitabine), preoperative chemotherapy followed by preoperative chemoradiation (45Gy with paclitaxel and carboplatin), and preoperative chemoradiation alone. The primary endpoint of this trial is event-free survival, with the intention that these results will inform a follow-up phase III trial comparing the identified optimal regimen with standard therapy.\(^\text{12}\) See Table 1, page 57, for a summary of the trials.

**Conclusions and future directions**

Treatment of localized gastric cancer remains a significant problem; however, recent advances in the optimization of perioperative chemotherapy and surgical safety have led to significant improvements in short- and long-term outcomes, with low perioperative mortality and median survival of 50 months in Western patients.
Although the use of preoperative chemotherapy has sharply increased over the past 10 years in the U.S., the role of preoperative radiation remains unknown.

significant improvements in short- and long-term outcomes, with low perioperative mortality and median survival of 50 months in Western patients. Current best practice is for perioperative chemotherapy with docetaxel, oxaliplatin, and FLOT with gastrectomy and D2 lymphadenectomy without splenectomy. Further improvements in perioperative multimodality completion, perhaps with total neoadjuvant approaches, and treatment of patients with microscopic peritoneal involvement are needed, including better defining the role of heated intraperitoneal chemotherapy.

Furthermore, the role of targeted therapy (for example, anti-HER2) and immunotherapy in the multimodality treatment of patients with nonmetastatic gastric cancer remain undefined. Novel clinical trial designs, such as presurgical or window trials, are needed to address these important questions. ♦

REFERENCES

The Joint Commission and the National Quality Forum (NQF) presented the 2018 John M. Eisenberg Patient Safety and Quality Awards, which recognize the achievement of health care professionals and organizations that have made significant and long-lasting contributions to improve patient safety and quality of care, earlier this spring.

STS
The Society of Thoracic Surgeons (STS), Chicago, IL, received the Eisenberg Award for Innovation in Patient Safety and Quality at the National Level for its extraordinary efforts as a trailblazer and industry leader in sophisticated performance measurement and consumer-friendly public reporting.

The centerpiece of the STS quality program is the STS National Database, which was developed in 1989 and is considered to be one of the premier clinical data registries in health care. Essential features include the following:* • Subspecialty registries for adult and pediatric cardiac surgery, mechanical circulatory support, and general thoracic surgery • Clinician-designed, explicitly defined, standardized data elements • Broad national penetration among providers • Exceptional data accuracy, verified by an external audit

Using these data, STS developed risk models and NQF-endorsed composite performance measures for all of its subspecialties and major procedures, results of which providers use to guide their improvement initiatives.

Furthermore, in an effort to facilitate consumer choice, STS introduced an outcomes-centric, voluntary public reporting program in 2010 that has achieved high participation rates.

The value of the STS quality program is demonstrated by longitudinal tracking, which documents sustained reductions in adverse outcomes and near-universal adoption of desirable care processes.

Other award recipients
The two other winners were as follows:

- Brent C. James, MD, MStat, received the Individual Achievement Award for his passion as a global leader in bringing quality improvement science and methods to clinical care for more than three decades.

- BJC HealthCare, St. Louis, MO, received the Innovation in Patient Safety and Quality at the Local Level Award for a system-wide approach to improving patient safety through reductions in preventable harm. In 2008, the 15-hospital health system launched a five-year, system-wide initiative to reduce preventable harm in a variety of categories, including falls with serious injury, pressure ulcers, adverse drug events, health care-associated infections, and venous thromboembolism. By implementing practical interventions for categories of harm, the health system had sustained success in improving outcomes, with a 75 percent reduction in preventable harm over 10 years.

  Created in 2002 by The Joint Commission and the NQF, the annual awards program is named for John M. Eisenberg, MD, MBA. An advocate for health care quality improvement, Dr. Eisenberg was a founding member of NQF’s board of directors and the former Agency for Healthcare Research and Quality administrator (1997–2002). He dedicated his life to ensuring care was based on a strong foundation of research while considering the patient’s needs and perspectives.

  An awards ceremony recognizing the winners took place March 25 at NQF’s 2019 Annual Conference in Washington, DC. For more information about the awards, past winners, and Dr. Eisenberg, visit www.jointcommission.org/topics/eisenberg.aspx.

  The winners also will be featured in an upcoming issue of The Joint Commission Journal on Quality and Patient Safety, which can be found at www.jointcommissionjournal.com. ♦

Disclaimer
The thoughts and opinions expressed in this column are solely those of Dr. Pellegrini and do not necessarily reflect those of The Joint Commission or the American College of Surgeons.
According to the legal definition, “under the influence” is a term that describes a state of intoxication that is criminal when engaging in certain activities; for instance, public intoxication or driving under the influence.* It is unlawful in all 50 states and the District of Columbia to drive a vehicle when one’s blood alcohol concentration (BAC) is greater than 0.08 percent. On the Centers for Disease Control and Prevention motor vehicle safety web page, under the “BAC Effects” tab, is a table that outlines how much alcohol needs to be consumed to reach certain BAC levels, typical effects, and predictable effects on driving.†

Know your limit
The table uses a standard drink size in the U.S. of 14.0 grams (0.6 ounces) of pure alcohol. This equates to a 12-ounce beer (5 percent alcohol content), eight ounces of malt liquor (7 percent alcohol content), five ounces of wine (12 percent alcohol content), or one-and-one-half ounces (a shot) of 80 proof (40 percent alcohol content) distilled spirits or liquor (for example, gin, vodka, rum, or whiskey).†

If a 160-pound man consumes two alcoholic drinks in one hour, his BAC will reach approximately 0.02 percent. The typical effects are some loss of judgment, relaxation, slight body warmth, and an altered mood. Behind the wheel of a motor vehicle, this individual will experience a decline in visual functions and an inability to perform two tasks at the same time (divided attention). After three drinks in one hour, his BAC approaches 0.05 percent, leading to exaggerated behavior, difficulty focusing his eyes, impaired judgment, lowered alertness, and a release of inhibition. When driving, he will experience reduced coordination, reduced ability to track moving objects, difficulty steering, and a reduced response to emergency driving situations.

At about four alcoholic drinks in an hour, his BAC will reach 0.08 percent, resulting in diminished balance, speech, vision, reaction time, and hearing. It will be harder to detect danger, and his judgment, self-control, reasoning, and memory will be impaired. Getting behind the wheel at this level can be particularly hazardous because of altered concentration, short-term memory loss, difficulty with speed control, reduced information processing capability (for example, signal detection or visual search), and impaired perception. Adding a fifth drink in an hour results in a BAC of approximately 0.1 percent and a reduced ability to maintain lane position and appropriate braking.

Life-altering consequences
To examine the occurrence of injuries in patients under the influence of alcohol in the National Trauma Data Bank® (NTDB®) research admission year 2017, medical records were searched using BAC. Specifically searched were records of individuals who had a BAC of 0.08 percent or greater. A total of 90,642 records were found, of which 73,435 records contained a discharge status, including 57,440 patients discharged to home, 8,131 to acute care/rehab, 957 to law enforcement, 4,192 to skilled nursing facilities; 2,715 died (see Figure 1, page 62). Of these patients, 78 percent were men, on average 42.3 years of age, had an average hospital

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Length of stay of 5.8 days, an intensive care unit length of stay of 5.4 days, an average injury severity score of 10.5, and were on the ventilator for an average of 5.4 days. The top three mechanisms of injury accounting for almost two-thirds of all cases were motor vehicle related (34.8 percent), fall (28.7 percent), and struck by/against (as a result of contact made between one person and another person[s] or object[s]) (11.3 percent). See Figure 2, this page, for more information on alcohol-related mechanisms of injury.

Almost one in 10 records contained in the 2017 research dataset represented an injury that occurred while the patient was under the influence. Although these activities may not be criminal in nature, alcohol consumption continues to be a significant contributor to the injury burden seen in the U.S. Throughout the year, we highlight these data through brief reports that are published monthly in the Bulletin. The NTDB Annual Report can be found on the American College of Surgeons website as a PDF file at facs.org/ntdb. In addition, information is available on our website about how to obtain NTDB data for more detailed study. If you are interested in submitting your trauma center’s data, contact Melanie L. Neal, Manager, NTDB, at mneal@facs.org.

Acknowledgment
Statistical support for this column was provided by Ryan Murphy, Data Analyst, NTDB.
The American College of Surgeons (ACS) presented the 2019 Jacobson Innovation Award to Henry Buchwald, MD, PhD, FACS, FRCSEng(Hon), at a June 7 dinner held in his honor in Chicago, IL. ACS President Ronald V. Maier, MD, FACS, FRCSEd(Hon), FCSHK(Hon), FCCS(Hon), presented the award to Dr. Buchwald for his pioneering work and innovative research in metabolic and bariatric surgery.

The Jacobson Innovation Award honors living surgeons who have been innovators of a new development or technique in any field of surgery and is made possible through a gift from Julius H. Jacobson II, MD, FACS, and his wife Joan. Dr. Jacobson is a general vascular surgeon known for his trailblazing work in the development of microsurgery.

Dr. Buchwald was honored for his pioneering work and innovative research in metabolic and bariatric surgery, formerly considered a fringe field for obese patients and excluded from mainstream academic surgical practice. Dr. Buchwald helped transform bariatric surgery into a legitimate field of study and application, and today, bariatric surgery is performed in almost every academic medical center and community hospital in the U.S.

**Notable accomplishments**

While he was a laboratory resident early in his career, Dr. Buchwald discovered that the ileum is the primary site for the absorption of cholesterol and bile acids. Resultantly, he developed the Buchwald Procedure: the partial ileal bypass (PIB) operation, which bypasses part of the ileum to lower cholesterol levels. The PIB procedure was one of the first surgical techniques to treat a metabolic disease and remains the most potent therapy to lower plasma cholesterol levels.

Among Dr. Buchwald’s extensive research accomplishments is a landmark paper in circulation that led to the multi-institutional trial on the surgical management of hyperlipidemias: Program on the Surgical Control of the Hyperlipidemias, which received continuous funding from the National Institutes of Health (NIH) from 1973 to 1997. The trial proved the link between cholesterol and heart disease, demonstrating that lowering cholesterol can reduce heart disease and save lives.

Dr. Buchwald has received seven additional NIH grants to study a totally implantable infusion pump device. He founded a separate bioengineering laboratory to produce the first implantable
infusion pump, a novel peritoneovenous shunt, one-way flow catheters, and other devices. He later patented the infusion pump for widespread use in insulin delivery, continuous delivery of chemotherapy, and further applications. He holds 20 patents and was inducted into the Minnesota Inventors Hall of Fame in 1988.

The 53rd annual Surgical Forum at the 2002 ACS Clinical Congress was dedicated to Dr. Buchwald as “a true surgeon scientist who, through creativity and perseverance, has made seminal contributions to science and society” and who has mentored more than 65 surgical residents and trainees. He has received numerous awards and honors, including a tribute in the U.S. Senate Congressional Record in 1991. He has been elected to five presidencies of national and international professional societies.

View a list of all Jacobson Innovation Award Recipients at facs.org/about-acs/governance/acs-committees/honors-committee/jacobson-list. ♦
Donald D. Trunkey, MD, FACS, long considered one of the most influential trauma surgeons in the U.S., died May 1 in Post Falls, ID, after a protracted illness. Dr. Trunkey truly was a unique individual, in many ways a “free spirit” but grounded by lofty ideals and laudable principles.

Don was a large person and seemed larger than life. Don believed in leadership through service and he followed this tenet throughout his career and numerous leadership positions. He instilled confidence on first meeting and garnered the respect of his peers for his equanimity, moral code, and unwavering commitment to his ideals and doing what was right for trauma patients. His coy smile and warm, upbeat personality, along with his true love and appreciation for his fellow human, were always present and freely shared with old and new friends around the world. Don was a true friend and mentor for an entire generation of trauma surgeons.

**Early influences**

Dr. Trunkey was born June 23, 1937, in Oakesdale, WA. Growing up in farm country in eastern Washington State instilled in him the work ethic, persistence, and integrity needed to be the successful leader he eventually became. He graduated from Washington State University, Pullman, and earned his doctor of medicine degree from the University of Washington, Seattle, in 1963. Following medical training, he completed a rotating internship at the University of Oregon under the direction of J. Englebert Dunphy, MD, FACS, who inspired Dr. Trunkey to become a surgeon.

After his internship, Dr. Trunkey joined the U.S. Army and served in Bamberg, Germany, for two years. Upon his return to the U.S., Dr. Dunphy, who had moved to the University of California San Francisco (UCSF) as the chair of the department of surgery, recruited him to the UCSF resident training program. His residency rotations at the San Francisco General Hospital (SFGH) under the mentorship of F. William Blaisdell, MD, FACS, led to his interest in a career in trauma surgery.

After his residency, he spent a year at Parkland Memorial Hospital, Dallas, TX, involved in trauma research on cellular function in shock with G. Thomas Shires, MD, FACS, who would go on to be elected Chair of the Board of Regents of the American College of Surgeons (ACS) and ACS President; C. James Carrico, MD, FACS, who also went on to chair the Board of Regents and to serve as ACS President-Elect; and Peter C. Canizaro, MD, FACS, a renowned expert in trauma and shock.
Dr. Trunkey returned to SFGH in 1972 and was tapped to serve as chief of surgery in 1978. After serving in that position for eight years, he accepted the chair of surgery at Oregon Health & Science University, Portland, and was named the Mackenzie Professor and Chair, department of surgery, in 1986, a title he held for 15 years.

Advocate for trauma patients
Dr. Trunkey achieved national and international stature as a trauma surgeon as a result of his research, publications, and larger-than-life persona. However, Don had a chronic problem—he refused to accept the unacceptable. He was driven to improve the prevailing standard of care of the injured patient. And, to rectify the inadequacies and inefficiencies he found in trauma care, he became a change agent despite any existing resistance and potential personal repercussions. On his own strength of character and conviction, he led numerous paradigm shifts and improved the care of thousands of injured patients.

While at SFGH, he published a seminal study in 1979 comparing the disparity in preventable deaths from trauma in Southern California against the organized system of care provided at SFGH. His recognition of the need for consistent high-quality care in standard-driven trauma centers as regional resources for an overall systematic approach to trauma care led to today’s modern trauma centers and systems of care.

During his tenure on the ACS Committee on Trauma (COT), which he chaired from 1982 to 1986, Dr. Trunkey and a group of his contemporaries established the Advanced Trauma Life Support® (ATLS®) course, which has become the world-wide standard for the initial care of the injured patient.

In 1976, Dr. Trunkey led the COT’s efforts to publish Optimal Hospital Resources for the Care of the Seriously Injured, the first document aimed at defining and developing trauma centers and trauma systems. Later, he virtually single-handedly created the Trauma Center Verification process within the COT, a process that has been and continues to be used to confirm trauma center level of function and improve care and outcomes from trauma throughout the U.S.
Don and a group of international colleagues then created the Definitive Surgery for Trauma Care course, which focuses on operative care training following the initial resuscitation defined by ATLS. This course has been provided to thousands of surgeons around the world and is adaptable to low-resource settings.

Demonstrating a deep commitment to our wounded warriors and military medicine throughout his career, Dr. Trunkey was activated to serve in Desert Storm as Commander of the U.S. Army Hospital in Riyadh, Saudi Arabia. After his experiences in Operation Desert Storm and Desert Shield, he wrote a commentary in the March 1993 edition of Archives of Surgery, “Lessons Learned,” that called out the weaknesses in the military surgical readiness and urged a major restructuring of training and maintenance of competence in military medicine. His proposals are now encoded in federal legislation as an expectation for our wounded warriors. For these and so many other advances in trauma care, he has become known to many in the surgical community as the “father of modern trauma care systems.”

**An Icon in Surgery**

In appreciation for his outstanding leadership, the College honored him with the ACS Distinguished Service Award in 2005 and in 2018 as an “Icon in Surgery” ([facs.org/icons]). Among other recognitions from the College, Dr. Trunkey presented the ACS Scudder Oration on Trauma in 1989, and in 1995 received the National Safety Council Surgeons’ Award for Distinguished Service to Safety.
He was recognized for his lifelong career of advancing the care of the injured by his election to the presidency of the American Surgical Association, the Society of University Surgeons, and the American Association for the Surgery of Trauma, as well as a director of the American Board of Surgery.

Don was a great friend to me and to numerous other colleagues, a trusted confidant, and a lifelong mentor. He was always available, always willing to provide insight and advice, and to support my career and that of so many other beneficiaries of his willing guidance. A great personal honor was being given the Jane and Donald D. Trunkey Chair in Trauma at the University of Washington as chief of surgery at Harborview Medical Center, Seattle. An honor and a challenge for me is to always work and strive to make Harborview the highest quality trauma center possible, one worthy of his gift and his ideals.

At home, Don was recognizable as the one with a parrot habitually on his shoulder. But above all, Don’s highest priority was family. He was a dedicated father and husband for nearly 61 years to his lifelong love, Jane. Jane was the omnipresent support and sanity throughout Don’s far-flung career. Our love and prayers reach out to Jane in this time of great loss—one shared by the thousands he touched in so many ways. His tireless devotion to his high ideals and drive for the improvement in care of the injured will live on in the multitude of survivors of severe injury who have benefited from his impact on their care.

Dr. Trunkey and his wife, Jane, in 2006

Dr. Trunkey with Erwin Thal, MD, FACS, in a 2012 version of photos they posed for annually at the COT Dinner
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Operation Giving Back (OGB) is a program of the Division of Member Services at the American College of Surgeons (ACS). OGB’s mission is to “leverage the passion, skills, and humanitarian ethos of the surgical community to effectively meet the needs of the medically underserved.” Through a variety of activities, OGB provides opportunities for ACS members of all specialties to engage in humanitarian outreach internationally and domestically. This article highlights some of these initiatives and provides information on how to become involved.

OGB Volunteer Database
The OGB Volunteer Database provides a platform for individuals and organizations to partner with the OGB to engage in international humanitarian work. Volunteers have access to a database of opportunities from partner organizations, including nongovernmental organizations (NGOs), academic institutions, and hospitals around the world. The database contains dozens of active volunteer opportunities to explore, including an ongoing project in Iraq, a resident volunteer position in Tanzania this September, and a surgical mission trip to Honduras in May 2020. Opportunities exist across levels of training and specialties. To view listings or to register, go to facs.org/ogb/portal.

ACS-COSECSA collaborations
The ACS has partnered with the College of Surgeons of East, Central and Southern Africa (COSECSA) on a number of projects. Examples are as follows.

ACS-COSECSA Surgical Training Collaborative
In January 2019, the ACS-COSECSA Surgical Training Collaborative launched its inaugural hub in Hawassa, Ethiopia. A total of 13 participating U.S. academic institutions are deploying faculty to Hawassa on a monthly basis to provide training and support to local surgical residents and faculty. The goal of the consortium is to strengthen the surgical care system in Hawassa through research, quality, education, and service activities, and ultimately to establish a regional surgical training hub. If your institution is interested in being considered as a partner for a future hub, contact Sadie Bazur-Leidy at ogb@facs.org.

Annual COSECSA Examinations
Each year, COSECSA recruits surgeon volunteers to administer annual examinations to graduates at the organization’s December meeting. If you are interested in this opportunity, contact Ms. Bazur-Leidy at ogb@facs.org. Preferred specialties include general surgery, orthopaedic surgery, urology, pediatric surgery, otolaryngology, plastic surgery, and neurosurgery.

ACS-Puerto Rico Project
In the aftermath of Hurricane Maria on the island of Puerto Rico, the ACS sent a delegation of surgeons to determine how best to address the surgical needs of the population. After significant planning, partnership building, and local input, our first volunteer surgeon arrived in San Juan, PR, this spring. In collaboration with the Puerto Rico Department of Health, Hurricane MARI A, Inc., the United Clergy Task Force, and other local partners, this project is facilitating a consistent mobilization of volunteer surgeons to address a significant backlog of surgical cases. The patient population is specified as those who are uninsured or underserved, focusing on immigrants primarily from the...
Dominican Republic. If you are interested in contributing to this effort by spending a week or more on the island, contact Ms. Bazur-Leidy at ogb@facs.org.

**Health Career Collaborative**

Although African and Hispanic Americans are among the fastest growing segments of the population, they are underrepresented in the health care workforce at all occupation levels. The Health Career Collaborative (HCC) is a three-year pathway program for high school students from low-income and ethnic and racial minority communities. Program goals include increasing academic achievement, health literacy, and interest in health care careers for at-risk high school students. Medical students and faculty serve as volunteer program mentors and instructors. The program is initiated as a partnership between a medical school and a local, underserved high school. The HCC provides validated, web-accessible, easily reproducible curricula intended to minimize preparation time required by volunteers and increase potential for participation.

The HCC operates in 13 cities with involvement from ACS Fellows, with expansion sites regularly identified. For additional information or to become involved, go to https://healthcareercollaborative.com, or contact Liana Gefter, MD, Program Director, at lianagefter@gmail.com.

**Clinical Congress 2019**

Each year at Clinical Congress, OGB provides a variety of Didactic Courses, Panel Sessions, and meetings to discuss the global engagement initiatives of the ACS and to prepare residents and surgeons for careers in global surgery. A selection of offerings this October includes the following:

- **Global Health Competencies for Surgeons: Cognitive and System Skills (Didactic Course)**
  8:30 am–4:00 pm
  Saturday, October 26
  CME Credits: 6

- **PS112 Global Engagement (Panel Session)**
  11:30 am–1:00 pm
  Monday, October 28

- **Resident and Associate Society Global Surgery Working Group (meeting)**
  2:00–3:00 pm
  Monday, October 28
  RSVP at www.surveymonkey.com/r/TLMK839

Register for Clinical Congress 2019 and learn more about what will be offered at facs.org/clincon2019.

**Committee on Global Engagement**

The Committee on Global Engagement through OGB provides support for the development and implementation of initiatives through the following subcommittees: Domestic Engagement, International Engagement, Advocacy, and Education. The committee is accepting applications for informal subcommittee positions. To apply, send a curriculum vitae and an outline of your global health experience to Ms. Bazur-Leidy at ogb@facs.org.

For more information on OGB and how to become involved with volunteer efforts, contact Ms. Bazur-Leidy at ogb@facs.org or go to facs.org/ogb. ♦
Don’t miss out on the sessions you want to attend—even if they’re scheduled at the same time. Webcast sessions are available on any device anytime, anywhere. Maximize your learning opportunities and earn CME Credit, Self-Assessment Credit, and help meet your state content requirements when it’s convenient for you.

Choose one of the two webcast packages below:

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Choose 25 of the selected webcast sessions from Clinical Congress 2019.

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*Practicing Surgeons are eligible for CME Credit and Self-Assessment Credit.

**Practicing Surgeons Webcast Packages**
Webcasts provide AMA PRA Category 1 Credits™, Self-Assessment Credits, and Credits to Address Regulatory Mandates. Receive a CME Certificate documenting credits upon successful completion of viewing the webcast and completing the posttest.

**Resident Webcast Packages**
View webcasts on demand. Individualize your education. Receive a Certificate of Completion.
**Brandeis EMBA for Physicians offers scholarship for ACS Fellows**

The Brandeis Executive master of business administration (EMBA) for Physicians program is offering a 15 percent tuition scholarship for all American College of Surgeons (ACS) Fellows who apply to start the program in January 2020. For the last 15 years, Brandeis University, Waltham, MA, and the ACS have partnered to offer the one-week Leadership Program for Health Policy and Management. The EMBA for Physicians program was developed at the request of the physicians in that shorter program. An accredited 16-month hybrid program, the EMBA provides further opportunity for physicians to build their leadership and managerial toolbox with the goals of improving patient care experiences, clinical outcomes, and decision-making efficiency.

The application deadline for the 2020 EMBA Program is **October 1, 2019**.

For more information, go to [https://heller.brandeis.edu/physicians-emba/](https://heller.brandeis.edu/physicians-emba/) or contact Calla Mattox at hellerpemba@brandeis.edu or 781-736-3999. ♦

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**Get involved with JACS**

The *Journal of the American College of Surgeons* (*JACS*) offers multiple outlets for participation for members of the Resident and Associate Society of the American College of Surgeons (RAS-ACS). For example, the RAS-ACS hosts a quarterly discussion of an article in *JACS* on Twitter, and the conversation continues on Facebook. Previous discussions can be found at [journalacs.org/discussions](https://journalacs.org/discussions).

Be sure to like *JACS* on Twitter and Facebook (@JAmCollSurg) to stay updated on all *JACS* content.

In addition, the RAS-ACS and *JACS* have partnered to create a mentored review program in which mentees have an opportunity to review manuscripts for *JACS* and receive feedback from senior reviewers. Contact jacsedit@facs.org if you are interested in being a mentee or mentor. Be sure to include your institution as well as your top three areas of interest (for example, bariatric, colon/rectal, trauma surgery, and so on).

More *JACS* content is available at [journalacs.org](https://journalacs.org). ♦

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**Coming next month in *JACS* and online now**

**Patient satisfaction and pain control using an opioid-sparing postoperative pathway**

Alexander Hallway; Joceline Vu, MD; Jay Lee, MD; and colleagues report in the *Journal of the American College of Surgeons* (*JACS*) their findings that patients reported minimal or no opioid use after implementation of an opioid-sparing pathway while still reporting high satisfaction and pain control. These results demonstrate the effectiveness and acceptability of major reduction and even elimination of opioids following discharge after minor surgery.

This article and all other *JACS* content is available at [journalacs.org](https://journalacs.org). ♦
RAS-ACS announces inaugural Outstanding Mentor of the Year Award

Has someone inspired you to become involved in the American College of Surgeons (ACS) and been a surgical mentor to you? If so, and you are a Resident Member or Associate Fellow of the ACS, nominate him or her for the inaugural Resident and Associate Society (RAS-ACS) Outstanding Mentor of the Year Award. Nominations are due by August 12, 2019.

The RAS-ACS Outstanding Mentor of the Year Award was created to honor an exceptional ACS Fellow who has had a marked impact on the engagement of a Resident Member or Associate Fellow and has offered the support and encouragement necessary to build the strong foundation for a surgical career. Mentors from any surgical specialty are eligible for the award and encouraged to be nominated.

Nominees should be Fellows of the College, and nominators should be Resident Members or Associate Fellows. Each nominee may be nominated by more than one RAS member.

Nominations should be accompanied by the following materials:

- A nomination letter, not to exceed two pages single-spaced, supporting the nominee’s efforts to engage young surgeons in the ACS and the impact this experience had on the nominator. Examples of mentorship include intellectual, social, and moral support, as well as career development/advancement.

- Name, position, institution, and contact information of the nominee.

- Name, position, institution, and contact information of the nominator(s).

Submit your nominations at www.surveymonkey.com/r/RASMentorAward. For additional details or with questions, contact rasnews@facs.org.

Surgeon Well-Being

Surgeon well-being is vital for you and your patients. Use the physician well-being index to better understand your overall well-being and identify areas of risk.

facs.org/wellbeing
As a surgical resident, you are interested in pursuing educational and professional excellence, both as a surgeon and as a member of the surgical community. Associate Fellowship in the American College of Surgeons (ACS) provides you with access to the tools, resources, and opportunities you need along the way. This membership category is open only to surgeons devoted to practicing surgery according to the College’s professional and ethical standards, as stated in the Fellowship Pledge and the Statements on Principles—both available on the College’s website at facs.org.

**Time to apply for Associate Fellowship**
If you are moving from training into practice this year, apply for Associate Fellowship. The application requests basic information about your education and training, licensure, board certification, and hospital and academic affiliations—some of which already exists in your Resident Member record and will auto-populate within the application. The ACS will waive the Associate Fellow application fee for current Resident Members as well as requirements of documentation of training completion.

Once you become an Associate Fellow, your membership at that level will be limited to a period of six years to foster your progression to the Fellowship level. Therefore, Associate Fellows are encouraged to consider applying for full Fellowship once they are eligible.

**Application requirements**
For Domestic Fellowship, the requirements are as follows:

- Certification by an appropriate American Board of Medical Specialties Surgical Specialty Board, an American Osteopathic Surgical Specialty Board, or the Royal College of Surgeons in Canada
- One year of surgical practice after the completion of all formal training (including fellowships)
- Current appointment at a primary hospital

For International Fellowship applicants, the requirements are as follows:

- Certification by an appropriate American surgical specialty board or Canadian or international college of physicians and surgeons, or national surgical board from the applicant’s county of practice
- Three years of surgical practice after the completion of all formal training (including fellowships)
- Current appointment at a primary hospital

Submit an online application for Associate Fellowship at facs.org/associate. You will need your ACS members-only website log-in information to access the application. If you do not have your log-in information, contact the Member Services staff at 800-293-4029 or via e-mail at enroll@facs.org for assistance.

When your application has been processed, an e-mail notification will be sent to provide updated information about your membership status.

We look forward to your transition from Resident Member to Associate Fellow of the ACS.

Residents: Prepare to take your ACS membership to the next level
A LEGACY OF QUALITY IMPROVEMENT

QUALITY PROGRAMS of the AMERICAN COLLEGE OF SURGEONS

facs.org/quality-programs
Domestic and international chapters of the American College of Surgeons (ACS) met in the last several months to host a variety of activities, including annual meetings, skills competitions, advocacy days, and more. Following are highlights and photos from these programs.

**DOMESTIC CHAPTERS**

**Brooklyn-Long Island Chapter (BLIACS):** Annual Young Surgeons Dinner, June 4, Garden City, NY. Phillip R. Caropreso, MD, FACS, Second Vice-President of the ACS, delivered the keynote address about the importance of the ACS. Photo: Jeffrey P. Weiss, MD, FACS (left), then-Chapter President, and Dr. Caropreso.

**Connecticut Chapter (CTACS):** Connecticut Chapter Lobby Day, March 1, Hartford. Legislative issues highlighted included expanding coverage to bariatric surgery to all insured patients in Connecticut, increasing the state hospital tax, supporting a helmet law, and opposing a law that prohibits hospitals from charging activation fees.

Photo, from left, front row: Philip Corvo, MD, MA, FACS, Governor at-Large and Past-President; Shea Gregg, MD, FACS; Kathleen LaVorgna, MD, FACS, Past-President and Co-Chair, Legislative Committee, and Governor at-Large; and Chris Johnson, State Affairs Associate, ACS Division of Advocacy and Health Policy.

Back row: Alan Meinke, MD, FACS, Chapter President, and Scott Kurtzman, MD, FACS, Past Governor at-Large and Past-President.

Photo: Founders Competition winners, from left: Lindsey Zhang, MD, University of Chicago, third place; Timothy Daugherty, MD, MS, Southern Illinois University School of Medicine, second place; Ryan A. J. Campagna, MD, Northwestern University, first place; and presenter Daniel M. Chase, MD, FACS, Illinois Chapter President.

Louisiana Chapter: Lobby Day, May 22, Baton Rouge. Chapter members spoke with Lieutenant Gov. Billy Nungesser about his support for a bill to study the expansion of insurance access for bariatric surgery, and met with Speaker of the House Taylor Barras about supporting legislation to require Stop the Bleed® training and bleeding control kits in public schools. The chapter also partnered with the Louisiana Emergency Response Network to provide Stop the Bleed demonstrations in the capitol rotunda.

Photo, from left (all MD, FACS): Rebecca Schroll, Chapter Advocacy Chair; Juan Duchesne, Chapter President; Peter Lundberg; Tomas Jacome, State Committee on Trauma (COT) Chair; and Sharven Taghavi

Massachusetts Chapter (MCACS): Stop the Bleed training, March 26, Boston.

During the event check-in at Boston’s Run to Remember, which pays tribute to fallen law enforcement officers and first responders, the chapter sponsored a Stop the Bleed booth and demonstrations to raise awareness and provide resources to the participants and the general public about bleeding control. Educational outreach was spearheaded by George DeBusk, MD, FACS. Chapter Councilor (pictured), and Kathryn Hughes, MD, FACS, a member of the Chapter’s Advocacy Committee.


Photo: The Top Gun Surgical Skills Competition in action
**Oregon Chapter (ORACS):** Day at the Capitol, March 4, Salem. Chapter council members on the steps of the Rotunda between the House and Senate Chambers at the Oregon Capitol.

Photo, from left: Glen Levine, MD, FACS; Kristen Massimino, MD, FACS; Sandeep Kumar, MD, FACS; Mark Dodge, EMR, Marion County Medical Reserve Corps; Harvey Gail, MBA, Chapter Administrator; Christian Johnson, State Affairs Associate, ACS Division of Advocacy and Health Policy; Robert Goldman, MD, FACS; James Nealon, MD, PC, FACS; and Monte Stewart, MD, FACS

**West Virginia Chapter:** Annual Meeting, May 9–11, White Sulphur Springs. The chapter has been actively promoting medical student attendance and participation at its annual meeting, including a medical student simulation session to instruct students on basic suturing and knot-tying techniques, and exposure to advanced surgical simulation. A total of 40 medical students from the five medical campuses throughout the state participated in a three-hour simulation consisting of central line, laparoscopic robotic, open vascular, and endovascular simulation stations.

Photo: Megan Davis (left), a vascular resident at West Virginia University, Charleston, mentors Julie Poe, medical student, Marshall University, Huntington, at the open vascular simulation station sponsored by industry representatives from Getinge.

**New York Chapter (NY-ACS) and Brooklyn-Long Island Chapter (BLIACS):** Advocacy Day, April 30, Albany. With the support of Albany Medical Center, the chapters hosted a Stop the Bleed training session. As a result of the chapters’ advocacy efforts, the New York State Assembly and the New York State Senate proclaimed May as Stop the Bleed Month in New York.

Photo: Assemblyman Colin Schmitt (standing, front), sponsor of the Stop the Bleed proclamation, with members of the chapters.

**Utah Chapter:** Annual Meeting, May 10, Salt Lake City.

Photo: Winners of the Utah ACS Resident and Trainee Poster Competition included, from left: Liese Pruitt, MD, general surgery resident, University of Utah, Salt Lake City; Travis Bailey, MS, medical student, University of Utah School of Medicine; and Mark Taylor, MD, general surgery resident, University of Utah.
**International Chapters**

**Australia and New Zealand (ANZ) Chapter:** ANZ Chapter Annual Meeting. Royal Australasian College of Surgeons Annual Scientific Congress, May 8, Bangkok, Thailand. Ronald V. Maier, MD, FACS, FRCS(Ed)(Hon), FCSSHk(Hon), FCCS(Hon), ACS President, updated the chapter on the College’s focus and activities. Photo, from left: Nick Parrish, MD, ACS Resident International Exchange recipient; Jayme Locke, MD, FACS, ANZ Traveling Fellow; Dr. Maier; and Julian Smith, MB, MS, FACS, Chapter President and Governor

**Brazil Chapter:** 33rd Brazilian Congress of Surgery of the Brazilian College of Surgeons, May 1–4, Brasília. The Congress focused on the care of the surgical patient and quality in surgery. Photo (all MD, FACS): David B. Hoyt, ACS Executive Director (middle) between Savino Gasparini, ACS Governor, and Bruno Ottani, Chair, Organizing Committee, 33rd Brazilian Congress of Surgery of the Brazilian College of Surgeons

**Chile Chapter:** Annual Congress of the Chile Chapter, June 2–5, Viña del Mar. Photo, from left, standing (all MD, FACS): Augusto León, Director; Carlos Polanco, Chapter Secretary; Francisco Ruiz, Chair, Chile COT; Helmuth Schweizer, Chapter Treasurer; Raúl Berrios, Director; Miguel González, Scientific Coordinator. From left, seated (all MD, FACS): Víctor Bianchi, Second Vice-President; Hugo Núñez, Chapter Past-President; Felipe Catan, Chapter President; Juan Hepp, Governor; and Ricardo Espinoza, Chapter President-Elect
**India Chapter:** Basic Surgical Skills Workshop, March 1, New Delhi. The hands-on workshop included basic skills of suturing, knotting, mass closure of abdomen, bowel anastomosis, and vascular and tendon repair on animal tissues, conducted under the convenorship of Prof. Chintamani, MB, BS, FACS, ACS Governor.

**Japan Chapter:** Annual Meeting, April 19, Osaka. Dr. Maier attended the event and presented a lecture, Quality Improvement for Trauma: ACS COT Trauma Quality Improvement Program.

**United Arab Emirates (UAE) Chapter:** The UAE Chapter conducted ACS Fellowship applicant interviews in Abu Dhabi in May.

Photo: Safwan Taha, MD, FACS (left), ACS Governor, and Mohammad Azfar, MB, BS, FACS, Chapter President.
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I had the distinct honor of serving as the 2019 American College of Surgeons (ACS) Traveling Fellow to Japan. It was a tremendous professional opportunity to share ideas with my Japanese colleagues, which I anticipate will deepen the collaboration between surgeons in our two countries to advance treatment of low-lying rectal cancers and other complex pelvic floor pathology.

Cancer Institute Hospital of the Japanese Foundation for Cancer Research
It was cherry blossom season when I arrived in Tokyo, with the city covered in pink petals. I spent several remarkable days there, observing operations and sharing insights with surgeons and residents from the Cancer Institute Hospital of the Japanese Foundation for Cancer Research (CIH JFCR), the first and largest hospital in Japan to specialize in cancer care. Since it opened in 1934, the hospital has grown from 29 to more than 700 beds and is now the leading center for clinical and biological cancer research in Japan.

My host at CIH JFCR was Tsuyoshi Konishi, MD, PhD, associate professor of surgery at JFCR and a respected international expert in lateral lymph node dissection (LLND) for rectal cancer. LLND is a technique that is widely employed in the Japanese surgical community—and one that is much less familiar to Western colorectal surgeons. Western surgeons generally use chemoradiotherapy to treat cancer patients at high risk for lateral lymph node involvement. Japanese surgeons, in contrast, often approach low-lying rectal cancer by combining total mesorectal excision with LLND. A recent randomized controlled trial reported by Prof. Shin Fujita, MD, PhD, and colleagues highlighted the potential utility of this technique in a study that showed decreased local recurrence in the patients offered LLND, which led to my interest in this surgical technique.*

At CIH, I observed several complex low-lying rectal cancer total mesorectal excisions with LLND, which Dr. Konishi was kind enough to book back-to-back to match my itinerary. The procedure requires great technical finesse, a strong understanding of the lateral compartment anatomy, and a meticulous and patiently executed laparoscopic approach. I left Tokyo with great respect for the skill of Japanese surgeons, and Dr. Konishi in particular, who kindly shared an anatomical image with me (see top photo, page 85). I also left with a renewed appreciation for Japanese sushi, which Dr. Konishi and colleagues—Takashi Akiyoshi, MD, PhD; Tomohiro Yamaguchi, MD, PhD; and Hiromichi Ito, MD, FACS—found time to enjoy with me and my son, despite their busy surgical schedules.

Meeting of the Japan Surgical Society
My next stop was Osaka, where I attended the 119th Meeting of the Japan Surgical Society (JSS), which provided an amazing opportunity to attend presentations on international surgical advances and to share insights and perspectives with my Japanese hosts.

A personal high point was the opportunity to present from the

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podium the lessons learned by our colorectal surgery group at Massachusetts General Hospital, Boston, in the course of the rollout of a new Enhanced Recovery After Surgery (ERAS) pathway for patients. It is a controversial topic, and spirited debate ensued. Some attendees were shocked by the idea of a 24-hour, inpatient recovery following laparoscopic colectomy. The Japanese tend to recover patients in hospitals for much longer periods, in part because they do not have a system of rehabilitation facilities after surgery or visiting nurses. Many perspectives were shared, and the presentation served as an excellent example of the kind of intellectual cross-fertilization that the Traveling Fellowship is intended to promote. I also took the opportunity to present grand rounds on ERAS during my visits to Tokyo and Kyoto, and the experience was memorable and engaging on each occasion.

In Osaka, I had the opportunity to explore nearby temples, restaurants, and culture on a comprehensive itinerary arranged by the organizers of the meeting. Osaka has been known for centuries as the “kitchen of Japan,” and is known for kuidaore, meaning “ruin oneself by one’s extravagance in food.”

Kyoto University Hospital
I concluded my visit with four days in Kyoto, a beautiful city of haunting and majestic temples. While there, I had the privilege of visiting and observing operations at the Gastrointestinal Surgery Department of Kyoto University Hospital. My hosts were Prof. Yoshiharu Sakai, MD, FACS, and assistant professor Shigeo Hisamori, MD, FACS, who went out of their way to introduce me to their colleagues and to arrange for me to observe a series of masterful laparoscopic operations on difficult and complex cases.
Particularly impressive was a carefully executed D3 lymph node dissection, which junior associate professor Kenji Kawada, MD, performed on a patient with advanced sigmoid cancer, while associate professor Kazutaka Obama, MD, performed a simultaneous resection on a synchronous gastric cancer in the same patient. Colorectal surgeons in the West have been reembracing the idea of D3 dissection, relabeled as “complete mesocolic excision,” but Japanese surgeons remain world experts at properly performed and anatomically detailed lymph node harvests in various gastrointestinal node basins.

**Conclusion**

I had many memorable evenings in Japan, including a wonderful dinner of Japanese barbeque in Kyoto with Prof. Kyoichi Takaori, MD, PhD, FACS, president of the International Association of Surgeons, Gastroenterologists and Oncologists, and his remarkable wife Terue; and a delightful farewell dinner, hosted by Dr. Hisamori and his colleagues, Shigeru Tsunoda, MD, PhD; Riki Ganeko, MD; and Keiko Kasahara, MD.

I am deeply honored and grateful to each and every individual I met and am deeply humbled by the hospitality shown to me in this ancient and beautiful, yet very modern, country. I look forward to maintaining these friendships and professional relationships for years to come and to sharing among colleagues in the U.S. the surgical approaches, techniques, and perspectives I encountered on this trip.

Dr. Bordeianou and family exploring the tastes of Dotonbori Street, Osaka
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Calendar of events

*A Dates and locations subject to change. For more information on College events, visit facs.org/events or facs.org/member-services/chapters/meetings.

**AUGUST**

Tennessee Chapter  
August 8–11  
Chattanooga, TN  
Contact: Wanda McKnight, wanda@tnacs.org, tnacs.org

Georgia Society of the ACS  
August 16–18  
St. Simons Island, GA  
Contact: Kathryn Browning, gasacs@gmail.com, georgiaacs.org

XLV National Congress Advances in Surgery  
August 18–21  
Bogota, Colombia  
Contact: Sonia Babativa, info@ascoclcirugia.org, ascocirugia.org

India Chapter  
August 30–September 1  
New Delhi, India  
Contact: Prof. Chintamani, profchintamaniacs@gmail.com, http://acsindianchapter.com

**SEPTEMBER**

Turkey Chapter  
September 5–6  
Ankara, Turkey  
Contact: Congress Secretariat, office@buto-org.com

UAE Chapter  
September 12–13  
Dubai, UAE  
Contact: Prof. Safwan Taha, Safwan.Taha@mediclinic.ae, acs-uae2019.com

France Chapter  
September 12–13  
Dijon, France  
Contact: Dr. Olivier Jean-Yves Joseph Monneuse, oliver.monneuse@chu-lyon.fr

Jordan Chapter  
September 12–13  
Amman, Jordan  
Contact: Dr. Majdi Al Soudi, alsoudi@gmail.com, http://acsjordan.com

Kansas Chapter  
September 13–14  
Lenexa, KS  
Contact: Denise Lantz, dlantz@kmsonline.org, kansaschapteracs.org

New Mexico Chapter  
September 13–14  
Albuquerque, NM  
Contact: Nallely Gomez, ngomez@nmms.org

Arizona Chapter  
September 21–22  
Scottsdale, AZ  
Contact: Joni Bowers, joni@azmed.org, azacs.org

Kentucky Chapter  
September 27  
Louisville, KY  
Contact: Linda Silvestri, lsliv2@uky.edu, kentuckychapter.facs.org

**NEVADA CHAPTER**

UAE Chapter  
September 28  
Las Vegas, NV  
Contact: Camille Spenner, camillespenner@gmail.com, nevadaacs.org

**OCTOBER**

Minnesota Surgical Society  
October 4–5  
Minneapolis, MN  
Contact: Janna Pecquet, janna@mnsurgicalsociety.org, www.mnsurgicalsociety.org

Argentina Chapter  
October 14–17  
Buenos Aires, Argentina  
Contact: Clara Mojica, capitulo@aac.org.ar

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October 4–8  
Chicago, IL

2021  
October 24–28  
Washington, DC
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