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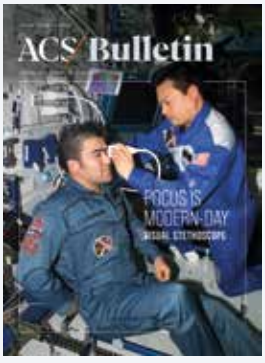

Credit: NASA

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Advancing Surgical Care in Underserved and Rural Communities

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THE ACS STRIVES to exemplify our motto, "To Heal All with Skill and Trust." Because access to surgical care remains uneven across the US, the ACS has developed programs, courses, and advocacy efforts to help surgical teams close gaps in care for underserved and rural communities.

Updated RTTDC

In 2003, the ACS launched the Rural Trauma Team Development Course (RTTDC), designed to help healthcare teams deliver high-quality care in US rural communities. Over the past 2 decades, the RTTDC has helped hundreds of teams improve their responses to low-volume, high-acuity trauma.

This month, we are launching the fifth edition, with an important update to the name: the Resource-Variable Trauma Team Development Course. The change signifies our understanding that the course's frameworks and skills apply far beyond just rural areas and are appropriate for any resource-limited environment. Built on the expertise of ACS-affiliated surgeons, the course is now tailored for global and humanitarian health contexts, austere environments, military deployed settings, under-resourced institutions, and rural US hospitals.

Prehospital Blood Access

The ACS also advances clinical practice in underserved and rural areas by advocating for universal access to blood products for emergency medical services (EMS) nationwide.

Blood access in prehospital care has the potential to save more than 10,000 lives per year. Patients in underserved and rural areas, who often face longer transport times, are in greatest need.

With the leadership of **Jeffrey D. Kerby**, MD, PhD, FACS, immediate past Chair of the ACS Committee on Trauma (COT) and current ACS Medical Director, Trauma Education, the ACS has promoted broader access to blood products in patients with hemorrhagic shock.

This has included ACS participation in the Prehospital Blood Transfusion Coalition (PBTC), which has persuaded nearly all US states to permit paramedics to initiate transfusions in the field. With the PBTC's encouragement, whole blood programs within ground EMS agencies now extend nationwide, from major urban centers to small, rural communities.

The ACS continues to engage. COT member **Peter E. Fischer**, MD, MS, NRP, FACS, represents the ACS on the PBTC board of directors. The ACS recently

cosponsored a PBTC meeting that brought 125 leaders to our Washington, DC, office to discuss funding strategies for prehospital blood access, with a focus on addressing rural disparities.

EMS for Underserved and Rural Children

Ensuring high-quality care for children is another ACS priority.

At Clinical Congress 2025, **Mary E. Fallat**, MD, FACS, FAAP, a pediatric surgeon and past First Vice-President of the ACS, delivered a well-received Scudder Oration on Trauma on trauma and burn care for US children. She expressed that children, who are 22% of the US population, should receive care equal in quality to that of adults. Yet most children who need trauma or burn care are in underserved areas where hospitals may see fewer than 10 pediatric patients a day.

Because providing this care is a serious challenge, the ACS has advocated for advancing pediatric emergency care nationwide. In late 2024, we reached a milestone with the passage of the Emergency Medical Services for Children (EMSC) Reauthorization Act. The EMSC Program provides grants to states for improvements to pediatric emergency response and is the only federal program so engaged. The reauthorization extended program funding for 5 years.

While the EMSC Program faced potential elimination in the FY2026 federal budget proposal, Congress acted to save it. The ACS supported that decision and will continue to advocate for children, particularly those with limited access to high-quality care.

The ACS has also worked closely with the federally funded EMSC Innovation and Improvement Center to advance pediatric readiness in ACS-verified trauma centers.

Offerings for Rural Surgeons

The ACS also offers programs specifically tailored to rural surgery.

Newly released Commission on Cancer accreditation standards for rural hospitals are helping advance care. Additional grant-funded initiatives are redesigning quality measures to better reflect geographic, social, and biologic drivers of inequity in surgical oncology.

The COT is developing Level IV trauma center standards specific to rural hospitals. An additional Rural Trauma Program is in development; we will share further details later this year.

Finally, I recommend "The Rewards and Frustrations of a Rural Surgery Practice," a webinar featuring **Michael D. Sarap**, MD, FACS, and **Alisha D. Reiss**, MD, FACS, a member of the ACS Board of Governors. Both offer valuable insights from their lived experiences.

Rural surgeons are strongly represented among ACS leaders. Our immediate Past President, **Beth H. Sutton**, MD, FACS, is a private practice general surgeon from Wichita Falls, Texas, and a strong advocate for rural surgeons. Our present leadership also includes Regent **David J. Welsh**, MD, MBA, FACS, a private practice general surgeon in Batesville, Indiana; Regent **Gary L. Timmerman**, MD, FACS, who is chair of surgery at the University of South Dakota in Sioux Falls; and Second Vice-President-Elect **Robert P. Sticca**, MD, FACS, an emeritus professor at the University of North Dakota in Grand Forks who helped establish and lead the only surgical residency program in that state. All these leaders have deep experience in rural surgery, and all are contributing to an effort to strategically align ACS rural surgery initiatives for maximal impact.

The ACS is committed to bringing higher-quality care to all surgical patients by supporting all surgeons, no matter their geographical setting or resource access. If there is more the ACS can do to help you, please let us know.

Join a Committee

We are committed to an open and inclusive application process to serve on ACS committees. Importantly, we welcome the voices of surgeons from all specialties, practice configurations, and locations. Learn more and apply by June 5 at *facs.org/committees*.

Register for Clinical Congress 2026

Clinical Congress is a great opportunity for all surgeons to learn and connect with colleagues and experts. Each year, we look forward to sessions on surgery across diverse environments and patient needs, plus events for surgeons across specialties, career stages, and practice settings. Register now at *facs.org/clincon2026*.

Educational Courses for Residents

Registration is also open for our popular ACS Residents as Teachers and Leaders course June 10–13 in Durham, North Carolina. Additionally, our Residency Readiness Course for medical school graduates entering internship will be held from June 15 to 17 at the ACS Headquarters in Chicago, Illinois. Please inform any future surgical residents you know about these opportunities. Information and registration are available on *facs.org*.

Dr. Patricia Turner *is the Executive Director & CEO of the American College of Surgeons. Contact her at* executivedirector@facs.org.

Real-Time Ultrasound Imaging
Enhances High-Stakes Surgical Decisions

Tony Peregrin

Frequently described in medical literature as the "visual stethoscope," point-of-care ultrasound (POCUS) continues to redefine bedside care by empowering surgeons to make high-stakes decisions quickly and safely—whether in a busy trauma bay or in remote environments, including space-based missions.[1]

WHILE THE TRADITIONAL stethoscope relies on the evaluation of sound, POCUS provides real-time imaging within seconds, allowing clinicians an enhanced ability to assess the heart, lungs, and abdominal organs. Although this technology is typically employed in emergency and critical care settings, POCUS is shifting from a frontline emergency tool to a standard, noninvasive diagnostic device used in daily practice.

Specifically, POCUS—which augments clinical expertise rather than replacing it—can help guide critical procedures related to trauma assessment, vascular access planning, preoperative evaluation, and more.

The principles of ultrasound were first identified in the 1790s by Italian physiologist Lazzaro Spallanzani, who studied how bats use inaudible, high-frequency sounds to navigate in the darkness.[2] His research was the basis for what would later become diagnostic ultrasound technology.

Ultrasounds were first used for medical purposes in the 1940s to help detect brain tumors. At that time, the machinery was inconveniently large, and patients had to be submerged in water where ultrasound waves move more quickly. By the 1990s, enhancements to this technology resulted in a portable ultrasound probe that allowed for rapid assessment of patients at the bedside rather than in a bathtub.[3]

By the early 2000s, widespread use of POCUS to guide central venous access (CVA) began to emerge, establishing this technique as one of the original and fundamental applications for POCUS, along with the Focused Assessment with Sonography for Trauma (FAST) exam.

"POCUS was built out of the need to evaluate patients in real time for specific procedures, most notably, the placement of central line access into a vein or artery," said Luis E. Llerena, MD, FACS, medical director of the University of South Florida (USF) Health Center for Advanced Medical Learning and Simulation (CAMLS) in Tampa. "The old way of doing it was by feel. We used anatomy because, as surgeons, we know anatomy very well—that's our fallback."

Today, POCUS-guided CVA (sometimes referred to as central venous catheter [CVC]) is the standard of care

Simulation-based training in ultrasound-guided central line placement helps ensure patient safety.

for these patients. In 2001, the Agency for Healthcare Research and Quality recommended ultrasound-guided CVC placement as a key practice, and in 2011, the ACS released the "Revised Statement on Recommendations for Use of Real-Time Ultrasound Guidance for Placement of Central Venous Catheters," noting that "Several prospective, randomized trials, as well as two meta-analyses, document that the use of ultrasound has been associated with a reduction in complication rate and an improved first-pass success when placing catheters in the internal jugular vein and the subclavian vein."[4]

"No one in 2026 should be putting in an essential line without an ultrasound," asserted Dr. Llerena, surgical director of the ACS Accredited Education Institute at USF.

With the real-time imaging provided by POCUS, anatomical variations may be detected, and complications such as arterial puncture, hematoma, and pneumothorax may be significantly reduced.

Despite these benefits, incorporating POCUS into daily bedside care continues to meet some resistance from surgeons and other healthcare providers.

"In the beginning, there was a lot of pushback, including my own resistance," admitted Dr. Llerena, a trauma surgeon and surgeon educator overseeing a series of critical care courses at CAMLS.

During an especially hectic night in the ICU, a critically ill patient required central line placement. Although ultrasound was readily available, Dr. Llerena initially hesitated to use it despite teaching POCUS. The ultrasound immediately provided more than just vessel visualization; it revealed vessel compression and movement characteristics that exposed an unsuspected blood clot. Using a traditional technique would likely have located the vessel, but without real-time imaging, the clot could have been missed, potentially causing unnecessary pain and complications for the patient.

POCUS in the Trauma Bay and Beyond

POCUS started to gain momentum as a diagnostic tool in the emergency department in the 1990s, when the diagnostic peritoneal lavage procedure was superseded by

Researchers found that approximately 54% to more than 90% of surgeons and emergency physicians use POCUS.

the FAST exam, which was introduced and adopted to quickly identify hemodynamically unstable trauma patients.

In 1997, the FAST exam was incorporated into ACS Advanced Trauma Life Support® guidelines—a key milestone in caring for the injured patient because it marked a shift from invasive, time-consuming assessments to a swift, noninvasive bedside approach. In 2004, Extended FAST (commonly known as eFAST) was developed, which features thoracic imaging and helps clinicians identify free fluid or air in the chest, abdomen, or around the heart.

"No one should be resuscitating a patient in the trauma department or in the ICU without quickly going to your ultrasound to see what's going on," said Dr. Llerena. "POCUS causes no radiation damage, so it is a process that is repeatable. And the images can quickly be exported to send to other medical experts."

In addition to assessing acute trauma cases, POCUS can be used in the emergency department to identify a variety of conditions, including kidney stones, appendicitis, gallstones, bowel obstructions, gout, and rheumatoid arthritis.

Perhaps most notably, these "grab-and-go" POCUS devices (as they are sometimes referred to in the mainstream media) are used in one of the most critical, high-stakes presentations in the emergency department—cardiac.[5] This technology aids clinicians in detecting serious medical conditions such as tamponade and ventricular thrombus, ultimately optimizing emergency resuscitation efforts.

"Someone described the ultrasound as the modern-day equivalent of the stethoscope, and I think that is an accurate statement," said Dr. Llerena, noting that while the stethoscope has functioned as a bedside cardiac and pulmonary assessment tool for more than 2 centuries, its effectiveness is contingent on the clinician's interpretation of auditory data. POCUS, on the other hand, provides visuals of cardiac function in real time. When used in tandem, both tools can help optimize diagnostic precision.

"Where you used to get a stethoscope as a gift from your family for getting into medical school—now I could see them getting you a commercially available ultrasound device," added Dr. Llerena.

A cross-sectional study of US Veterans Affairs medical centers published in 2025 examined POCUS usage in five clinical domains, including surgery, hospital medicine, anesthesiology, emergency medicine, and critical care.[6]

Researchers found that approximately 54% to more than 90% of surgeons and emergency physicians use POCUS, depending on the specific specialty, setting (academic versus community), and geographical region. The most common application was in trauma bays, specifically the FAST exam, which is used in 73%–89% of cases, according to survey.

The study authors noted that "past studies have focused on POCUS use in individual specialties, primarily emergency medicine and critical care, but comparative studies of different specialties are needed to guide investment" in POCUS implementation.

Barriers to POCUS implementation, according to survey respondents, include lack of training (53%–80%), access to ultrasound equipment (25%–57%), and POCUS infrastructure (36%–65%).

"It's an expectation that all our surgical residents are exposed to surgeon-performed ultrasound in their training and that many will take it into their practice."

Dr. Scott Dulchavsky

Access related video content online.

NASA-Inspired Training Drives POCUS Education on Earth

In 2006, the Wayne State University School of Medicine (WSUSOM) in Detroit, Michigan, became a pioneer in medical education by integrating an ultrasound curriculum into its basic science courses and clinical clerkships, positioning it as one of the first US institutions to adopt this training.[7]

The program featured six organ-system-based sessions covering ultrasound physics, anatomy, and procedural applications. The inaugural class achieved a mean score of 87% in technical performance. Student engagement scores also were high, with 91% supporting longitudinal integration across 4 years.

The WSUSOM ultrasound curriculum was informed by educational training developed by the ACS and National Aeronautics and Space Administration (NASA) protocols. Scott Dulchavsky, MD, PhD, FACS, a principal investigator for NASA and the International Space Station, was funded by the agency to lead a team from 1998 to 2014 that trained astronauts on how to use POCUS to obtain diagnostic-quality medical images that could be transmitted via satellite to radiologists on earth for medical evaluation.[8]

"While we developed this program for astronaut and cosmonaut crews to be used off the planet, we thought it'd be very applicable to bring back home to Earth in one of the largest medical schools in the US," explained Dr. Dulchavsky, the Roy D. McClure Chair of Surgery and surgeon-in-chief of Henry Ford Health in Detroit, Michigan. "When we were originally doing this, it was quite novel, and in fact, Wayne State actually had the program in the recruitment brochure. But now, you're at the point of being left behind if you don't offer ultrasound training. It's an expectation that all our surgical residents are exposed to surgeon-performed ultrasound in their training and that many will take it into their practice."

A survey of nearly 200 accredited US medical schools in 2001 revealed that 72.6% of respondents had an integrated ultrasound curriculum; that number has likely increased due to increased portability of handheld devices, reduced costs, user-friendly artificial intelligence (AI)-assisted systems, and increased student demand.[9] In fact, today some medical schools even provide a handheld ultrasound device to every first-year medical student.

"This kind of training is becoming standard at many universities due to the many demonstrated benefits—cost savings, decreased complications, improved patient comfort, and the fact that it allows the resident to feel more confident in what they're doing," said Dr. Llerena.

At USF, administrators incorporate POCUS training into its medical and physician assistant curricula via its CAMLS program, which emphasizes a hands-on approach to ultrasound training.

"Ultrasound is used from the minute the students arrive at USF. During the same course where they're looking at anatomical cadavers, they also

rotate through different stations where they look at imaging and scans, and then they rotate through another station where they're doing actual ultrasound training," added Dr. Llerena.

While POCUS skills are not specifically outlined as an Accreditation Council for Graduate Medical Education (ACGME) milestone for general surgery residents, this skill set is generally required within the broader framework of procedural and critical care competence. For other specialties, such as emergency medicine residents, ACGME mandates a minimum of 150 POCUS examinations in order to fulfill residency requirements.[10]

Space Station Tech Boosts ER Care

While Dr. Dulchavsky's collaboration with NASA played a role in shaping the educational framework of POCUS, his work with astronauts has had other terrestrial applications as well. Specifically, his team developed techniques for crew members aboard the International Space Station to use POCUS to check for thoracic issues such as pneumothorax.

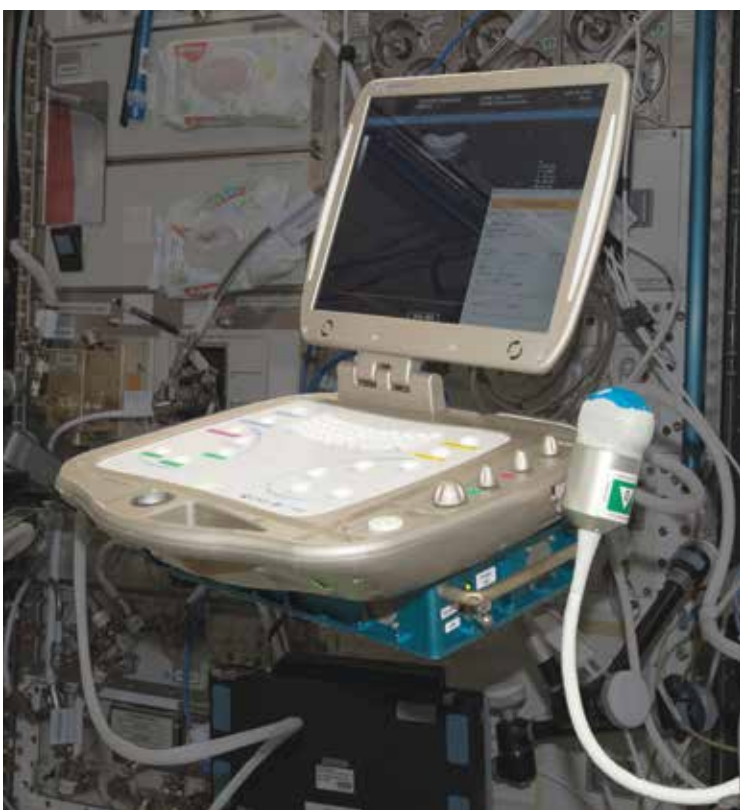
"One of the challenges we had early on was how to diagnose a collapsed lung because we worry about that when you're getting in and out of a spacesuit—you get depressurized and that's a problem," said Dr. Dulchavsky. "Because it's loud in space, stethoscopes don't work well, and because the crew officer might be a geophysicist and not a physician, we investigated using ultrasound to diagnose a lung collapse, an approach that was eventually confirmed by a large clinical study."

Researchers for this study, published in 2001, examined retrospective data for a 3-year period at a Level I trauma center and found that POCUS outperformed supine chest x-ray in finding pneumothorax, whether used by a fellowship-trained provider or general practitioner.[11]

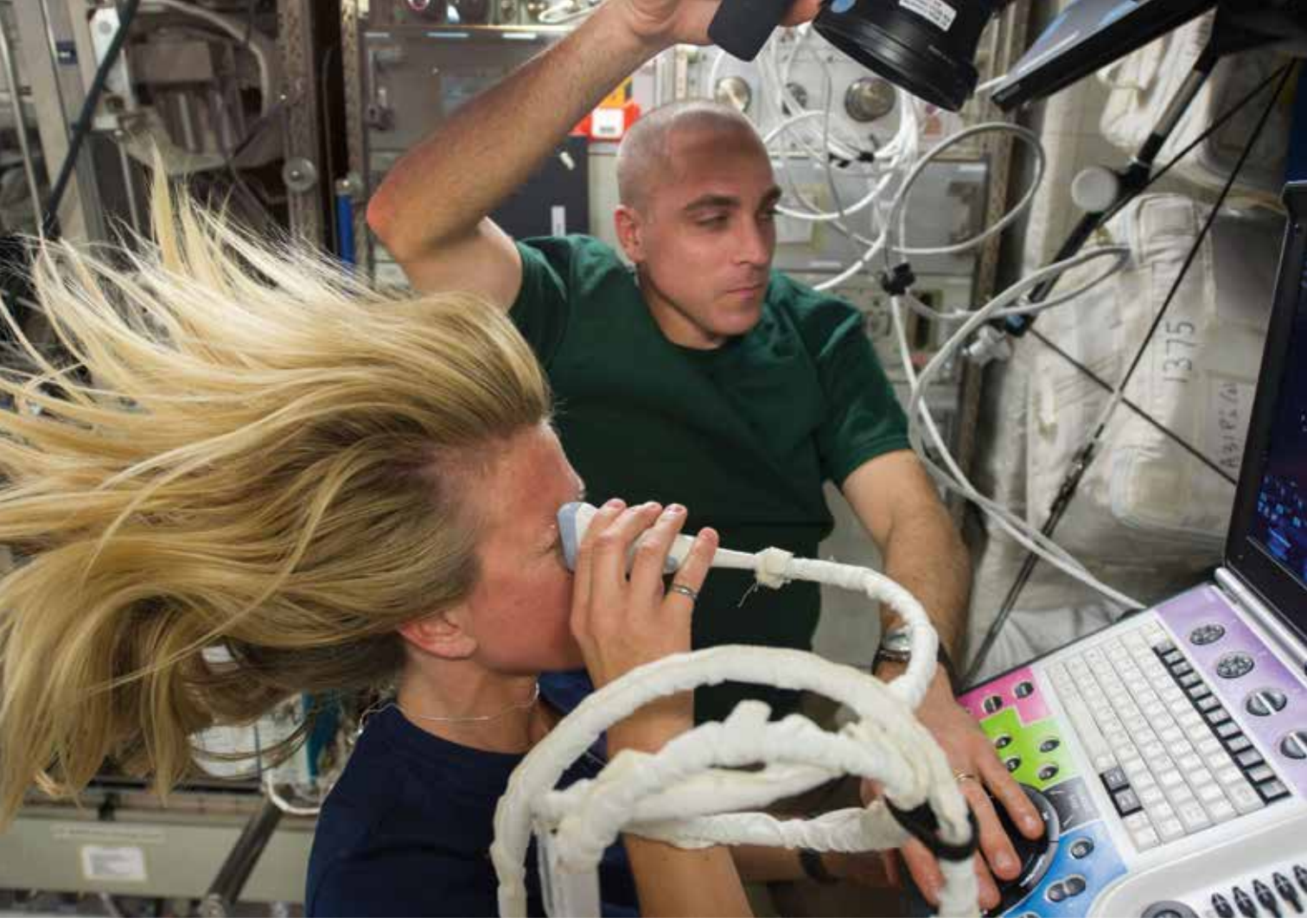
"So, if you're in an ER anywhere in the US, more likely than not, somebody is going to a put a probe on your chest to see whether your lung is collapsed—and that came from NASA," said Dr. Dulchavsky. "We did the same thing with musculoskeletal care and looking at intracranial pressure. These assessments would normally entail using a lot of devices and expenses here on planet Earth—but you can do all of that with POCUS."

AI Enhances Clinical Decision-Making, Patient Engagement

Probe placement and image optimization can now be augmented by built-in AI guidance systems that provide users with real-time prompts for correctly positioning the device. For residents and trainees, this capability—combined with AI overlays that provide auto-labeling of anatomical features—



This handheld POCUS machine enables real-time cardiovascular monitoring on the International Space Station. *(Credit: NASA)*



Portable ultrasound technology allows for precise imaging of the human body in a microgravity setting. *(Credit: NASA)*

delivers immediate feedback that accelerates learning and enhances user confidence levels.

"We work with ultrasound mannequins that allow learners to practice POCUS-specific maneuvers," said Dr. Llerena. "There is a monitor beside the student that shows them where their hand is, with correcting capabilities in real time. At the same time, it's telling you where to move your arm, almost like a golf swing simulator."

Both AI POCUS simulators and AI-enabled golf swing simulators provide data-driven coaching.

A golf simulator displays information related to club path, face angle, and swing speed immediately after a shot, while a POCUS simulator provides instant feedback on probe positioning, angle, and image acquisition.

"When we first started working with the astronaut crews, it was interesting because these were not medical people; it would be a fighter pilot, geophysicist, engineer of some variety," said Dr. Dulchavsky. "We would almost have to devise our own nomenclature for how to get the crew to appropriately place the probe to obtain the target image. And, so, we came up with some clever ways to do that, and it became part of what was incorporated into the early ACS resident ultrasound courses. Today, with AI, the devices have that capability built into them. They can be your bedside assistant telling you to push the device a little to the right."

In addition to providing optimal probe positioning, AI-enhanced POCUS uses data acquired from deep learning algorithms to automatically adjust settings that improve clarity, reduce image "noise," and improve tissue boundary visualization.

"This is where the real magic of AI comes in," explained Dr. Dulchavsky. "AI-powered POCUS looks at a bank of millions of images and makes an incredibly good first guess. Much like the EKGs that spit out a presumptive diagnosis, these devices can do the same thing."

AI-enabled POCUS can examine patterns and offer suggested findings such as "left ventricular hypertrophy," a diagnosis that would need to be confirmed by a trained clinician.

"The black doctor's bag of the future will have an ultrasound probe in it rather than a stethoscope,"

> "The black doctor's bag of the future will have an ultrasound probe in it rather than a stethoscope."
>
> Dr. Scott Dulchavsky

Dr. Dulchavsky said. "I can tell you that 100% of my residents are completely comfortable with an ultrasound probe in their hand, much like I was decades ago with a stethoscope. Our surgeon's bellwether has always been patient focused, and if we can use POCUS to get critical information, we can make faster, more accurate decisions at the bedside."

While the stethoscope continues to be an iconic tool that fosters physician-patient relationships through its hands-on applications, POCUS also can support a personal and collaborative exchange with a patient through its real-time "point-and-display" capabilities.

"Ultimately, I need to figure out what is going on with the patient," added Dr. Llerena. "If I have access to labs, x-rays, POCUS—all of these tools that help with my diagnosis and help get the patient better—why wouldn't I take advantage of all of it?"

Tony Peregrin *is the Managing Editor of Special Projects in the ACS Division of Integrated Communications in Chicago, IL.*

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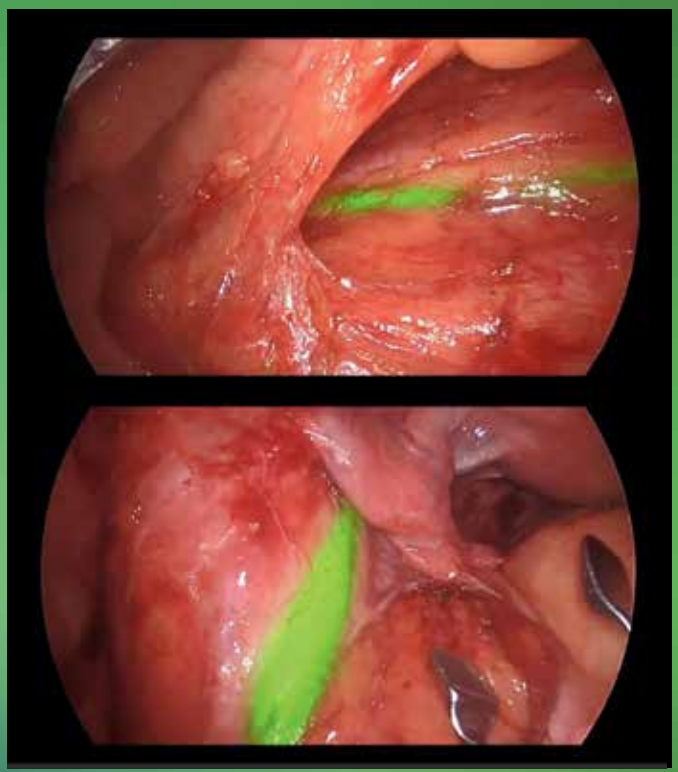
Fluorescence-Guided Surgery May Soon Extend Beyond Oncology

M. Sophia Newman, MPH

Improving visualization is key to enhancing surgical precision and optimizing patient outcomes.



The tissue of the colon is fluoresced with indocyanine green for perfusion assessment. *(Credit: Dr. Steven Wexner)*

FLUORESCENCE-GUIDED SURGERY (FGS) is increasingly used to address pathology while preserving healthy tissue, and emerging technologies are widening potential applications of FGS across surgical specialties.

Fluorescence in Surgery

Scientists have described fluorescence, the emission of light after absorption of radiation, dating back to the mid-16th century. Since the 1940s, this phenomenon has been put to a range of scientific uses, from immunofluorescence to flow cytometry to fluorescence in situ hybridization. Many of these technologies have advanced cellular biology, immunology, and clinical care, particularly in oncology.

In contrast, fluorescence in the OR is relatively straightforward. It involves applying a fluorescent agent (or fluorophore) to tissue during surgery to enhance visualization of structures of interest in real time. Fluorophores can perfuse through tissue or cause specific tissue types to glow, enhancing assessment, excision, and/or reconstruction.

Although the US Food and Drug Administration (FDA) issued the first approval for a fluorescent agent, indocyanine green (ICG), in 1959, surgeons only began routinely using FGS around 2005, after imaging systems emerged to facilitate ICG use. Since then, numerous agents have been developed.[1] The US FGS market is now valued at approximately $100 million.[2] But use remains limited relative to its potential applications.

Approximately 60% of all FGS usage is oncologic,[1] and most peer-reviewed studies on FGS indexed in PubMed focus on cancer, even though FGS use is possible for a range of indications beyond biopsy and resection, including flap creation, burn assessment, aspects of organ transplant, and more. The reasons for the focus on cancer are historical, biological, and financial—but as laparoscopic and robotic-assisted surgery continue to expand, the opportunity to add FGS to other procedures is growing rapidly.

With the investigation of one new, broadly applicable fluorophore, the options for FGS use may expand even further.

The excitement of investigating the novel fluorescent agent rizedisben lies in its broad use cases.

New Way to Visualize Nerves

For Samuel Gold, MD, a urologist completing a fellowship in urologic oncology at Memorial Sloan Kettering Cancer Center in New York, New York, the excitement of investigating the novel fluorescent agent rizedisben lies in its broad use cases.

Dr. Gold and colleagues published a phase I, nonrandomized clinical trial of rizedisben in *JAMA Surgery* in July 2025.[3] His team administered rizedisben to 38 patients undergoing robotic-assisted laparoscopic radical prostatectomy, aiming to establish both safety and an effective dosage. The results revealed effective use at a range of dosages with few adverse events.

In some ways, the study reflects dominant patterns in FGS: It used a fluorescent product in an oncologic procedure. But Dr. Gold is enthusiastic about rizedisben because the fluorophore appears to be one of the first that can illuminate nerve tissue specifically.

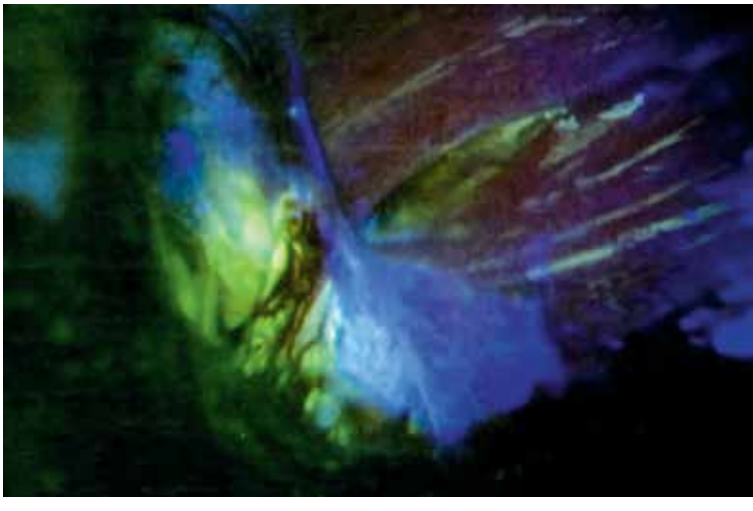
"I've always been fascinated by how advancements in technology and the subsequent guidelines that might police or embrace those advancements affect the care that's delivered and the way that patients can access that care," he explained. "The work that I was doing and continue to do with rizedisben is not just about how we can create a clinical trial protocol to make sure that we are testing efficacy. It's also: What's next? How do we make a case for why this is important on a larger scale?"

In the case of rizedisben, the answer is simple. "It's not engineered to be specific to cancer," Dr. Gold said.

Instead, rizedisben may enable visualization of nearly any nerve in the body and could be used in any surgery in which locating a nerve and/or avoiding nerve injury is important. "It's ubiquitous," Dr. Gold said.

"There are profound clinical and quality-of-life implications to enhancing nerve tissue visualization in surgery, and we are working to explore these in our ongoing efforts," he added.

If rizedisben reaches the market, its nonspecific nature may position it similarly to ICG, the most common surgical fluorophore. The widespread use



(*Left*) The obturator nerve is fluoresced with rizedisben under blue light. (*Right*) The periprostatic nerves are fluoresced with rizedisben under blue light. *(Credit: Dr. Samuel Gold/ Memorial Sloan Kettering Cancer Center)*

Selected Agents Used for Fluorescence-Guided Surgery

FLUOROPHORE(S)	PURPOSE
Indocyanine green	Perfusion/leakage assessment
Fluorescein sodium and 5-Aminolevulinic acid	Identifying high-grade gliomas during neurological surgery
Methylene blue	Illuminating tumor, parathyroid, ureters, and sentinel node tissues; perfusion assessment
IRDye 800DX conjugate and IRDye 700DX conjugate	Conjugation to specific targeting molecules found in tumor or other tissue
Pafolacianine (Cytalux®)	Targeting and illuminating folate receptors in lung and ovarian cancers

of ICG also is attributable to its ability to fluoresce tissue (although not nerve tissue) throughout the body, and its applicability to numerous surgical tasks.

Leakage and Perfusion

Use cases for ICG are somewhat typified by the clinical practice of Steven D. Wexner, MD, FACS, physician executive director and system chief of colorectal surgery for MedStar Health in Washington, DC. His insights also help clarify why FGS is predominantly used in cancer procedures, even though it could aid many other types of surgical care.

Dr. Wexner first used FGS approximately 25 years ago, around the time it became widely available. He explained that a fellow surgeon "brought it in for me to use it on a J-pouch, and I was very impressed by how it basically saved this patient from a permanent ileostomy."

He rapidly embraced the method and soon became the lead North American investigator for a trial with NOVADAQ Technologies Inc., a now-defunct company then developing new fluorophores. He served as the chief medical officer until its acquisition by Stryker Corporation in 2017 and also has consulted widely with other companies.

As a disclosure of conflicts of interest, he noted consulting roles with Arthrex and Activ Surgical. Dr. Wexner also is the current president of the North American chapter of the International Society for Fluorescence Guided Surgery (ISFGS), through which he has taught surgeons worldwide about FGS.

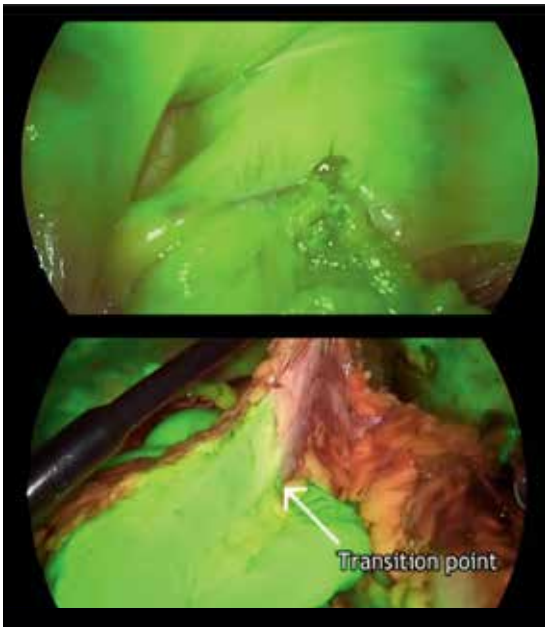
Although uncommonly well-versed in multiple approaches to FGS, Dr. Wexner mostly uses ICG on his own surgical cases. "I use it routinely in clinical practice for high-risk anastomosis," he said.

Dr. Wexner emphasized its utility in high-risk colorectal cases, particularly left-sided anastomoses.[4,5] Although he typically completes surgeries creating right-sided anastomoses without fluorescence, left-sided anastomoses are another matter. In those cases, even when anastomoses have passed visual inspection, air leak tests, and other assessments, "I want something else to tell me it's going to be okay. In fact, if I had three more ways to tell me, I would want to do those things," he said. "When you have a leak in those anastomoses, it's just a horrible situation for the patient," and could involve abscess, sepsis, and/or urgent reoperation.

Citing a recent *Lancet* study,[6] he explained why this occurs most typically in oncological procedures: "When you pool all the trials on ICG, it does significantly reduce leak rates in high-risk anastomosis. But high-risk anastomoses mostly occur in cancer cases."

"There are certain situations where it's really helpful, such as when a tumor is close to a major blood vessel...I find it's very useful in sarcoma patients. That's been really a high yield."

Dr. Sunil Singhal



Perfusion assessment is achieved with the fluorophore indocyanine green. *(Credit: Dr. Steven Wexner)*

Dr. Wexner added that additional uses also arise in cancer surgeries: "When you look at the resection rather than anastomosis, the use of ICG shows potential promise to facilitate lateral pelvic node dissection. When operating for both benign and malignant disease, the safety of pelvic dissection can be improved by ICG illumination of the ureters. Thus, FGS has important roles in dissection, resection, and anastomosis."

Multiple studies have reinforced the functionality of FGS in specialties other than colorectal surgery. For example, another meta-analysis[7] of 20 studies comparing ICG versus standard assessment in resection of liver cancer found an array of benefits, including significantly reduced intraoperative blood loss and hospital stay duration, halved transfusion rates (odds ratio, 0.50 [95% CI, 0.36–0.70]), and a 41% decrease in complications (odds ratio, 0.59 [95% CI, 0.44–0.79]).[7]

In other words, the combination of specific patient needs and the likelihood of significant benefit to the patient is large enough to compel widespread implementation of ICG in cancer surgery, conditions that may not be met elsewhere.

Targeting Tumors

Another reason that FGS is predominantly used in oncology is technological. The limitation of FGS has always been the nonspecific binding of fluorophores to tissues, which primarily allowed use focused on vascular perfusion.

However, researchers have launched a renaissance by using insights into cancer biology to develop numerous highly specific fluorophores that specifically bind diseased cells. These approaches conjugate photosensitizer molecules with antibodies, proteins, enzymes, or small molecules known to be more highly expressed in tumors than surrounding tissue. When injected, these fluorophores specifically bind cell surface molecules that cause tumors to glow, aiding precise excision and helping ensure margins are microscopically negative.

The work of Sunil Singhal, MD, FACS, chief of thoracic surgery and the William Maul Measey Professor in Surgical Research at Penn Medicine in Philadelphia, Pennsylvania, illustrates this approach. He is both a clinician who uses fluorophores "every day, whenever I do surgeries," and a researcher leading a team investigating new fluorophores.

Dr. Singhal uses the term "intraoperative molecular imaging," which uses fluorescent agents to identify tumors via activatable or receptor-specific molecules. "Our main contribution has been developing targeted tracers. We've specifically led the field on small molecule methods to target tumors."

His achievements have been substantial. In 2022, after conducting phase I, II, and III, multi-institutional randomized clinical trials, Dr. Singhal and his team received FDA approval for pafolacianine (Cytalux®). This fluorophore illuminates a folate receptor present on ovarian cancer and lung cancer in a blue-green or neon-green shade.

Randomized clinical trials[8,9] on pafolacianine established three main benefits, according to Dr. Singhal. "The endpoints are specifically that we can locate tumors that may be hard to find minimally invasively, because you can't get your fingers in to feel them or they have no obvious indentation on the lung surface. This fluorophore also helped us identify patients who had a positive margin, that is, we had inadvertently cut too close to the cancer. And it helped us find additional cancers called synchronous cancers or occult cancers."

To date, there is no substantial evidence that it improves disease-free or overall survival, and after completing more than 1,700 lung cancer resections, Dr. Singhal is careful to note that the fluorophore is not necessarily always needed: "There is no magic bullet for everything."

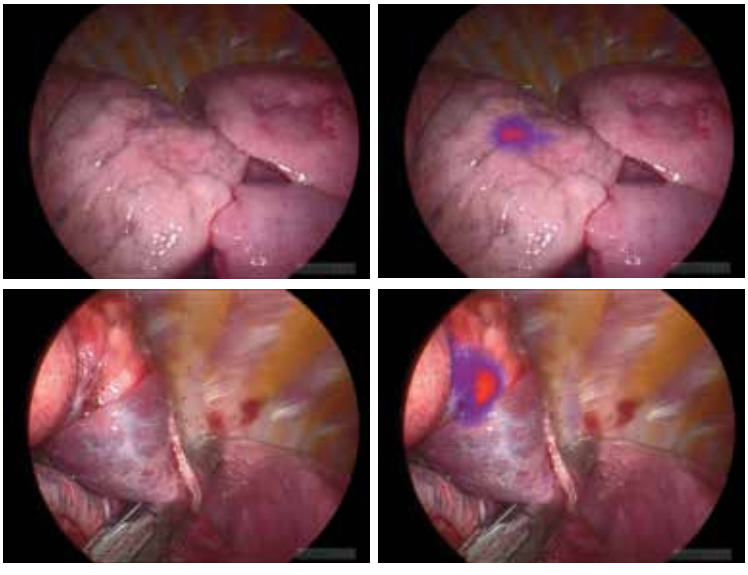
Nonetheless, he was confident that benefits to the patient arose via use of Cytalux. "There are certain situations where it's really helpful, such as when a tumor is close to a major blood vessel…I find it's very useful in sarcoma patients. That's been really a high yield."

What's Next for FGS?

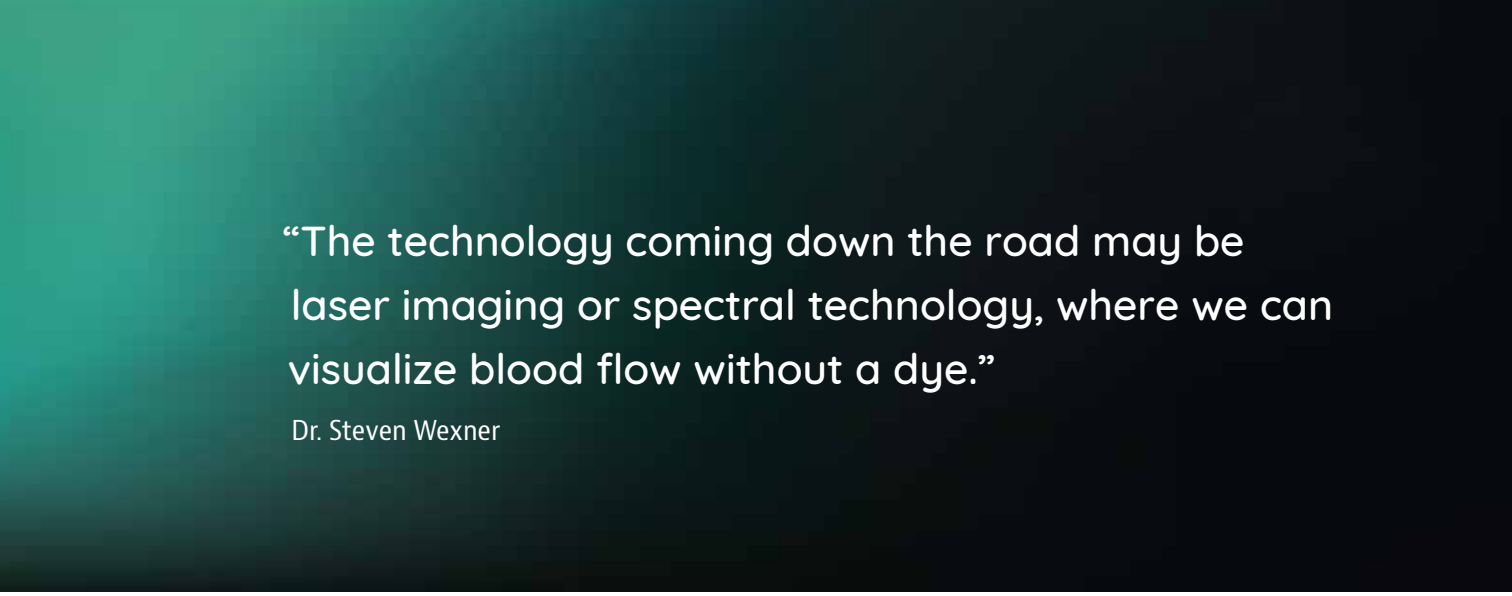
Will rizedisben, with its promise of wide applicability, increase the use of FGS beyond surgical oncology?

That will depend on further investigation by Dr. Gold, who was quick to note that only a phase I trial has been completed and efficacy across clinical settings has yet to be determined. For now, he noted that there are subtleties in rizedisben not yet fully explored.

"What we were seeing is that certain types of tissue would fluoresce green instead of the true signal, blue. We determined that those were more likely to be things like blood vessels or lymphatic ducts. That allowed for some very interesting conversations during the surgery. It might be more effective in certain tissue settings," he said.



Lung tissue shows tumors visualized under white light, and under fluorescent light with pafolacianine (Cytalux). *(Credit: Dr. Sunil Singhal)*



Whatever rizedisben’s outcome, these surgeons expect the use of fluorescence in surgery to continue expanding.

Each noted that the rise of laparoscopic and robotic surgeries plays an important role in FGS expansion. While open surgeries can use FGS, they require dimming the entire OR before handheld fluorescent lights can be applied. In contrast, laparoscopic and robotic systems incorporate cameras that can be easily switched to fluorescent light within the confined operation space, making FGS a quicker, easier option.

In addition, the proliferation of new fluorophores will continue. Dr. Singhal’s laboratory has ongoing research examining multiple fluorophores as part of its mission to advance intraoperative molecular imaging. These investigators are among the many researchers investigating fluorescent agents for surgical and nonsurgical uses.

Dr. Wexner also expects various new dyes to emerge. “The technology coming down the road may be laser imaging or spectral technology, where we can visualize blood flow without a dye. You basically have a laser light that you turn on and off, and you can see the blood supply in the vessel. A variety of people are looking at that avenue.”

Drs. Singhal and Wexner also are on the leading edge of helping surgeons across disciplines use existing FGS approaches. Both say their experience shows that interest comes from surgeons in virtually all disciplines, including many who may not use FGS primarily for cancer procedures.

For his part, Dr. Gold plans to continue his ongoing inquiry into rizedisben. He aims to advance the technology through later-phase clinical trials, FDA approval, and market entry, with the goal of establishing FGS as a standard intraoperative practice across surgical specialties.

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Clinical Innovations, Policy Drive Improved Organ Preservation and Increased Transplants

Matthew Fox, MSHC

Organ transplantation in the US experienced a strong year in 2025, with a record 49,064 transplants performed.

THIS FIGURE IS ONLY the latest representation of a growing, positive trend, where organ transplant totals have increased each year for more than a decade (excluding 2020 due to COVID-19 restrictions).[1]

These increases reflect continued advances across transplant care, where surgeons are often taking the lead in improving access to and use of organs from an increasingly diverse group of donors, both living and deceased.

Even limiting the focus on the two most-needed and most-transplanted organs, kidneys and livers, reveals the many ways the system is advancing, often based on transplant surgeons' expertise and experience as the functional crux of organ transplantation.

This article examines recent clinical advances, research, and policy developments that are driving the ongoing success of the US transplant system—as well as the work that remains to be done.

Ischemia-Reperfusion Injuries Remain a Challenge

Because donor organs are such a valuable and scarce resource, approaches to managing organ shortages and broadening the pool of usable organs involve both scientific and clinical advancements, as well as policy changes.

A primary clinical focus in solid organ transplantation is maintaining organ function during procurement, transport, and implantation. During the critical period when the organ is outside the body, it is at risk of ischemia, and then possibly a reperfusion injury once it is placed.

"Any organ, even the organ from a living donor, undergoes a period of ischemia once it is removed, with the damage to an organ determined by organ-specific aspects, length of ischemia, and the modality of organ preservation," said Stefan G. Tullius, MD, PhD, FACS, a kidney and pancreas transplant surgeon, program director of the Division of Transplant Surgery, and the Joseph E. Murray, MD, Endowed Chair in Transplant Surgery at Brigham and Women's Hospital in Boston, Massachusetts.

He noted that there are organ-specific ischemic times, as livers, for example, are less ischemia-resistant than kidneys. In addition, all organs are impacted by the quality and age of an organ, with older, comorbid organs less resistant to the consequences of ischemia and reperfusion injury.

Opposite: A living donor kidney transplant is performed by Dr. Turgeon (second from left) at the Dell Seton Medical Center at The University of Texas at Austin.

"TODAY, roughly half of kidneys from donors older than 55 are procured but not used for transplantation."

Dr. Stefan Tullius

"During reperfusion, all those aspects and components of the organ that have been damaged during the ischemic time are now activated and contribute to the damage of the organ after reperfusion. So, the reperfusion is necessary for the ischemic injury to kick in," Dr. Tullius said.

As with any injury, ischemia-reperfusion initiates a potentially damaging inflammatory response—damage that can be particularly consequential in a transplanted organ. In kidneys and livers, ischemia-reperfusion injuries are associated with early graft dysfunction and eventual graft loss.[2,3]

Evolving Approaches Reduce Organ Damage Before Transplant

The damage that an organ experiences during this ischemic time can be prevented in part through various organ preservation and perfusion technologies, the optimal course for which differs by organ and available resources.

One of the most significant potential improvements for reducing ischemia and ameliorating reperfusion injury may involve increasing organ storage temperature.

Historically, most organs recovered as a donation after circulatory death (DCD) were transported and kept for use within static cold storage at a temperature of 4°C; however, while this option keeps metabolism to a minimum, evidence suggests this temperature may contribute to metabolic injury and restrict the time an organ is available to transplant.

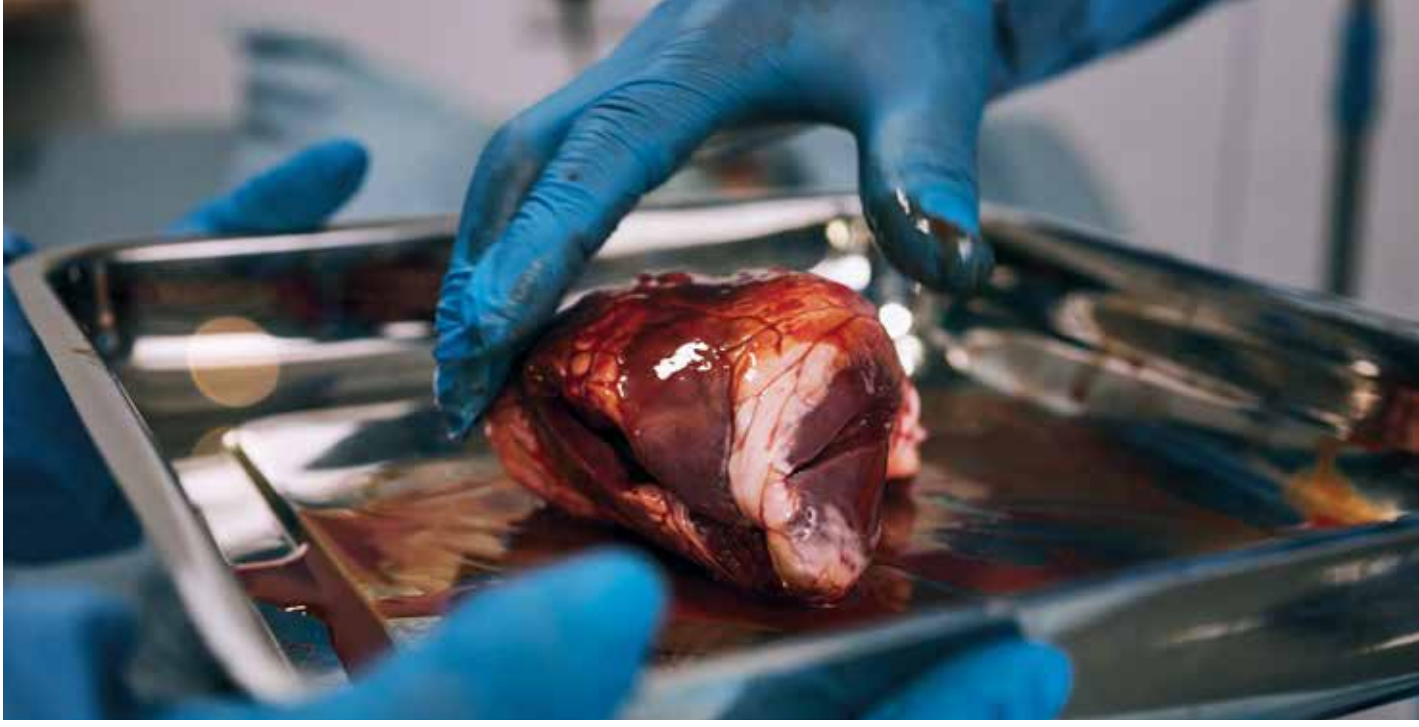
Recent research and clinical evidence show that increasing the storage temperature to 10°C can reduce mitochondrial damage and other cellular degradation, improve organ function post-transplant, and increase the window for effective transplantation. While the most notable results have come in lung and heart transplants, emerging evidence suggests kidneys also may benefit from this approach.[4]

Beyond static cold storage, the greatest functional gains—or reduction in functional loss—are achieved through machine perfusion, which pumps oxygenated blood or nutrient solutions through organs to maintain their viability.

Hypothermic machine perfusion has been used for many years in kidneys, and more recently in livers, to reduce delayed graft function and early graft dysfunction, respectively. The most recent breakthroughs in organ functionality and longevity, particularly for livers, have occurred in normothermic machine perfusion (NMP) technology.

"With NMP, the DCD organs that surgeons were afraid to use for liver transplants because they came from medically complex donors or had long travel times and logistical challenges, are now becoming more usable," explained Juliet Emamaullee, MD, PhD, FACS, a liver transplant surgeon and research director of the Transplant Institute at the University of Rochester Medical Center in New York.

"These technologies allow rehabilitation of organs to a certain degree, which mitigates potential injury to the bile ducts,



for example," she said, noting that NMP allows organs to maintain similar physiologic function outside of the body because they are maintained at body temperature.

With blood flowing through a normothermic pump, transplant teams also can evaluate the organ function by looking at liver function in real time—how it clears lactate, how it deals with glucose metabolism, and so on.

Dr. Emamaullee noted that there are two primary NMP providers offering their technology for liver transplants, one of which is a service-based model that includes a procurement surgeon and a perfusionist who travel with the device to a procurement site, procure the organ, and maintain it on the pump in transit to the recipient. The other machine is not service based and instead can be purchased by a transplant center or organ procurement organization (OPO) but requires specialized staff to operate the system.

There is an even more innovative normothermic approach to organ capture that forgoes an external machine—normothermic regional perfusion.

"This technique is used when you have a DCD donor who passes away, and then a team surgically places them on ECMO [extracorporeal membrane oxygenation]—but only for the abdominal or thoracic organs, without any blood supply to the brain," Dr. Emamaullee said. "Clamps are applied to prevent cerebral blood flow so that a deceased donor is not reanimated like what might happen with CPR. You pump blood from the neck down, or from the diaphragm down to minimize injury to the organs."

Both the external machine-based and ECMO-based normothermic approaches have shown favorable results for maintaining quality for donor organs and, ultimately, outcomes for the donor recipients.[5,6]

It should be noted, however, that these technologies are highly resource- and cost-intensive, potentially adding more than $80,000 to organ acquisition costs[7]—meaning their use is dependent upon available resources, which will limit potential access in a field in which disparities in access to care are visible challenges.

Clinical Advances Broaden Donor and Recipient Pools

The impact of these static cold storage or machine perfusion advances extends beyond adequately maintaining an ideal organ. They already are increasing the donor and recipient pool to include older individuals who may have had specific health issues such as diabetes or steatosis.

"Today, roughly half of kidneys from donors older than 55 are procured but not used for transplantation," Dr. Tullius said.

With more than 90,000 individuals on the kidney waiting list in the US, raising that percentage even by only a few points could add thousands of organs to a strained system.

For liver transplants, the dramatic increase in DCD organ donation that is made possible by new perfusion technology—when and where available—is changing indications for transplant.

"Because we have more organs available, our indications are expanding because it allows us to think more broadly about who we can transplant and still get good results," Dr. Emamaullee said.

Alcoholic hepatitis is the newest, most expansive form of liver transplant indication, according to Dr. Emamaullee. Under the right circumstances, surgeons can offer a transplant to save the life of such a patient and provide a sustained, high-quality outcome, even if they haven't achieved 6 months of abstinence and treatment through a rehabilitation program.

Patients with metastatic colon cancer that has spread to the liver also are now increasingly eligible for transplant if they meet a strict set of criteria.

In addition to improved storage that will lessen the metabolic and physiological degradation of any organ, there are medications and technologies that may allow for ex vivo organ reconditioning, Dr. Tullius said.

He noted a few promising rejuvenation strategies that may be "very close to a clinical reality": senotherapeutic drugs, including senolytics that selectively remove senescent cells and senomorphics that inhibit inflammatory factors that senescent cells create, as well mitochondrial modulators that can enhance mitochondrial function that has lessened with age.[8]

Further in the future, stem cell therapies also may play a role in transplantation.

Policy Updates Aim to Grow Organ Supply, Improve Allocation

The supply side of the transplant system plays an important role in securing and allocating these extremely limited resources, and policy changes

Dr. Turgeon (center) leads a kidney transplant.

> "BECAUSE we have more organs available, our indications are expanding because it allows us to think more broadly about who we can transplant and still get good results."
>
> Dr. Juliet Emamaullee

from the federal government, transplant centers, and OPOs are continuing to evolve.

The most foundational updates are likely to spring from efforts to modernize the Organ Procurement & Transplantation Network (OPTN), the public-private partnership that serves as a link between all transplant professionals in the US.

While the nation's organ donation system has achieved significant success by growing access to the number of organs transplanted each year, the scale of data, regulations, and logistics presents opportunities to achieve even greater success.

The Securing the US Organ Procurement and Transplantation Network Act of 2023 modernized the OPTN by dividing its work from a single national contract into multiple vendors that specialize in different areas to improve patient safety, transparency, and equity, among other goals. The multiphase initiative is now in its third stage, and as of December 2025, most vendors had been selected.[9]

This modernization initiative is intended to allow for subject-matter expertise to have a greater impact within the transplant system. The United Network for Organ Sharing (UNOS), for example, will manage the OPTN's matching system and data—a decision that may be particularly consequential for kidneys, as they are the organ that may be most sensitive to equity gaps.[10]

"In every policy we develop, we strive to create a fair, equitable, and efficient system that improves patients' lives and honors the gift of life, and that is what we aimed to improve with the kidney allocation system," said Nicole Turgeon, MD, FACS, a kidney and transplant surgeon, chief of the Division of Transplant Surgery, and a professor in the Department of Surgery and Perioperative Care at The University of Texas at Austin Dell Medical School.

Dr. Turgeon, who also is a past member and chair of the UNOS Kidney Committee and Policy Oversight Committee, described iterations of the OPTN kidney allocation system.

The "Kidney Allocation System 250" (KAS 250) was designed to provide a more standardized framework to improve equitable access to kidney transplants by eliminating local Donation Service Area (DSA) boundaries and promoting broader geographic sharing.

But even this system was constrained by geographic and socioeconomic realities. Therefore, the latest system reflects a shift toward reducing barriers in transplantation.

"The next iteration, 'continuous distribution,'[11] replaces rigid classification boundaries with a composite allocation score that prioritizes transplant candidates based on a weighted combination of medical urgency, biological compatibility, logistical efficiency, and other factors to improve long-term outcomes and reduce waitlist mortality," Dr. Turgeon said.

When Logistics, Equity, and Public Perception Intersect

Because donor organs are such a visible and valuable resource, the transplant system is often highly scrutinized. And because organ transplantation is frequently perceived in binary terms—patients either receive a

"THE TRANSPLANT system has evolved rapidly, achieving remarkable advances while creating opportunities to further strengthen coordination and consistency."

Dr. Nicole Turgeon

transplant and gain the possibility of extended, improved life, or they do not and may deteriorate or die while waiting. As a result, challenges in organ allocation policy that reach public attention underscore the importance of clear and equitable regulation.

Such was the case when *The New York Times* published an article in February 2025 with a provocative headline: "Organ Transplant System 'in Chaos' as Waiting Lists Are Ignored."[12] The longform piece described how patients who were at the top of their organ waitlist rankings were regularly passed over, while individuals hundreds or even thousands of spots below on the list were given organs.

Fairness is a common concern in organ allocation, and the article inflamed public and policymaker sentiment on an already sensitive topic. However, transplant surgeons and other medical experts saw this report on "out-of-sequence" allocation not as a failure of the transplant system, but a challenge to improve communication-related logistics. The response to the article also highlighted the importance of aligning standards related to transplant allocation.

"There are situations where we determine an organ is not a good match for a potential recipient. For example, an organ may not physically fit, or a patient may have multiple medical conditions that would make it physiologically intolerable to receive an organ that could take weeks to function properly," Dr. Emamaullee said.

At the same time, surgeons want to ensure that every usable organ is transplanted. A transplant center might call the OPO they worked with to recover the organ, which could be several states away, and explain that the intended recipient is unable to move forward with this transplant. Sometimes these rare events happen after we have started the operation on the recipient. The organ has already been recovered and may have several hours of accumulated cold ischemic time.

"We may request that this organ is reallocated to the next appropriate recipient at our center because the process of them calling another center, seeing if their patient is ready, if they can accommodate it logistically—all of that just adds extra cold ischemic time. At some point the OPO must make a judgment call for an out-of-sequence or 'expedited placement' allocation to make sure the organ gets used," she said.

Out-of-sequence allocation, then, is a tool that allows the organ transplant system to ensure organs are not wasted. Nevertheless, *The New York Times* article revealed regulatory gaps in the system that contributed to public misperception.

"The transplant system has evolved rapidly, achieving remarkable advances while creating opportunities to further strengthen coordination and consistency," Dr. Turgeon said. "In policy development, we emphasize transparent, codified methodologies that enable impact assessment and the identification of unintended consequences, including disparities."

Dr. Turgeon explained that transplant specialists recognize the need for a pathway to rescue organs, which would be allocation out of sequence, but it needs to be defined clearly, and those pathways need to be organized. While most organs allocated out of sequence are medically complex, there are some cases where organs

were directed to centers that may have used them on patients closer to the top of ranking list. That, too, is largely based on easing the logistics of the transplant system, and never malicious intent.

"We are working to realign the system to balance equity, utility, and efficiency, facilitating the rescue of organs that might otherwise go unused and ensuring their allocation to centers with the capability to transplant them, rather than relying on pathways outside standard allocation processes," Dr. Turgeon said.

Surgeons Must Continue to Lead

The ongoing work of addressing organ shortages has been making positive strides. By joining the expert-led committees in their hospitals, OPOs, or the OPTN itself, surgeons can use their clinical experience and research breakthroughs to bolster messaging regarding the importance of organ donation, both living and deceased, to policymakers and the public.

"Our field does an extraordinary amount of good, and there is always opportunity to improve," Dr. Turgeon said. "While negative stories can draw attention, it is essential that we clearly communicate the facts and help the public understand the profound impact of organ donation and transplantation."

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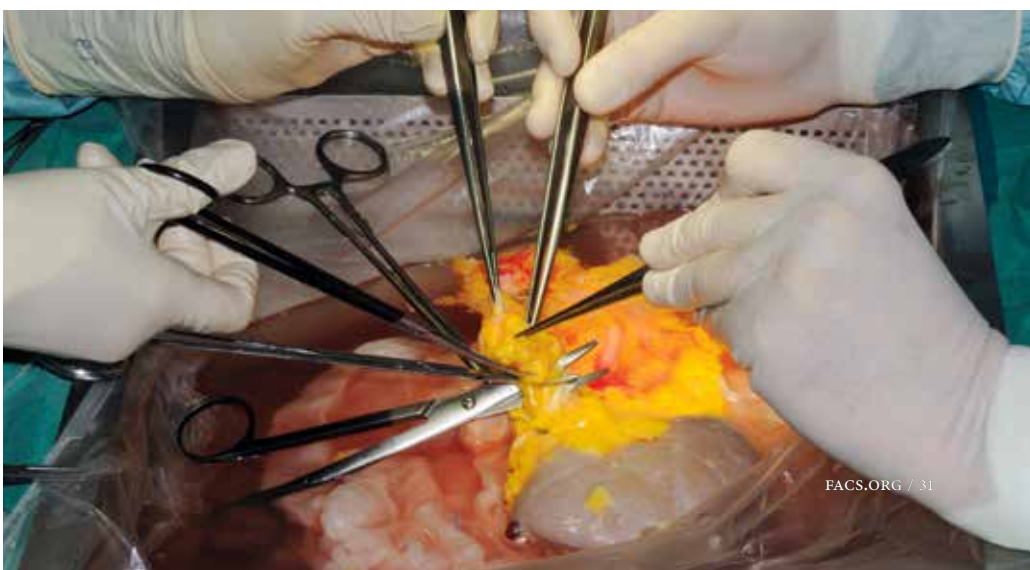

Systemic Policy Reform Boosts Protections for Pregnant Surgeons

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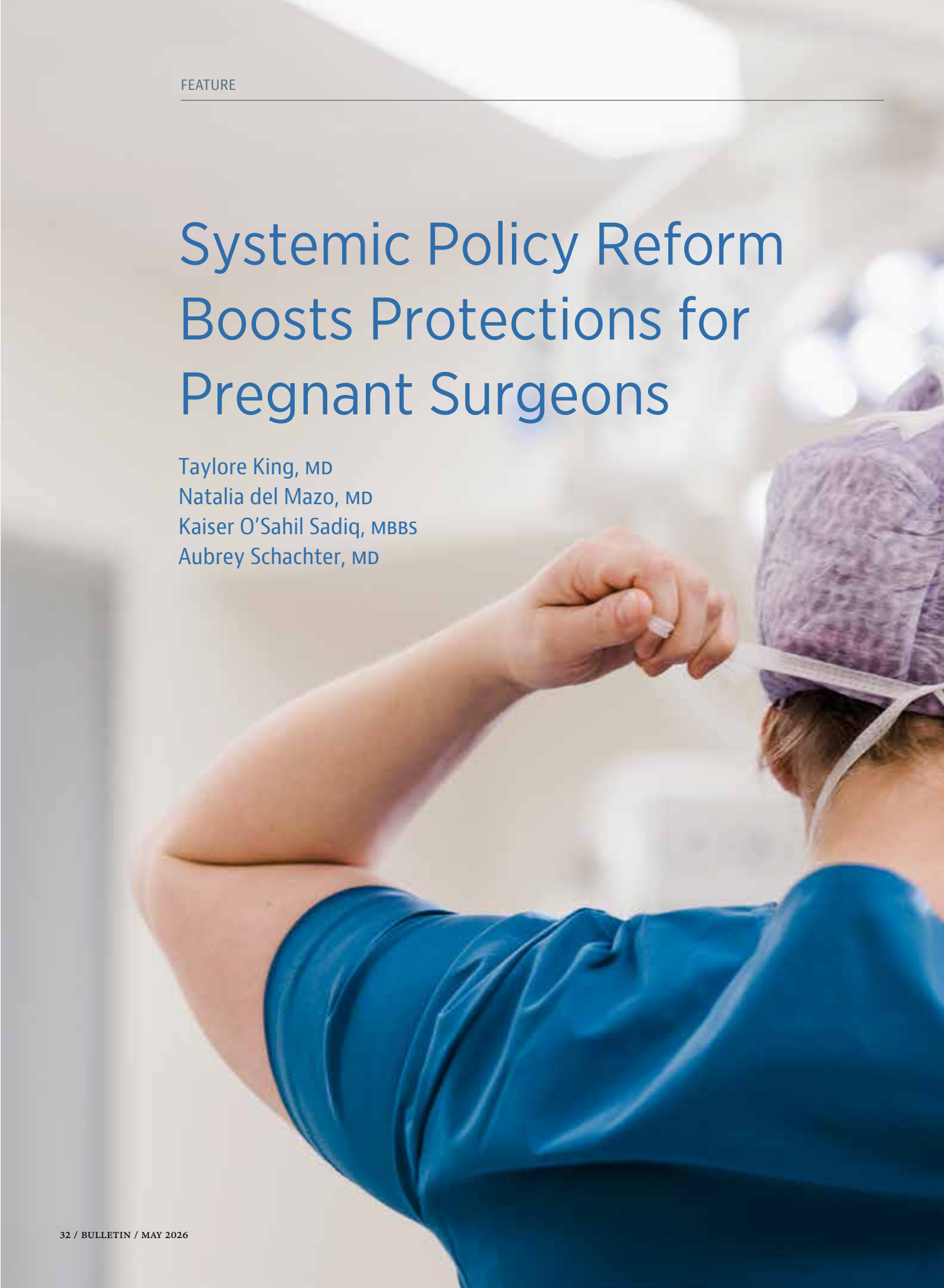

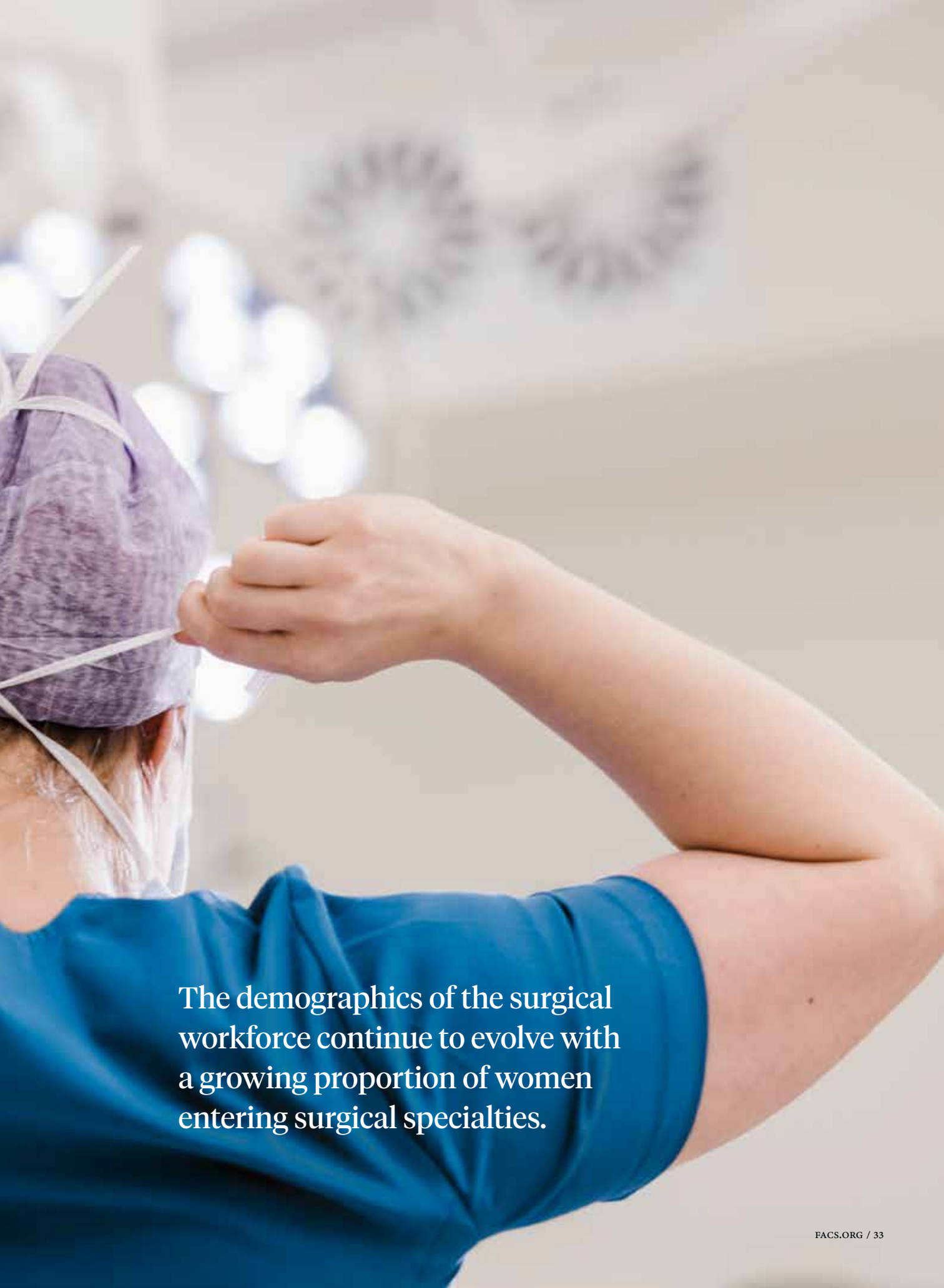

The demographics of the surgical workforce continue to evolve with a growing proportion of women entering surgical specialties.

IN 2025, THE ASSOCIATION of American Medical Colleges reported that women comprised 55% of medical school matriculants and 39.2% of resident physicians in surgical specialties.[1]

As the proportion of trainee and practicing female surgeons increases, pregnancy among members of the operative team will become more common.

Emerging data on pregnant surgeons have demonstrated a significant increase in obstetrical morbidity compared to nonsurgeon counterparts. Rangel and colleagues compared obstetrical outcomes between pregnant female surgeons and pregnant nonsurgeon female partners of male surgeons.[2] These two populations were chosen due to their sociodemographic similarities, including delayed timing of family building compared to the general population.

Miscarriage rates amongst female surgeons were as high as 42%, more than double the rate of the general population. Surgeons also were more likely to experience major pregnancy complications (e.g., pre-eclampsia, preterm birth, fetal growth restriction) compared to nonsurgeon partners, even after controlling for age, race, use of assisted reproductive technology, and work hours.[2]

The cooling vest is an adjustable garment designed to provide comfortable and portable relief.

Long operative time, defined as more than 12 cumulative hours per week, was the greatest independent risk factor for adverse pregnancy outcomes, likely due to the intense physical and mental demands associated with performing surgery.[2] When overall work hours were examined, a four-fold increase in risk of preterm delivery was found among physicians working more than 60 hours per week.[3]

Night shift and irregular shift work were also associated with increased odds of miscarriage, pre-eclampsia, and preterm delivery, likely due to sleep deprivation, higher stress levels, and the disruption of circadian rhythm.[3,4] Long working hours may increase catecholamine release, which in turn increases uterine contractility and the risk of miscarriage and preterm delivery.[4] Despite these adverse effects, few female surgeons reduce their workload during pregnancy.[2]

Managing Physiologic Changes in OR

Operating while pregnant presents distinct physical challenges for surgeons. Early in pregnancy, rising β-hCG levels are commonly associated with nausea and vomiting, which may interfere with operative performance.[5] Practical mitigation strategies include pre-operating room hydration, small frequent snacks, and the use of antiemetics when indicated.

Pregnancy-related hormonal changes also cause systemic vasodilation, particularly through the release of relaxin, the hormone that increases ligament and muscle laxity. This hormone reduces venous return, increases cardiac output, and lowers blood pressure, which typically reaches its nadir between 20 and 24 weeks of gestation.

The combination of these physiologic changes, when coupled with the physical demands of operating, increases maternal body temperature and can decrease the threshold to experience syncopal episodes.[5] The Heart Rhythm Society recommends increasing salt and water intake, using compression stockings, and avoiding triggers like rapid positional changes to prevent syncope.[6] The use of cooling vests during surgery is another noninvasive strategy to improve comfort and reduce syncopal risk.

Long working hours may increase catecholamine release, which in turn increases uterine contractility and the risk of miscarriage and preterm delivery.[4]

Challenge	Impact	Recommended solutions
Shift in center of gravity	Back, hip, and pelvic pain; balance strain	Adjustable OR tables, operate from a seated position when feasible, frequent posture changes
Prolonged standing and walking	Fatigue, lower back pain, leg/ankle edema	Intraoperative sitting breaks (every 3 hours), padded floor mats, compression stockings
Use of lead aprons	Increased spinal load and fatigue	Lighter or maternity lead, frequent breaks, lead support systems
Wrist flexion and repetitive gripping	Carpal tunnel syndrome, wrist pain	Ratcheting instruments, neutral wrist positioning, wrist splints when needed
Surgical retraction and lifting	Shoulder, wrist, and back strain	Self-retaining retractors, assistance from colleagues or trainees
Patient transfer and transport	Acute back strain and injury risk	Mechanical lifts, transport assistance
Increased distance from operative field	Upper extremity strain, shoulder fatigue	Scope holders, arm supports, seated positioning, additional OR standing step
Heat and physical exertion	Fatigue, dizziness, discomfort	Cooling strategies (vests), breathable garments, intraoperative breaks
Robotic console fit limitations	Abdominal compression, poor posture	Updated consoles, ergonomic adjustments
Extended work hours and overnight shifts	Exacerbation of MSK pain and fatigue	Limiting work hours, overnight call, and consecutive operating time in the third trimester

Anatomic changes during pregnancy also pose significant ergonomic challenges in the OR. The enlarging gravid abdomen increases the distance between the surgeon and the operating table, resulting in increased upper extremity strain and shoulder fatigue.

Ergonomic Strategies for Pregnant Surgeons

Despite advances in surgical ergonomics, data on work-related musculoskeletal (MSK) disorders among pregnant surgeons remain limited.

To better characterize these challenges, Wang and colleagues evaluated MSK symptoms experienced by pregnant surgeons, and 94.7% of respondents reported that workplace activity exacerbated pregnancy-related MSK symptoms.[7] Common symptoms included fatigue, back pain, leg and ankle swelling, carpal tunnel pain, hip pain, and pubic symphysis pain.[8]

Prolonged periods of standing or walking, 60-hour workweeks, 24-hour or longer shifts, overnight shifts, surgical retraction, sustained wrist flexion, lifting, use of lead aprons, and transferring/transporting patients were among the most frequently reported aggravating factors.[7] These demands place increased physical strain on the spine, pelvis, and upper and lower extremities, particularly in the context of pregnancy-related biomechanical changes.

Pregnancy-related hormonal, physiologic, and anatomic adaptations further compound these ergonomic challenges. Elevated pregnancy hormone levels promote fluid retention and edema due to decreased venous return. Pregnant surgeons may benefit from increased use of ratcheting instruments that minimize grip force and allow for changes in hand orientation to protect the wrists.[7]

Anatomic changes during pregnancy also pose significant ergonomic challenges in the OR. The enlarging gravid abdomen increases the distance between the surgeon and the operating table, resulting in increased upper extremity strain and shoulder fatigue. In both laparoscopic and open surgeries, the use of an additional standing step may be required to prevent contact between the gravid abdomen and the OR bed or retractors.

Strategies to alleviate MSK symptoms include sitting, stretching, intraoperative breaks, use of heating pads, and back support belts.[7] It is recommended that pregnant surgeons in the third trimester take frequent intraoperative breaks to sit or stretch, limit consecutive operating time, and minimize workplace responsibilities that require continuous standing for more than 3 hours. When necessary, coverage assistance from colleagues or co-trainees should be proactively solicited or implemented to reduce physical strain.

Specific Considerations: Highest Risk Exposures

Inhaled Toxins

A systematic review in the 1990s found that exposure to nitrous oxide among pregnant medical personnel was associated with a 1.9-fold increased relative risk of miscarriage compared to unexposed controls. Given this established association, exposure of pregnant women to anesthetic gases should be limited and total intravenous anesthesia used around pregnant staff when available.[3]

Chemicals found in surgical smoke are also associated with infertility, congenital defects, and miscarriage. Use of smoke evacuators to eliminate smoke from the surgical field should be prioritized in all surgeries, and N95 masks should be worn by pregnant surgeons working in cases with expected high levels of smoke generation.[9]

Radiation

Surgical subspecialists exposed to high levels of radiation should be cognizant of the specific precautions required to protect their pregnancy. The recommended lead gown thickness for pregnant women is 0.5-1 mm, compared to the standard 0.25 mm gowns. Fetal radiation dosimeters should also be worn under the lead gown at the abdominal level in all pregnant women exposed to radiation.[9]

Methyl Methacrylate (MMA)

MMA is used as a bone-cementing agent in orthopaedic surgeries and has been shown to have teratogenic effects, particularly causing skeletal abnormalities, at high exposure levels in animal studies. Although occupational exposure is far less than levels used in these studies, mixing of MMA, which incurs the highest risk of exposure, should not be performed by pregnant individuals.[9]

Support a Pregnant Surgical Colleague

- Offer breaks to use the bathroom, eat, and hydrate during OR cases less than 3 hours
- Offer sitting breaks to decrease MSK burden
- Help move the patient
- Make it known to the OR staff that there is a pregnant person on the team (with consent)
- Announce when parts of the surgery require pregnant persons to leave the room (e.g., HIPEC, radiation, use of anesthetic gas)
- Provide coverage for perinatal appointments

Chemotherapy Agents

Oncologic surgical subspecialists performing hyperthermic intraperitoneal chemotherapy (HIPEC) should ensure no pregnant staff are present in the OR following the introduction of the chemotherapy agent, which is highly teratogenic.[3] Any women or men attempting to conceive within the upcoming 2-3 months, and pregnant or breastfeeding surgeons should not be exposed to these medications.

Stigma Surrounding Pregnancy

Pregnancy-related discrimination and social stigmatization are well-documented phenomena in the surgical profession.[10]

Among general surgery residents, 80% of nonpregnant females reported experiencing gender discrimination compared to 17% of their male counterparts. This already staggering percentage increases to 90% among pregnant general surgery residents.

Female residents cited attendings as the most likely perpetrators of gender-based discrimination pertaining to experiential opportunities and evaluations, while co-residents were the most likely source of negative reactions surrounding pregnancy and childcare. Surgical trainees who perceive stigma during childbearing also report significantly higher career dissatisfaction. Among female surgeons who gave birth during training, 40% strongly considered leaving their career and 30% discouraged female medical students from pursuing surgery due to the challenges of balancing pregnancy and training.[3]

With twice the rate of miscarriage compared to the general population, the psychologic devastation following pregnancy loss is an additional burden shouldered by female surgeons. Following miscarriage, 10% of women experience acute stress disorder and 25% experience post-traumatic stress disorder.[3] Yet, 75% of female surgeons report taking no time off work following a miscarriage (loss <20 weeks), and 45% report taking less than 1 week off work following a stillbirth (loss >20 weeks).[2]

The culture of surgery often normalizes personal sacrifice while minimizing the effects of burnout. When compounded with the physical and psychosocial demands of pregnancy, pre-existing gender discrimination, and the limited protections afforded to pregnant US physicians, it is not surprising that obstetrical outcomes are worse among female surgeons.

Systemic Institutional Changes

Attending surgeons have some autonomy over their operative schedules, but surgical trainees have limited control over their work hours during residency and

Institutional Policy Recommendations

- Decreased overnight and 24-hour call for pregnant surgeons, particularly in the third trimester
  - <Six overnight calls per month in first and second trimester
  - No overnight call in third trimester
  - Limit workweek to 60 hours
  - No forced call payback before or after pregnancy
- Mandated decrease in operative time in third trimester with opt-out option available (<12 hours of operative time per week)
- Required rest and hydration breaks every 3 hours during long surgical cases
- Allotted time for prenatal appointments
- Additional maternity leave for mothers of babies in the neonatal intensive care unit
- Allotted bereavement time for pregnancy loss due to miscarriage and stillbirth
- Protected paid parental leave for trainees (minimum of 6 weeks)

With twice the rate of miscarriage compared to the general population, the psychologic devastation following pregnancy loss is an additional burden shouldered by female surgeons.

fellowship.[7] When surveyed, residency program directors viewed pregnancy as an inconvenience, reporting concerns regarding education, service coverage, and hospital costs.[3] Therefore, the implementation of explicit departmental policies is essential to protect surgical trainees.

A proposed example is an opt-out policy that automatically limits 24-hour shifts, overnight call, and heavily operative rotations in the final months of pregnancy.[7] Given the unique structure of residency and fellowship programs, individualized solutions may be necessary to support pregnant trainees while minimizing additional strain on colleagues providing coverage.

Pregnant surgeons represent a distinct, high-risk occupational cohort that likely will increase in the coming years. Specific considerations should be made to ameliorate the physical burdens of performing surgery during this critical time and actively support colleagues throughout pregnancy and the postpartum period. B

Disclaimers

Throughout this article, the words "women" and "female" are used when referring to pregnant and birthing individuals, acknowledging that gender and birthing status are not synonymous.

The thoughts and opinions expressed in this article are solely those of the authors and do not necessarily reflect those of the ACS.

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Dr. Siegfredo Paloyo

Surviving Aortic Dissection Redefines a Surgeon's Perspective

Siegfredo R. Paloyo, MD, MPH, FACS

It was 2:00 am when jet lag finally loosened its grip on my body and tightened its hold on my mind.

THE HOUSE WAS STILL, wrapped in the peculiar hush that settles just before dawn. My family slept. Yet in the silence, memory refused rest.

The past month replayed itself in fragments—images, sounds, and sensations that still felt borrowed from another life. A family vacation had quietly transformed into a lesson on vulnerability, surrender, faith, and grace.

As surgeons, we live in timelines measured by minutes and margins. We calculate ischemia times, blood loss, operative windows. We speak in probabilities and contingencies. Rarely do we examine the fragility of the body we inhabit ourselves. When that illusion fractures, it does so without ceremony.

Memorial Day, May 26, 2025, was only the second morning of our stay in Seattle, Washington. The night before had been unremarkable in the way vacations often begin: brief shopping for necessities, an early dinner to recover from travel fatigue, a walk through a nearby park while the light lingered longer than it did back home. Nothing about the evening carried omen or warning. It was a perfectly forgettable happiness.

In the early hours, my wife woke to find me sitting quietly at the edge of the bed. She would later tell me that something in the way I held myself felt wrong—too deliberate, too contained, as though I were bracing against something unseen.

About an hour earlier, she had woken from a vivid, unsettling dream that something terrible had happened to me. Dreams often dissolve in daylight; this one did not.

"Masakit dibdib," I said simply. My chest hurts.

Like many surgeons, I defaulted to restraint. Observe first. Wait. Do not escalate without proof. I had taken my medications.

However, my Apple Watch could only offer a heart rate, and we did not have a separate blood pressure apparatus where we were staying. My wife woke her brother to drive to the nearest retail pharmacy. While waiting, I retched violently in the bathroom—another warning that my mind acknowledged but did not yet obey.

When the blood pressure apparatus finally arrived, the numbers hovered around 100 to 110 over 70. To most people, this would have been reassuring. To two physicians far from home, it was not. My baseline systolic pressure typically lived in the 130s. Relative hypotension is often how catastrophe introduces itself quietly, before it announces its presence aloud.

Still, I hesitated.

It was only when my wife told me about her dream—when I saw the unguarded fear in her eyes—that something shifted. We locked eyes in a brief, wordless exchange that required no medical vocabulary. I nodded. We agreed to go.

Downstairs, the children were already gathering for breakfast. We kept our voices light. No prolonged explanations. No dramatic embraces. We did not ask them to hug me goodbye. That small omission would later ache with unexpected gravity.

Race Against Time

Urgent care moved quickly. This was not benign chest pain. Coronary angiography at the community hospital showed clean vessels. And then, a transesophageal echocardiogram revealed the real diagnosis: an acute ascending aortic dissection (Stanford Type A). The hospital was not equipped to manage it. I was to be airlifted to a tertiary center.

The choreography of emergency medicine unfolded with both precision and fragility. The helicopter landed on a grassy field. The stretcher could not roll on grass. It had to be exchanged. The replacement stretcher was incompatible with the aircraft. It, too, had to be exchanged.

Somewhere in that urgent ballet of logistics and human hands, my heart ceased to generate a pulse. Pulseless electrical activity. There were 6 to 12 minutes of resuscitation before circulation returned.

I have no memory of that moment. My wife does.

She remembers the convergence of flashing lights and rushing bodies. She remembers recognizing the gravity of the scene without needing anyone to articulate it. She remembers introducing herself as a physician and watching colleagues measure their words carefully—truthful but merciful, precise but gentle. She remembers waiting, hour after suspended hour, as the world narrowed to a single unanswered question.

She also remembers something else: an almost irrational voice inside her that whispered, persistently, *He will be okay*. Against everything her training had taught her about probabilities and physiologic reserve, that voice refused to recede. It became her anchor.

Left:
Early recovery in the ICU for Dr. Siegfredo Paloyo involved a specialized approach, including early mobilization and respiratory exercises.

Right:
The first walk after a prolonged hospitalization helped Dr. Siegfredo Paloyo regain his independence.

At the receiving hospital, I underwent an emergency Bio-Bentall procedure. The hospital staff later told my wife we were fortunate that the appropriate surgeon was on call—this pathology was his specialty. A fellow would later describe the operative field to me: blood everywhere, the aorta held together by little more than its outermost layer. A few more minutes, perhaps, and there would have been nothing left to repair.

Seventeen hours after I had first sat silently on the edge of the bed, I emerged from surgery alive.

The Moment I Opened My Eyes

Survival, however, is not synonymous with recovery. I remained intubated and unconscious.

Days passed without discernable milestones. My kidneys failed; creatinine climbed into the double digits. Dialysis was discussed. Instead, aggressive diuresis was attempted. Over the course of 10 hours, nearly 12 liters of urine poured forth—a physiologic reprieve that felt less like science and more like mercy. Rehabilitation began early. Filipino nurses recognized my accent and offered small pieces of home in a foreign hospital.

Yet, the hardest stretch belonged not to me, but to my wife. For 5 days, she did not know whether I would awaken, when I might awaken, or who I might be if I did. Would she need to remain abroad indefinitely? How would she bring me home? What if I never opened my eyes? Each day, she leaned close and whispered for me to come back—to her, to our children—without knowing whether her words reached anything beyond silence.

When I finally opened my eyes, her relief was indescribable.

Recovery outside the ICU carried its own quieter humiliations. Within a day of discharge, I developed urinary retention. We briefly joked about inserting a Foley catheter ourselves—two physicians navigating foreign healthcare—until we remembered that prescriptions still governed improvisation. At 3:00 am, my brother-in-law drove us back to urgent care. Mid-interview, the attending paused.

"Aren't you the Filipino transplant surgeon who was here weeks ago?" she asked. Turning to my wife, "And you're the plastic surgeon?"

We smiled, surprised by the recognition.

She asked permission to tell her colleagues outside that I was alive.

Professional Solidarity

Medicine contains these small, luminous moments of kinship—fleeting acknowledgments that beneath credentials and specialties, we are simply human beings caring for one another in moments of vulnerability.

Left:
A physical therapist performed bedside therapy in the ICU, helping Dr. Siegfredo Paloyo find his balance again.

Right:
Cardiac rehabilitation was an important step in Dr. Siegfredo Paloyo's recovery.

Constipation followed. Abdominal pain. Recurrent ER visits. Readmission coincided with my wife's 50th birthday, quietly spent under hospital lights.

Eventually, equilibrium returned. My surgeon asked only two things when we parted: to send periodic surveillance scans and a photograph when I returned to the OR. I later sent him images from my first kidney and liver transplants after recovery. His reply was brief and generous: welcome back.

On the day of our flight home, one final irony arrived. A dull ache emerged in my right lower abdomen. I recalled a small renal stone incidentally noted on imaging. While waiting for lunch, the urge to urinate came suddenly. In the restroom, I felt the unmistakable scrape of stone against urethra until it audibly bounced into the urinal. Relief was immediate. Timing, impeccable.

Only medicine permits such endings.

Surgeons inhabit a culture of control. We make irreversible decisions under pressure. We accept responsibility for outcomes that echo long after the OR lights dim. We rarely occupy the opposite side of the bed. Becoming a patient dismantles illusion quickly. The body does not defer to expertise. Time stretches and contracts unpredictably. Systems reveal themselves not as abstractions, but as lifelines. Family becomes the true intensive care unit.

More than anything, this experience reshaped my understanding of professional solidarity. At every threshold, I was carried by colleagues whose names I may never fully know, but whose hands preserved my life: urgent care physicians recognized danger, cardiologists excluded one diagnosis while uncovering another, anesthesiologists stabilized chaos, cardiothoracic surgeons repaired what minutes earlier had nearly ruptured, intensivists navigated organ failure, nurses measured outputs through long nights, therapists coaxed motion back into stiffened limbs.

A surgeon survived because other surgeons, and the systems they sustain functioned when seconds mattered.

Returning to the OR weeks later felt different. The instruments were the same. The choreography was familiar. Yet something inside me had softened and sharpened simultaneously. Every pulse felt less theoretical. Every consent conversation carried new gravity. Every family waiting outside a recovery room felt closer than before. The distance between physician and patient had narrowed permanently.

Dr. Siegfredo Paloyo returned to the OR and performed the first kidney transplant following his recovery.

My wife still speaks of the voice that sustained her during the darkest hours: *He will be okay*. Against every algorithm and probability, that voice proved correct. Faith, she says, was not denial of risk—it was endurance inside uncertainty. It was choosing to stand steady while the future remained unreadable.

Two months later, scars remain. Surveillance continues. Fatigue lingers. Yet gratitude now accompanies routine. Perspective now shadows confidence. Humility now steadies ambition.

We spend our lives trying to save others. Occasionally, we are granted the rare education of learning what it means to be saved ourselves. B

Disclaimer

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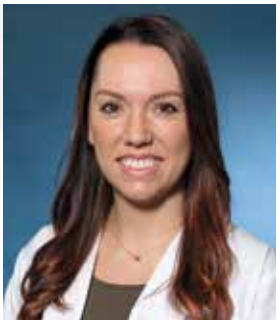

Dr. Erin Scott

Elective Surgical Timing Fails At-Risk Patients

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DEFERRING SURGERY for patients presenting with symptomatic but nonemergent conditions, such as cholelithiasis or reducible hernia, assumes a reliable system of outpatient follow-up that, for many patients, does not exist. Individuals without insurance coverage, consistent transportation, or paid medical leave often face substantial barriers to returning for elective surgery.[1-3]

Consequently, they often represent with more advanced or complicated disease requiring urgent or emergent intervention, with a substantial increase in morbidity.[3-6] This pattern represents a structural inequity in the delivery of surgical care and parallels the global problem of delayed access to essential and timely operative care.[7]

Structural Inequity in Surgical Timing

Timely access to surgery is a critical driver of outcomes across a wide range of general surgical conditions.

For example, uninsured or underinsured patients with symptomatic cholelithiasis experience significantly longer delays to definitive cholecystectomy compared with insured patients, with median wait times extending for several months.[3-5] During this period, 20%-40% develop complications related to gallstone disease, including recurrent biliary colic, acute cholecystitis, choledocholithiasis, or pancreatitis.

If these patients eventually undergo elective surgery, it is associated with increased surgical complexity, longer operative times, higher conversion to open rates, and prolonged hospital lengths of stay. Similarly, patients who initially present with reducible hernias and are discharged with instructions to follow up for ambulatory surgery may represent with incarceration or strangulation requiring emergent repair, which is associated with higher postoperative morbidity and mortality.[6]

When definitive surgery is deferred or delayed, patients often experience disease progression and increased

healthcare use through repeated emergency department visits and readmissions. These outcomes primarily are not the result of patient noncompliance but rather reflect systemic design limitations.

Safety-net hospital populations, in particular, face structural barriers such as housing insecurity, unpredictable employment, limited access to transportation, restricted healthcare literacy, and geographic disparities regarding access to emergency general surgery (EGS) care.[1,8]

These barriers are exacerbated by hospital and emergency department closures that disproportionately limit access in rural and underserved urban communities and are further compounded by a declining general surgery workforce that reduces EGS coverage and contributes to delays, disease progression, and worse outcomes for vulnerable patients. The expectation that such patients consistently can follow up in clinics and return for semi-elective procedures presumes socioeconomic resources that many simply do not possess. As a result, deferred elective surgery may functionally serve as a mechanism of exclusion, disproportionately affecting those with the fewest resources.

Recent evidence from trials in traditionally urgent surgical conditions, such as acute appendicitis, further underscores the complexity of relying on deferred or nonoperative management strategies in populations with limited access to consistent care.

Randomized studies including the Appendicitis Acuta (APPAC)[9] and the Comparison of Outcomes of Antibiotic Drugs and Appendectomy (CODA)[10] trials demonstrated that antibiotic-first treatment can be a reasonable alternative to appendectomy in select patients with uncomplicated appendicitis.

However, these studies also reported substantial rates of recurrence and readmission. Approximately 27% to 39% of patients required subsequent appendectomy within 90 days to 1 year. One can surmise that deferring appendectomy may reduce detection of incidental, though clinically significant, neoplasms for disadvantaged patients. Importantly, these outcomes were observed in healthcare systems with robust outpatient follow-up infrastructure and reliable access to diagnostic imaging, antibiotics, and EGS care.

In low-resource or safety-net settings, the assumptions underpinning nonoperative management, such as reliable access to antibiotics, timely reassessment, and consistent follow-up, are often violated.

Patients lacking insurance, transportation, or pharmacy access may be unable to complete antibiotic courses or obtain early evaluation for recurrence, potentially leading to delayed perforation, abscess formation, or sepsis.

As such, strategies that rely on outpatient antibiotic-based management may paradoxically increase morbidity when systemic barriers limit continuity of care. Moreover, in the CODA trial, readmission and emergency department visits were higher among patients initially treated with antibiotics, even within high-income systems, underscoring that deferred definitive management carries measurable risks and higher resource use.[9,10]

With this in mind, future studies should include vulnerability indices during analysis to better understand whether noninferiority of nonoperative strategies extends to disadvantaged populations.

These findings reinforce the broader principle that timeliness is a core component of equitable surgical care. For patients at risk of being lost to follow-up, definitive management during index admission, whether for cholelithiasis, hernia, or appendicitis, may represent the safest and most just approach. Within the framework of semi-elective surgery, this model prioritizes early resolution of pathology over dependence on future healthcare access that cannot be guaranteed.

Operational Implementation and Feasibility

Integrating semi-elective operations during the initial hospitalization (or within

Timely access to surgical care is an ethical and operational imperative.

a defined, short-interval timeframe) offers a strategy to mitigate these disparities.

Operationalizing semi-elective surgery within existing hospital systems would require clear patient selection criteria, coordinated workflows, and institutional commitment. Hospitals can implement standardized pathways that identify patients presenting with symptomatic but nonemergent conditions who would benefit from definitive surgical management during the same or a closely subsequent hospitalization. Early laparoscopic cholecystectomy within 72 hours of presentation, early elective hernia repair within 1 week, or laparoscopic appendectomy prioritized at index presentation are examples of feasible strategies that reduce loss to follow-up and prevent disease progression.

Institutions could consider the creation of protected "equity" OR blocks reserved for socially or medically vulnerable patients at risk of being lost to care, thereby formalizing equity as an operational priority. When inpatient operative capacity is limited, rapid-access ambulatory EGS programs offering guaranteed surgery within 7–14 days could provide an alternative, especially when integrated with hospital-at-home programs that streamline comprehensive healthcare processes to reduce hospitalizations.

These efforts also should be supported by payment structures that incentivize timely intervention, such as bundled reimbursements that include readmissions or value-based metrics tied to preventable emergencies, and by supplemental funding for safety-net hospitals serving high-risk populations.

For patients discharged before surgery, telehealth follow-up and collaboration with community health workers can sustain engagement and continuity until surgery is completed. Together, these coordinated measures make semi-elective surgery a practical and ethically grounded extension of value-based, patient-centered care.

System-Level Benefits

EGS services already have demonstrated the practicality of semi-elective models. Several urban safety-net hospitals have reported success using dedicated "index-admission" gallbladder pathways, resulting in decreased readmission rates and overall cost savings.[4] These programs emphasize multidisciplinary coordination among surgeons, anesthesiologists, OR managers, and case coordinators to optimize throughput while maintaining elective capacity.

At the system level, the benefits extend beyond individual cases. Each avoided readmission represents a potential reduction in hospital resource utilization, bed occupancy, and uncompensated care. Moreover, patients who receive timely definitive operations are less likely to present with emergencies requiring intensive care, prolonged hospitalization, or complex reconstruction, all of which increase cost and risk.

From a quality improvement standpoint, incorporating semi-elective pathways into institutional practice supports both clinical and equity metrics. Establishing benchmarks for time-to-surgery for selected conditions could parallel existing standards such as

door-to-balloon time or time-to-antibiotics, reframing timely surgery as a measurable dimension of healthcare quality.[7]

Ethical and Policy Considerations

Timely access to surgical care is an ethical and operational imperative.

The existing paradigm, which assumes the feasibility of outpatient follow-up, inadvertently poses a disadvantage for populations already at risk for healthcare exclusion. Aligning surgical systems with the social and economic realities of patients requires recognition that deferred elective surgery is not always benign and may, in some contexts, constitute a preventable inequity.

Equitable access requires not only the availability of surgical services, but also their timely delivery. Policies that encourage hospitals to incorporate semi-elective protocols through quality metrics, funding mechanisms, or accreditation standards could systematically reduce these disparities. Such measures align with broader public health goals emphasizing timely access to essential care as a determinant of population health.

Domestic Parallel to Global Surgical Access

The challenges faced by uninsured or underinsured patients in the US mirror those documented globally, where an estimated 5 billion people lack access to safe, affordable surgical and anesthesia care.[7] *The Lancet* Commission on Global Surgery and related initiatives have emphasized that surgical care is a fundamental component of universal health coverage, not a discretionary service.

Applying these principles domestically highlights that inequities in surgical timing are a form of delayed access. The global surgery framework, focused on timely, affordable, and essential operations, provides a useful lens through which to examine disparities within high-income nations. Adapting its concepts locally reinforces the importance of treating semi-elective operations not as optional but as necessary components of equitable care delivery.

Ensuring that surgery is performed when feasible, rather than deferred when convenient, aligns both ethical and practical imperatives. Equity in surgical care depends not only on whether an operation is offered, but also on when it is delivered.

Disclaimer

The thoughts and opinions expressed in this article are solely those of the authors and do not necessarily reflect those of the ACS.

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National Pilot Will Assess Feasibility of Promotion in Place for Surgical Trainees

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The Blue Ribbon Committee (BRC) II has identified Promotion in Place (PIP) as a proposed model for enhancing autonomy and judgment in general surgery training,[1] assisting in the transition to fellowship and practice, and exploring a competency-based, time-variable (CB-TV) approach to resident education.

IN THE PIP MODEL and CB-TV approach, trainees become American Board of Surgery (ABS)-admissible when they are deemed competent and practice ready. An ABS-admissible candidate is a participant who is provided with access to examination applications and evaluated according to all ABS requirements, except for the time-in-training requirement.

Qualified trainees then voluntarily graduate early and become fully credentialed attendings with billing privileges until what would have been their standard graduation date. This structure allows the individual an independent experience serving as an attending while "sheltered" in their training institution.

In its first year, the PIP model permits up to 6 months of experience in a sheltered independent (SI) practice. Thus, the fully credentialed PIP-SI attending is completely independent from the Accreditation Council for Graduate Medical Education (ACGME) training program and is not associated with the ACGME Accreditation Data System (ADS).

Initial findings support the use of PIP-SI in the specialties of pathology, obstetrics and gynecology, and plastic surgery.[2-5] After approximately 1 year of preparation and with the support of the ACS, ABS, ACGME, American Surgical Association, and Association of Program Directors in Surgery (APDS), PIP will be implemented as a multicenter, multiyear national pilot during which feasibility, acceptability, and outcomes of the PIP-SI model of CB-TV training in general surgery will be evaluated.

Pilot Objectives and Execution

Voluntary participating programs will be selected through an application process. All trainees in participating programs will be assessed uniformly for a PIP-SI role. The program's Clinical Competency Committee (CCC) will determine competency and readiness to graduate from the program based on specific metrics.

After identification of practice readiness by the CCC, a qualified trainee may accept or decline an offer to graduate early. Those who decline will continue in the standard training program.

Once a PIP-SI candidate is selected, schedules are adjusted so that all specialty services and ABS and ACGME requirements are completed prior to initiation of the PIP-SI experience. Adjustment of these schedules also is intended to allow the future PIP-SI attending to have a "chief experience" during the last 6 months of the fourth year and the first 6 months of the fifth year in training.

Following selection, a 6-9-month ramp-up period prior to the anticipated graduation date is necessary as the incoming PIP-SI attending will need to apply for a full state medical license, Drug Enforcement Administration license, hospital credentialing, payer onboarding, and malpractice coverage in accordance with all applicable state laws, regulations,

Metrics for Determining Practice Readiness

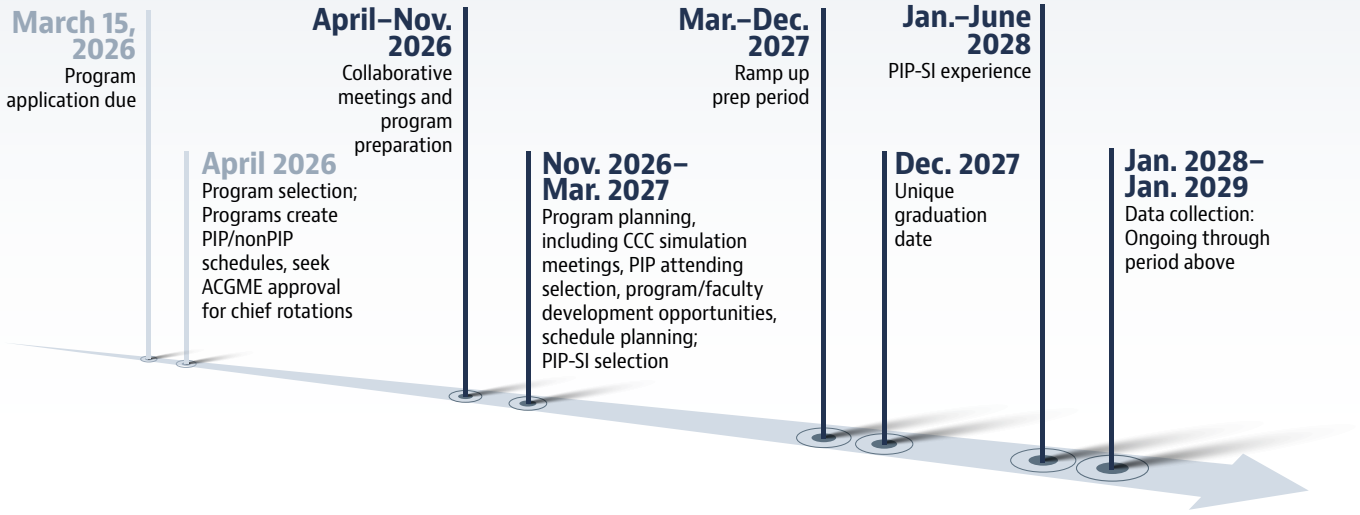
- **Case Log Minimums Met**
- **Certifications:** ATLS, FLS, FES
- **Pass Qualifying Exam**
- **EPA Assessments:** Practice Ready for all EPAs*
- **Milestone Requirements†**
- **End of Rotation Evaluations:** No concerns about communication, professionalism, or teamwork
- **Multisource Feedback:** Assess integrity, reliability, knowledge of limitations, ability with flexibility in tool used

*EPAs with fewer than 0.5% of collected assessments will be exempt from this requirement.

†Achievement of milestone levels per PIP guidelines.

ATLS = Advanced Trauma Life Support;
FLS = Fundamentals of Laparoscopic Surgery;
FES = Fundamentals of Endoscopic Surgery

First PIP-SI Cohort Timeline



and institutional policy. An experienced PIP team will guide these efforts.

The program director, selected trainee, and clinical service chief will develop a plan for the PIP-SI experience that is beneficial for the PIP-SI attending's career development. The default scope of practice will be a core general surgery experience. Each training program will have individual circumstances that determine the best configuration of a PIP-SI experience. However, the central tenet of PIP-SI is to allow an autonomous experience in the familiar environment of their training program surrounded by those who have been instrumental in their training once a trainee graduates early from the program. This structure contrasts with the transition to independence that often occurs in a new institution, with unfamiliar surroundings, colleagues, and modes of practice.

If the PIP-SI attending has limited experience in a case, they would request consultation with a more experienced colleague, as one would expect with any new attending. Thus, the breadth of experience of the PIP-SI attending would continue to grow as it would during the early years following residency. The PIP-SI attending must remain in the training institution until the standard graduation date as a requirement for ABS certification.

Critical to the success of the PIP pilot is a robust CCC that can make high-stakes decisions regarding practice readiness as well as faculty and trainee development in the form of feedback and assessment.

Enhancements in trainee assessment already have been achieved via Entrustable Professional Activities (EPAs), Milestones, formal intraoperative assessments, multisource evaluations, and so on, which provide a plethora of sources for CCC appraisal. We expect that one of the benefits of the PIP program will be enhancement in assessment, evaluation, and feedback processes to the betterment of all trainees, including those that are excelling, but also those who may be struggling.

Programs are currently being identified for the pilot with plans for the first PIP-SI experience to begin January 2028, with new programs added on an annual basis.

As the pilot develops, we are intent on creating a community of centers to identify best practices, share ideas, and create processes for successful implementation. The need to be flexible in applying the PIP-SI experience to each program is paramount while principles of enhanced autonomy and experience in the attending role are maintained.

The BRC II invites all interested institutions to contact the PIP team to discuss participation in the pilot. Learn more at *facs.org/for-medical-professionals/education/programs/promotion-in-place-pip-pilot* or contact

PIP@facs.org for additional information and to request an application. View the full FAQ for this program at *facs.org/for-medical-professionals/education/programs/promotion-in-place-pip-pilot/faq*.

Looking Ahead

PIP is one of the first innovations nationally that seeks to implement and evaluate CB-TV training. It offers residents the possibility of graduating early and transitioning to "sheltered independence" in a familiar environment. It also allows us to gain experience with such a model, learn from it, and work to advance medical and surgical education as a whole.

PIP is an interim step on the path to CB-TV training in which the period of residency/fellowship could be shorter, standard, or longer depending on when competency is achieved. Gathering pilot data on feasibility, acceptability, patient safety, trainee morale, competency achievements, and other important outcomes will be essential.

Disclaimers:
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PIP is one of the first innovations nationally that seeks to implement and evaluate CB-TV training.

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Rare Ureterosciatic Hernia Case Solved with Stenting, Robotic-Assisted Repair

Lauren Diem, MSPAS, PA-C
Laura Greco, MD, FACS
Matthew Gerstein, MD
Karen A. Chojnacki, MD, FACS

URETEROSCIATIC hernias occur when the ureter herniates between muscles of the pelvic floor, namely superior to the piriformis through the greater sciatic foramen, and inferior to the gluteus minimus.[1] The incidence of such hernias is quite low; only a few other case reports exist, and there are no official incidental data.

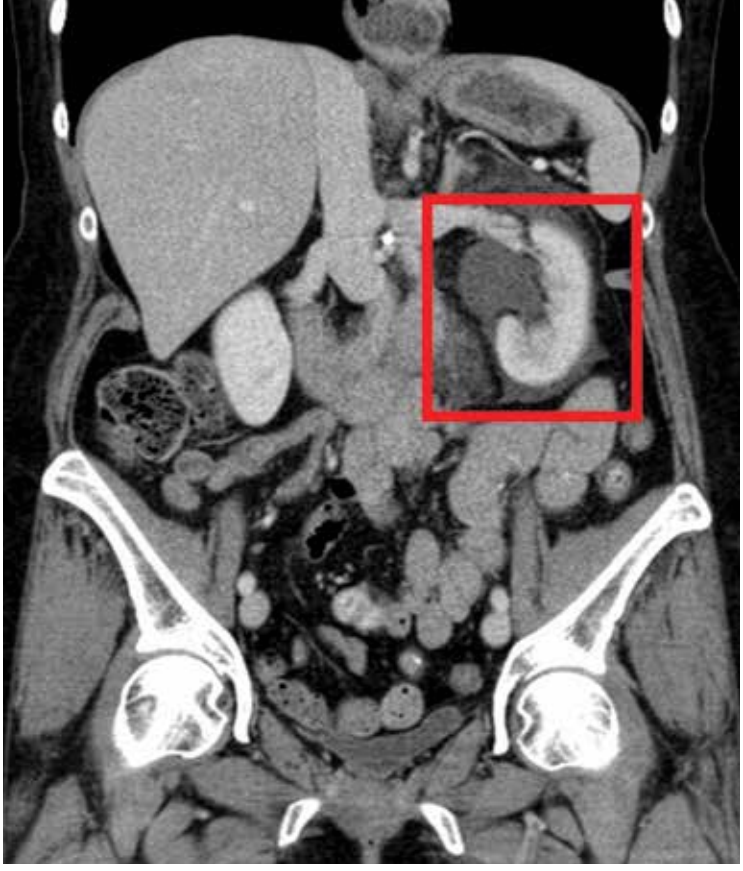
Interestingly, all the case report subjects are female.[2] It is believed that fewer than 40 other instances have occurred worldwide,[2] with the first case documented in 1947 by Ake Lindbom, MD (hence this type of hernia is sometimes referenced as a Lindbom hernia).[3]

The etiology of these hernias is unknown but is likely a combination of pelvic floor muscle atrophy,[4] adhesions, fascial loss, and congenital anatomic malformations of the ureter or pelvic floor.[3,4] History of childbirth also is believed to increase risk. The most common path through which a ureter herniates is the inguinal canal into the scrotum. Bowel, bladder, or ovary also may herniate through the sciatic foramen.

While ureterosciatic hernias may be asymptomatic, they also can cause abdominal pain and urinary symptoms such as frequency, urgency, burning, or hematuria. This classification of hernias can cause urinary tract infections, pyelonephritis, and hydronephrosis upstream from the hernia, especially if it becomes incarcerated. Although these hernias have the ability to spontaneously reduce, they can become incarcerated or strangulated and must be diagnosed via imaging such as computed tomography (CT) scan or retrograde pyelogram, which will show the "curlicue sign" of a tortuous ureter with a U-shaped or omega-shaped ureter trapped in a defect.[5]

HPI/Hospital Course

The patient, a 59-year-old female, was seen urgently in



Patient CT imaging reveals a left forniceal rupture with surrounding urinoma (coronal view). The left kidney is identified with a red box.

the emergency room in 2024 for evaluation of nausea, flank pain, and difficulty urinating that began the night before presentation. She reported that she was pushing hard to urinate, then began to experience left-sided flank pain. Her pain and nausea worsened, which prompted her to present to the emergency department.

She was in her usual state of health beforehand. A CT scan of the abdomen and pelvis revealed left-sided hydronephrosis with forniceal rupture and urinoma, for which treatment is placement of a double-J stent.[6] It also showed what appeared to be a ureterosciatic hernia on the left, with no signs of ureterolithiasis. She presented afebrile with a creatinine level of 1.0, white blood cell count of 16,000, and lactate level of 3.4, meeting sepsis criteria. Her urinalysis was negative for hematuria or infection. She received ceftriaxone and hydromorphone in the emergency department.

The patient consented to have a left ureteral stent placed in the OR later that morning. The stent was placed with some difficulty by Dr. Gerstein. She tolerated the procedure well without complications and reported that her flank pain resolved.

After overnight observation, her white blood cell count decreased to 13,000, her kidney function remained stable, and her lactate normalized. She was discharged from the hospital in good condition the next day, with follow-up set up with Karen A. Chojnacki, MD, FACS, to repair the hernia,[6] which was repaired surgically later that year.

Description of Operation

The procedure conducted by Dr. Chojnacki was a robotic-assisted repair of ureterosciatic hernia with ureteral mobilization and intraperitonealization.

After supine positioning and induction of general endotracheal anesthesia, a urinary catheter was placed, followed by prepping and draping, incisions, and robotic docking.

The small bowel was mobilized out of the pelvis. The white line of Toldt of the colon was incised, and the left colon was mobilized from lateral to medial until the gonadal vessels and ureter were exposed. The ureter was carefully dissected out of the retroperitoneum and encircled with a vessel loop.

The ureterolysis was continued from the intersigmoidal fossa down to the ureterovesical junction. There was entrapment of the ureter within the sciatic hernia. The adhesions between the ureter were carefully lysed, and the ureter was removed from the sciatic hernia. Once ureteral mobilization was completed, the hernia was easily seen and measured approximately 1.5 cm in diameter. The peritoneal flap was created inferiorly and superiorly to accommodate a small piece of soft mesh.

August 4, 2024
Patient presentation
Ureteral stent insertion by Dr. Matthew Gerstein

October 16, 2024
Robotic surgical repair of ureterosciatic hernia with mesh by Dr. Karen Chojnacki

December 16, 2024
Ureteral stent removal by Dr. Matthew Gerstein

February and July 2025
Follow-up visits and imaging

To facilitate visualization, the left tube and ovary were tacked to the anterior abdominal wall using suture. A 4 x 4-cm piece of soft mesh was introduced into the peritoneal cavity. This was positioned in the pelvis to cover the sciatic hernia, and the peritoneum was then closed over this mesh with care taken to make sure the mesh remained flat and across the hernia defect. The peritoneum was closed with absorbable suture. The ureter was left on the peritoneal side of this closure. Therefore, it was ensured that the peritoneal closure was not too tight on either the proximal or distal ureter.

A urologist was present to confirm that leaving the ureter intraperitoneal was safe and that the ureter had been mobilized safely with no evidence of injury. The mesh had been peritonealized completely, and the ureter was left on the intraperitoneal side for a distance of approximately 7 cm.

Follow-Up Procedures and Visits

In December 2024, the patient followed up with Dr. Gerstein for a left-sided stent check and possible removal in the OR. (She had been experiencing some stent colic since placement a few months prior.)

Fluoroscopy revealed the stent was in good position with a straight contour throughout its course. Cystoscopy and ureteroscopy were performed. The ureteroscope was able to be advanced to the portion of ureter previously involved in the hernia, and visual inspection revealed this portion to be widely patent and without tortuosity or obstruction. Some nonspecific mucosal changes were noted in this area. The scope then focused on the ureteral orifice into the bladder; brisk efflux of clear urine was appreciated, as was ureteral peristalsis. The decision was made not to replace the stent.

In February 2025, the patient was seen by Dr. Gerstein during a follow-up visit. She reported feeling much better without the stent and a 6-month follow-up ultrasound was arranged from that date.

In July 2025, the ultrasound showed normal kidneys, no hydroureteronephrosis, and a normal-appearing bladder. She denied experiencing any abdominal or urinary symptoms, and it was determined that no scheduled follow-up was required. Because she was symptomatic at original presentation, she will be seen as needed and will re-engage if the symptoms return.

The patient has thus far been stable with no urologic complaints or return visits to the hospital since her scheduled follow-up visits.

Treatments for ureterosciatic hernias have included observation (usually reserved for asymptomatic cases), nephrostomy placement,

The patient has thus far been stable with no urologic complaints or return visits to the hospital since her scheduled follow-up visits.

ureteral stenting alone,[3] and ureteral stenting with delayed surgical repair (with or without mesh).[7] If incarcerated ureter is discovered to be unviable during surgical hernia repair, ureteral reconstruction should be performed and a ureteral anastomosis created.[5] To this day, there are no fixed guidelines for treatment.[2]

Fewer than 10 other robotic-assisted repairs of this rare hernia had been documented,[8,9] in addition to some nonrobotic laparoscopic repairs.[10] Open and transgluteal surgical repairs are not recommended.[5] The initial presentations and treatments vary, but successful long-term management of these patients can be achieved with surgical intervention or regular ureteral stent exchanges. B

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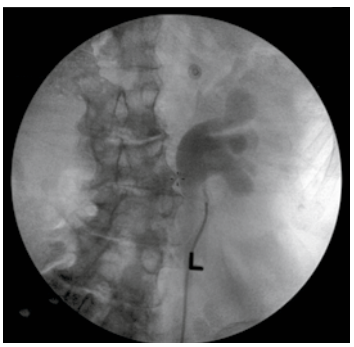
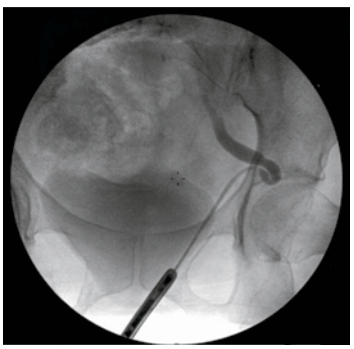


A fluoroscopic image of a forniceal rupture was taken in the OR during a ureteral stenting procedure. The ruptured left kidney is highlighted with dark fluoroscopic dye pictured to the right of the spine.



A fluoroscopic image of the ureterosciatic hernia also was obtained. The hernia is highlighted with dark fluoroscopic dye in the right portion of the image.

75 Years of Accreditation Reflect a Surgical Legacy that Helped Shape Modern Healthcare Quality and Safety

Lenworth M. Jacobs Jr., MD, MPH, FACS

In 2026, Joint Commission marks its 75th anniversary, celebrating three-quarters of a century as the nation's leading healthcare accreditor.

FOR SURGEONS—and especially for Fellows of the ACS—this milestone is more than a commemorative moment. It is a reminder that the roots of accreditation, outcomes measurement, and organized quality improvement and patient safety in US hospitals are rooted in the surgical profession; the ACS was a driving force behind the creation of Joint Commission.

In the early 20th century, hospitals varied widely in the areas of quality, safety, recordkeeping, and staffing. Concerned about this inconsistency, Ernest A. Codman, MD, FACS, a Boston surgeon, advocated for outcomes-based hospital standardization.

Dr. Codman advanced what he called the "End Result Idea"—the concept that hospitals and surgeons should systematically follow patients to determine whether treatment had been successful and learn from adverse outcomes. He vigorously pursued these ideas in the Boston surgical community.

Dr. Codman's pioneering ideas found institutional backing when the ACS was founded in 1913. Hospital quality quickly became a central ACS priority. In 1917, the ACS formally launched the Hospital Standardization Program, establishing what would become the first national standards for hospital care.

The original "The Minimum Standard" for hospitals, adopted by the ACS in 1919, fit on a single page. Yet its requirements—an organized medical staff, accurate medical records, safe facilities, and appropriate diagnostic and therapeutic services—were revolutionary for the time.

First Hospital Surveys

When ACS surveyors began visiting hospitals in 1918, the results were sobering. Only 89 of 692 hospitals surveyed—approximately 14%—met The Minimum Standard. Rather than abandoning the effort, the ACS expanded it, refining standards and publishing the first comprehensive standards manual in 1926.

Over the next several decades, the ACS Hospital Standardization Program became the de facto national authority on hospital quality, influencing healthcare well beyond surgery and laying the groundwork for modern accreditation.

Formation of Joint Commission

By mid-century, it became clear that hospital accreditation required a broader coalition. In 1951, the ACS joined the American College of Physicians, American Hospital Association, American Medical Association, and Canadian Medical Association to create the Joint Commission on Accreditation of Hospitals (JCAH) as an independent, nonprofit organization.

Significantly, the ACS transferred its Hospital Standardization

Left:
Boston surgeon Dr. Ernest Codman advocated for outcomes-based hospital standardization.

Below:
Adopted in 1919 and finalized in 1920 by the ACS, "The Minimum Standard" was a revolutionary one-page document aimed at improving hospital quality.

The Minimum Standard

1. That physicians and surgeons privileged to practice in the hospital be organized as a definite group or staff. Such organization has nothing to do with the question as to whether the hospital is "open" or "closed," nor need it affect the various existing types of staff organization. The word STAFF is here defined as the group of doctors who practice in the hospital inclusive of all groups such as the "regular staff," "the visiting staff," and the "associate staff."

2. That membership upon the staff be restricted to physicians and surgeons who are (a) full graduates of medicine in good standing and legally licensed to practice in their respective states or provinces; (b) competent in their respective fields and (c) worthy in character and in matters of professional ethics; that in this latter connection the practice of the division of fees, under any guise whatever, be prohibited.

3. That the staff initiate and, with the approval of the governing board of the hospital, adopt rules, regulations, and policies governing the professional work of the hospital; that these rules, regulations, and policies specifically provide:

(a) That staff meetings be held at least once each month. (In large hospitals the departments may choose to meet separately.)

(b) That the staff review and analyze at regular intervals their clinical experience in the various departments of the hospital, such as medicine, surgery, obstetrics, and the other specialties; the clinical records of patients, free and pay, to be the basis for such review and analyses.

4. That accurate and complete records be written for all patients and filed in an accessible manner in the hospital—a complete case record being one which includes identification data; complaint; personal and family history; history of present illness; physical examination; special examinations, such as consultations, clinical laboratory, X-ray and other examinations; provisional or working diagnosis; medical or surgical treatment; gross and microscopical pathological findings; progress notes; final diagnosis; condition on discharge; follow-up and, in case of death, autopsy findings.

5. That diagnostic and therapeutic facilities under competent supervision be available for the study, diagnosis, and treatment of patients, these to include, at least (a) a clinical laboratory providing chemical, bacteriological, serological, and pathological services; (b) an X-ray department providing radiographic and fluoroscopic services.

Program directly to the new Joint Commission, ensuring continuity of standards, philosophy, and survey methods. Accreditation under JCAH officially began in 1953, but its intellectual foundation was unmistakably surgical.

For its first decade, Joint Commission accreditation remained voluntary. This approach to accreditation changed in 1965, when Congress passed the Social Security Amendments, granting hospitals accredited by JCAH "deemed status" for participating in Medicare and Medicaid. This decision meant that hospitals accredited by Joint Commission could receive federal reimbursement for care, ultimately leading to accreditation as a cornerstone of federal healthcare policy.

Over subsequent decades, Joint Commission accreditation expanded beyond hospitals to include ambulatory care, behavioral healthcare, home care, laboratories, and long-term care, among other healthcare settings, reflecting the changing delivery of care across the continuum.

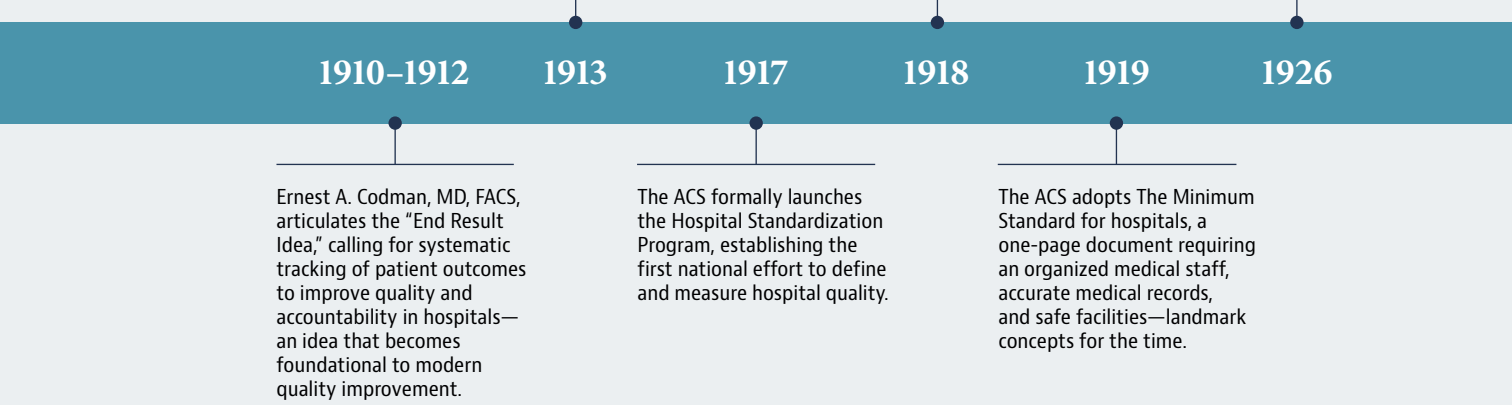
Joint Commission's mission—to enable and affirm the highest standards of healthcare quality and safety for all—remains consistent with the ideals first articulated by Dr. Codman and institutionalized by the ACS.

Landmark Joint Commission initiatives such as the Sentinel Event Policy, performance measurement systems, National Patient Safety Goals, and most recently Accreditation 360 all reflect an ongoing emphasis on outcomes, transparency, and continuous improvement—concepts that trace directly back to the ACS's early focus on measurable results in surgical care.

Why 75 Years of Accreditation Matters

For today's surgeons, Joint Commission standards are a routine part of professional life—sometimes debated, but undeniably influential.

From Surgical Standards to National Accreditation



The 75th anniversary offers an opportunity to recognize that surgeons were not passive recipients of accreditation requirements; they were the architects of the system itself.

The ACS did not simply help found Joint Commission—it created the intellectual framework, conducted the first surveys, wrote the first standards, and demonstrated that healthcare quality could be defined, measured, and improved.

This legacy continues today in ACS Quality Programs, from the National Surgical Quality Improvement Program to ACS Committee on Trauma verification and ACS Commission on Cancer accreditation, each reflecting the same commitment to data-driven improvement that launched hospital accreditation more than a century ago.

As healthcare enters an era of outcomes-based accountability, public transparency, and system-level performance measurement, this history is particularly noteworthy. The partnership between the ACS and Joint Commission—rooted in shared values of professionalism, self-regulation, and patient safety—remains as vital today as it was in 1951.

Seventy-five years later, Joint Commission's anniversary is not only its own milestone. It is a celebration of a surgical vision that helped define quality and safety in US healthcare—and continues to shape it for generations to come.

Disclaimer

The thoughts and opinions expressed in this article are solely those of Dr. Jacobs and do not necessarily reflect those of Joint Commission or the ACS.

Dr. Lenworth Jacobs Jr. *is a professor of surgery at the University of Connecticut in Farmington and director of the Trauma Institute at Hartford Hospital in Connecticut.*

1951 — JCAH is created as an independent, nonprofit organization by the ACS, American College of Physicians, American Hospital Association, American Medical Association, and Canadian Medical Association. ACS formally transfers its Hospital Standardization Program to the new Joint Commission.

1953 — JCAH begins formal hospital accreditation, building directly on the ACS standards and survey model.

1965 — Congress passes Social Security Amendments, granting hospitals accredited by JCAH "deemed status" for participation in Medicare and Medicaid, establishing accreditation as a cornerstone of US healthcare policy.

1987 — The organization is renamed the Joint Commission on Accreditation of Healthcare Organizations to reflect its expanding scope beyond hospitals.

2000 — Joint Commission International, a subsidiary of Joint Commission, releases its first international set of hospital standards and accredits its first hospital.

2007 — The organization rebrands as The Joint Commission, reflecting its national and international role across the continuum of care. ("The" was subsequently dropped.)

2026 — Joint Commission marks its 75th anniversary, while launching Accreditation 360, a streamlined, outcomes-focused accreditation model that echoes the ACS's original emphasis on measurable performance and continuous improvement.

Social Determinants of Health Screening Helps Advance Quality of Cancer Care

Kelley Chan, MD, MS
Amanda B. Francescatti, MS
Rebecca A. Snyder, MD, MPH

Social determinants of health (SDOH) encompass a broad range of social and economic nonmedical factors that significantly impact health outcomes.

these determinants are highly prevalent among patients with cancer and have been associated with adverse outcomes, such as treatment delays, morbidity, and mortality, underscoring the critical role of SDOH in shaping cancer prognoses.[1]

The integration of SDOH screening into the framework of cancer care and research offers a strategic approach to addressing these inequities. The systematic identification of these risks can enable healthcare systems and providers to tailor interventions, provide targeted support services, and coordinate with community resources to address existing health disparities. Moreover, the integration of SDOH screening aligns with broader efforts to deliver patient-centered care that recognizes the complex interplay between social factors and cancer care.

Despite the well-established influence of SDOH on cancer care delivery and outcomes, the prevalence of SDOH among patients with cancer in the US has not been well characterized, and these data are not represented in existing cancer data registries. Current studies suggest that the integration of SDOH screening within the outpatient oncology setting may improve access to high-quality and timely cancer care.

SDOH Screening at Accredited Hospitals

In 2024, the ACS distributed to ACS Commission on Cancer (CoC)-accredited programs a cross-sectional survey to assess SDOH screening practices in the outpatient oncology setting.

Of the 435 programs that participated in the survey, only 37.9% reported routinely conducting SDOH screening.[2] These findings align with current trends among healthcare systems, with less than one-third reporting routine SDOH screening in community health and primary care settings.[3,4]

These findings suggest an opportunity to improve clinical workflows and protocols to aid in the identification and management of social determinants influencing cancer outcomes.

In the study, no differences were found in program type or geographic location between screening and non-screening hospitals, suggesting that SDOH screening may be integrated effectively across diverse organizational structures and geographic locations. The findings also underscore the need to develop standardized approaches to SDOH assessment across unique healthcare environments. This will set the stage for scalable implementation of standardized SDOH screening, which then can be adjusted to support the distinct operational capacities, resource availability, and patient populations of diverse cancer programs.

The study found that programs that routinely screened for SDOH demonstrated improved adherence to cancer care quality measures related to timely administration of adjuvant therapies for breast, colon, and lung cancers. Other studies have similarly suggested that interventions to screen for and address SDOH can reduce disparities along the continuum of cancer care across multiple disease sites and patient populations.[5]

Additionally, almost all participating programs indicated the availability of social work and patient navigation programs at their sites, highlighting the widespread recognition of the essential role of support staff to help patients navigate complex healthcare systems, address social challenges, and connect to community resources.

Along these lines, a recent meta-analysis demonstrated that patient navigation interventions were associated with increased screening rates for colorectal, breast, and cervical cancers, and findings remained consistent across patient populations.[5] These services can foster community engagement and support tailored interventions to respond to the needs of individual patient populations across diverse settings.

Challenges to SDOH Screening Implementation

Cancer program administrators should focus first on standardizing the screening processes. The study found that there is significant heterogeneity in the use of SDOH screening tools, with many programs using instruments developed internally or embedded in electronic health records, which poses challenges to effectively and uniformly identify needs, collect discrete and standardized data fields that are

Common Domains of SDOH Screening Tools

SDOH	Screening Tool Domain
Economic stability	• Financial strain • Transportation difficulties
Education access and quality	• Health literacy • Education level
Healthcare access and quality	• Health insurance status • Healthcare access
Neighborhood and built environment	• Housing status • Neighborhood safety
Social and community context	• Social and emotional health • Food insecurity

comparable across different patient care settings, and develop interventions or optimize resource allocation.

Common domains were identified in the current screening tools used by programs in this study, including transportation difficulties, financial strain, social and emotional health, and food insecurity, which are consistent with other reports. In fact, the Centers for Medicare & Medicaid Services previously mandated the collection and reporting of select SDOH screening measures from hospitals reporting to the Inpatient Quality Reporting Program in 2024.

These SDOH reporting requirements have been expanded to the outpatient setting through separate regulatory channels. However, updates to this policy are ongoing, and their impact has yet to be determined. Ultimately, efforts are needed to inform the development of consensus guidelines and standardization of SDOH screening tools that can be integrated into oncology practice workflows.

Efforts to Support SDOH Screening

To date, feasibility of routine SDOH screening in the outpatient oncology and ambulatory care settings has been demonstrated in single institution and healthcare system studies.

A regional cancer center recently reported the feasibility and acceptance of routine outpatient SDOH screening for new evaluations of patients with gastrointestinal cancer, with broad support from multiple stakeholders including clinicians, staff, and patients.[6]

Notably, the screening process identified several SDOH needs among patients without significantly disrupting clinical workflow or prolonging overall clinic visit time, demonstrating that SDOH screening can be integrated without compromising the delivery of care or provider productivity. Further research investigating the feasibility and acceptability of SDOH screening in diverse outpatient oncology settings is warranted.

At a national level, there are opportunities to standardize SDOH screening and identify best practices for the integration of screening into existing healthcare system workflows. Standardization will improve the consistency of data collection, facilitate identification and management of social needs, and optimize resource use. National efforts also could support technological integration and policies that enable healthcare systems to embed SDOH screening as a routine and sustainable component of patient care.

Ultimately, the integration of SDOH screening into oncology practices has the potential to substantially improve cancer care outcomes across multiple levels. At the patient level, SDOH screening enables the identification of nonmedical factors that influence a patient's ability to access and benefit from high-quality cancer care.

In addition to improving individual patient care, systematic SDOH screening will generate valuable data that can inform institutional-level strategies to effectively allocate supportive resources and

implement targeted interventions to address common barriers. At the population level, SDOH assessments will identify structural drivers of cancer care disparities and guide the development of policies and initiatives to address these upstream determinants of health.

National Strategies to Advance SDOH Screening

The ACS CoC is dedicated to improving the quality of cancer care through accreditation processes aimed at establishing and raising standards of care. Recently, through the development and implementation of multiple large-scale national quality improvement (QI) collaboratives, improvements in the provision of local cancer care have translated into significant impacts on the way cancer care is delivered nationally.

Prior national QI collaboratives have aimed to address certain components of SDOH, including increasing access to smoking cessation resources, reducing missed radiation therapy appointments, and addressing barriers to equitable genetics access.[7]

The survey of CoC-accredited cancer programs highlights a strong consensus that the identification of systematic processes for SDOH screening remains an important priority for cancer programs. Nearly all programs reported an interest in participating in a national QI collaborative focused on improving SDOH screening and addressing SDOH-related needs.

National efforts would facilitate the sharing of knowledge and resources across diverse healthcare systems and enable the development of standardized workflows and screening protocols.

Such a collaborative could also foster the identification and dissemination of best practices for collecting SDOH data and connecting patients with community and clinical resources for identified needs. These data could then be integrated into quality metrics and improvement strategies, enabling healthcare systems to better align cancer care within the broader social context of patients, ultimately improving outcomes and reducing disparities at a population level.

Future research exploring how SDOH screening correlates with broader cancer care quality metrics, such as treatment completion, health-related quality of life, and clinical outcomes, is needed. Together, these efforts would enhance the integration of SDOH into the framework of cancer care and research, enabling cancer programs to better address the unique needs of their patient populations to ensure high-quality, multidisciplinary, and comprehensive cancer care delivery.

It is more critical now than ever for healthcare providers and systems to integrate SDOH screening into their practices to enhance cancer care delivery, improve outcomes, and reduce health disparities.

Dr. Kelley Chan *is a general surgery resident at Loyola University Medical Center in Maywood, IL.*

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Register for Reimagined ACS Quality, Safety & Cancer Conference

Healthcare professionals dedicated to advancing surgical quality, patient safety, and cancer care are invited to attend the 2026 ACS Quality, Safety & Cancer Conference (QSCC), July 30–August 2 in Orlando, Florida.

THE CONFERENCE OFFERS a dynamic 2.5-day experience focused on delivering actionable strategies that improve patient outcomes and organizational performance.

Registration is now open at *facs.org/QSCC26*.

This year marks a milestone for the conference, as it will bring together the ACS Quality and Safety Conference and the ACS Cancer Conference into one unified, reimagined experience. By fully integrating cancer care into the program and engaging the entire multidisciplinary care team, QSCC reflects the complexity, coordination, and collaboration required in modern healthcare delivery.

"QI Powered by AI"

This year's conference theme, "QI Powered by AI," highlights the growing role of artificial intelligence (AI) in healthcare. While AI continues to generate excitement, QSCC will emphasize the practical application to support decision-making, enhance efficiency, and drive measurable improvements in quality and safety.

At the same time, the program will reinforce that technology alone is not enough. Sessions throughout the conference will explore the importance of resilience, multidisciplinary teamwork, and learning from failure as essential components of successful quality improvement (QI). By reframing failure as an opportunity for growth, healthcare teams can strengthen systems and adapt in an increasingly complex environment.

Return on investment will be a consistent focus throughout the program, with many sessions exploring how to measure, communicate, and align QI efforts with organizational and financial priorities.

General Sessions Highlight Key Challenges and Opportunities

In response to evolving educational needs, many sessions have been redesigned to be more interactive and case based.

QSCC General Sessions will feature expert perspectives and insights on AI, surgical education, how C-suite leaders prioritize QI, rural cancer surgery, and other timely topics.

The conference will include more than 50 breakout sessions, 26 abstract podium presentations, as well as expanded cancer-focused programming across multiple specialty areas, including bariatric, cancer, geriatric, emergency general surgery, pediatric, and vascular surgery.

This year also will debut new content tracks spanning Data Insights, Accreditation & Verification, Quality Improvement & Patient Safety, Abstracts & Research, Hot Topics, Quality Improvement in Action, and Team-Based Competencies, which will allow attendees to tailor their experiences to specific interests and roles.

QI in Action

A new highlight of QSCC is the "Quality Improvement in Action" sessions, which showcase real-world success stories from multidisciplinary teams. Participants from the front line to the C-suite will share how meaningful improvements were achieved within their organizations.

In addition to celebrating a culture of quality and collaboration, these sessions provide clear, actionable steps that attendees can adapt and implement in their own institutions.

Access related video content online.

Hands-On Preconference Workshops

A full day of optional preconference workshops on Thursday, July 30 (additional registration required) will provide hands-on, interactive learning opportunities:

- **QI Essentials (morning or afternoon session):** A streamlined, practical introduction to QI principles is designed for today's busy healthcare professionals.
- **Wake Up Safe QI and Safety Workshop:** This interactive, multipart workshop provides a comprehensive overview of modern patient safety frameworks, human factors science, and systems-based approaches to safer care.
- **The Future of Age-Friendly Care: Driving Value Through AI & Innovation:** Through a blend of expert-led presentations, interactive breakout discussions, and actionable implementation tools, participants will explore how technology and AI can enhance clinical outcomes and operational efficiency for older adult surgical care.
- **Microsoft Excel Basics*:** This introductory workshop equips QI professionals with foundational Excel skills for organizing, analyzing, and visualizing improvement data. Through guided, hands-on instruction, attendees will build confidence in core Excel functions and tools that support everyday QI work.
- **Elevating Your Data Skills*:** This intermediate-level workshop guides QI professionals in using Excel pivot tables, pivot charts, and Power Query to analyze and combine complex data sets.
- **Advanced Excel for QI: Build your Own Dashboard*:** This advanced workshop guides experienced Excel users in designing dynamic dashboards to support complex QI analyses. Through hands-on practice, attendees will learn how to integrate multiple data sources, apply advanced functions, and build interactive visual tools that support decision-making.

*Attendance is limited and will be first come, first served.

Networking Opportunities and a New Engagement Activity

Dedicated events will provide opportunities for attendees to connect and exchange ideas:

- The **Welcome Reception** will take place Friday evening, July 31, at Live! at Pointe Orlando, a dynamic indoor/outdoor venue located just steps from the conference.
- The **Abstract Poster and Exhibiting Reception** on Saturday, August 1, will offer attendees the opportunity to engage with research presenters and explore innovative products and solutions from exhibitors.

New this year, the conference will host an "escape experience" activity designed for individuals to challenge their thinking. As the clock ticks down, participants will analyze clues, uncover hidden patterns, and "crack the code" by identifying breakdowns, testing assumptions, and applying problem-solving approaches to reach clarity.

The opening session will then bring attendees together to connect their escape activity experience and real-world case scenarios to practical lessons.

QSCC also is an opportunity to earn credits for Continuing Medical Education, Continuing Nursing Education, Maintenance of Certification in Anesthesiology, and for the National Cancer Registrars Association.

Visit *facs.org/QSCC26* to learn more and register.

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Member News

Adams Is Tapped as Inaugural CMO at UVA Health

Reid B. Adams, MD, FACS, has been named the inaugural chief medical officer (CMO) for University of Virginia (UVA) Health. In his new role, Dr. Adams will serve as the senior physician for the entire health system, which includes four hospitals across Charlottesville, Culpeper, and Northern Virginia, along with a statewide network of outpatient clinics. Dr. Adams has served as CMO for the UVA Health University Medical Center in Charlottesville since April 2020.

Tanabe Takes Over as SSO President

Kenneth K. Tanabe, MD, FACS, was elected 2026–2027 president of the Society of Surgical Oncology (SSO). An expert in surgical oncology with a focus on hepatobiliary and colorectal cancers, Dr. Tanabe serves as chief of the Division of Surgical Oncology at Massachusetts General Hospital and professor of surgery at Harvard Medical School, both in Boston. He also is deputy clinical director at the Mass General Brigham Cancer Institute.

Have you or an ACS member you know achieved a notable career highlight recently? If so, send potential contributions to Jennifer Bagley, MA, *Bulletin* Editor-in-Chief, at jbagley@facs.org. Submissions will be printed based on content type and available space.

Slater Moves Up at Mount Sinai

Bethany Slater, MD, MBA, FACS, was promoted to professor of surgery and pediatrics at the Icahn School of Medicine at Mount Sinai and system chief of pediatric surgery at Mount Sinai Kravis Children's Hospital in New York, New York. She also is chief of the Division of Pediatric Surgery at Mount Sinai Kravis Children's Hospital.

Martin Leads Society of University Surgeons

Colin A. Martin, MD, FACS, was named president of the Society of University Surgeons, an organization that promotes excellence and leadership in academic surgery. Dr. Martin is the Brad and Barbara Warner Endowed Professor of Surgery and chief of the Division of Pediatric Surgery at Washington University in St. Louis (Missouri), as well as surgeon-in-chief at St. Louis Children's Hospital.

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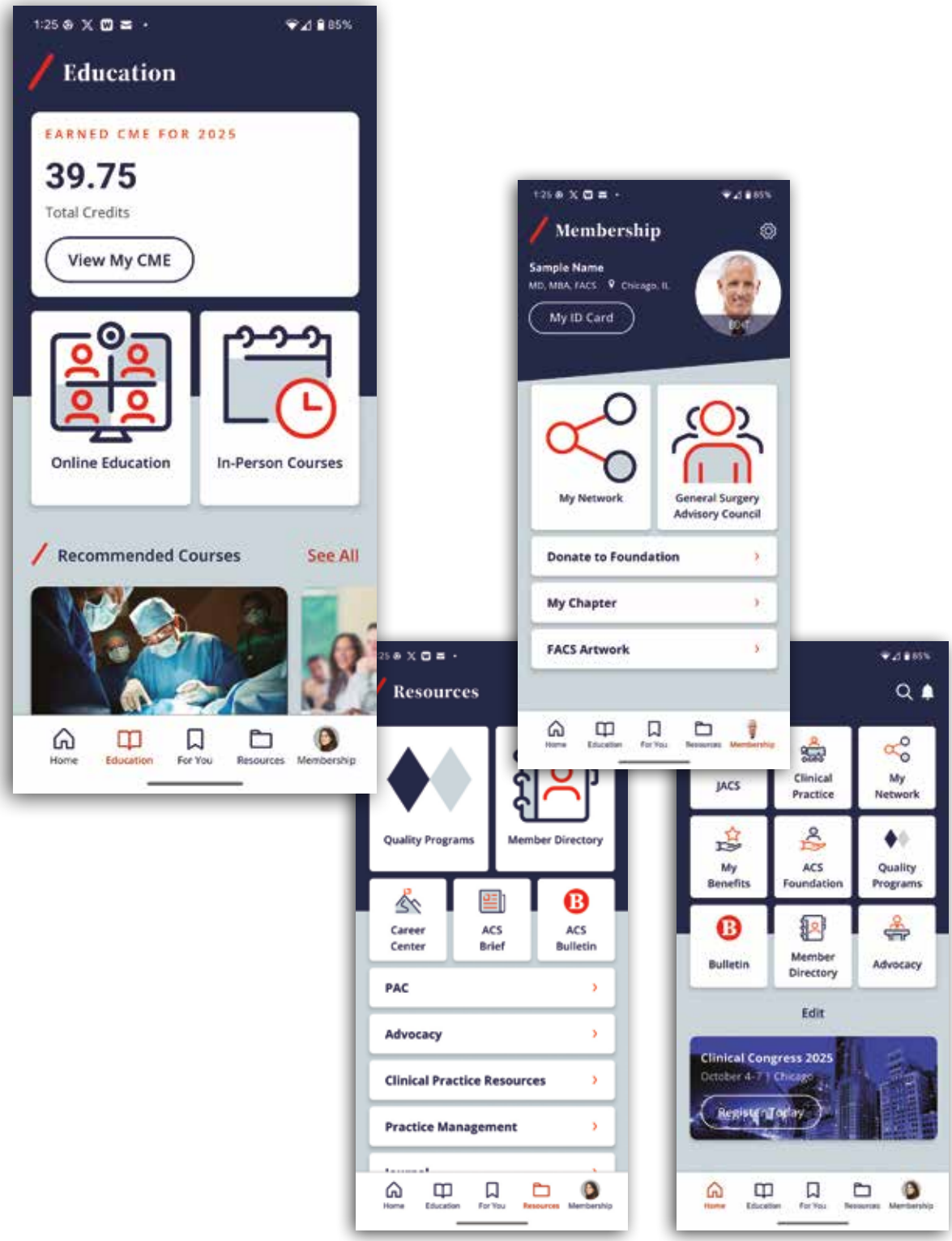

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The 2026 theme, "**QI Powered by AI**," reflects both the momentum and responsibility ahead. Artificial intelligence is rapidly transforming healthcare, but technology alone does not drive improvement. Meaningful quality improvement is driven by multidisciplinary teams who work together to identify gaps, examine setbacks, and learn from experience.

QSCC provides a space for surgeons, clinical leaders, quality professionals, administrators, and multidisciplinary teams to learn from peers, exchange best practices, and gain tools that immediately can be applied in practice.

Whether you are looking to better understand your data, meet accreditation and verification standards, build the foundations for sustaining effective quality improvement, or explore how quality and safety impact the financial health of your institution, QSCC brings it all together in one comprehensive experience.

Register

Program & Agenda

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