Preventing Surgeon Errors
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Looking forward
by David B. Hoyt, MD, FACS

Topping the agenda of the new presidential administration and Congress is repeal of at least some portions of the Affordable Care Act (ACA). Many Fellows of the American College of Surgeons (ACS) have expressed concerns about the potential consequences of this effort, particularly if Congress passes replacement policies that have not been thoughtfully articulated and debated.

The ACS intends to play an active role in what is certain to be a highly charged debate—just as we did when the ACA was under consideration. As we enter this discussion, we will advocate for the policies that we believe will have the greatest benefit toward ensuring that all surgical patients have access to necessary services. We will not be swayed by politics, but rather will promote our enduring principles of meaningful change: quality and safety, patient access to surgical care, reduction of health care costs, and medical liability reform.

Quality and safety
The ACS maintains that quality improvement and patient safety efforts should be at the heart of health care reform. In our advocacy efforts, we will explain how the ACS uses a multifaceted approach to enhance quality and safety in health care worldwide. This process involves four steps: setting standards, building the infrastructure necessary to comply with the standards, using clinical registries to measure performance and guide improvement, and instituting peer review processes to verify adherence to evidence-based standards.

To promote quality improvement and patient safety, the College supports legislation and policies that advance well-designed clinical comparative effectiveness research, the analysis of physician quality data, appropriate public reporting, and the use and adoption of health information technology.

Patient access to surgical care
As L. D. Britt, MD, MPH, DSc(Hon), FACS, FCCM, FRCSEng(Hon), FRCSEd(Hon), FWACS(Hon), FRCSI(Hon), FCS(SA)(Hon), FRCSGlasc(Hon), ACS Past-President, has noted, “There is no quality without access.” It is essential that reforms lead to health care coverage that is more accessible and more affordable for all Americans. The ACA has led to an increase in the number of people who have health insurance coverage. We should seek to sustain these gains and expand upon them through the development of more affordable alternatives. One of the common criticisms of the ACA is that low-income Americans cannot afford to pay the rising premiums. We cannot allow new coverage paradigms to threaten access to surgical care for at-risk populations.

The ACS has a long-standing policy of supporting universal access to affordable, high-quality surgical care delivered in a timely and appropriate manner. To achieve this goal, the nation must have a well-trained surgical workforce that can meet the needs of all surgical patients. The ACS maintains that any health care reform plan should call upon the health insurance industry to address issues of cost containment, coverage for low-income patients and those with pre-existing medical conditions, and administrative burdens for providers.

Reduction of health care costs
ACS Quality Programs, such as the ACS National Surgical Quality Improvement Program, the Trauma Quality Improvement Program, the Cancer Quality Improvement Program, and so on, lead to higher quality care and cost savings by preventing inefficiencies and complications. Consequently, the College will advocate for continued payment reforms that promote participation in quality improvement efforts, including the development and testing of Advanced Alternative Payment Models (APMs). APMs should ensure a sustainable workforce by providing fair and appropriate reimbursement for surgeons (see related article, page 24). Cost containment should be linked to improvement in care. If implemented, participation should be voluntary, nonpunitive, and allow access to a range of providers.

In addition, the ACS maintains that Congress should retain primary responsibility for setting
As we enter this discussion, we will advocate for the policies that we believe will have the greatest benefit toward ensuring that all surgical patients have access to necessary services.

Medicare payment policy. This task should not be delegated to an unelected government body that accepts minimal input from patients and other stakeholders.

Medical liability reform
The mission of the ACS is to improve the care of the surgical patient, safeguard standards of care, and create an ethical practice environment. The College believes the nation’s medical liability system is broken and that it fails both patients and physicians. Whereas liability reforms enacted at the state level have effectively reduced health care costs and improved access to care, the College will advocate for reforms aimed at fostering safety, quality, and accountability; traditional tort reforms, including caps on noneconomic damages; and alternative, patient-centered reforms, such as early disclosure and offer programs, communication and resolution programs, and safe harbor protections.

Strategy going forward
We are living in an era of political polarization, and health care reform certainly has been one of the most divisive issues for a number of years. As a professional organization dedicated to providing surgical patients with optimal care, it behooves the College to play a part in this round of the debate.

We will urge Congress to take the College’s general principles into account as members develop a clear strategy for reforming the current policies. The ACS also will encourage legislators to provide opportunities for patients, health care professionals, and other key stakeholders to assess new proposals and to share their views on the best path forward.

In these exchanges, the College will be direct but civil and will be prepared to offer alternatives that we believe will serve the interests of surgical patients. No doubt, there will be—and, in fact, should be—disagreement. A certain amount of conflict and tension is necessary to stimulate change and growth. However, we cannot allow these discussions to deteriorate into discord and division.

For more than 100 years, Fellows of the ACS have been committed to serving all patients with skill and fidelity. Throughout our history, we have engaged with state and federal lawmakers on both sides of the aisle to advocate for the profession and our patients. The ACS leadership looks forward to a thoughtful reevaluation of the health care system in the months and years ahead.

If you have comments or suggestions about this or other issues, please send them to Dr. Hoyt at lookingforward@facs.org.
Evolving insights for preventing surgeon errors:

Balancing professionalism and cognition with knowledge and skill

by David H. Ballard, MD; Navdeep S. Samra, MD; and F. Dean Griffen, MD, FACS
Errors that lead to adverse events occur in 2.9 percent to 3.7 percent of hospital admissions, and more than half of the adverse events that occur in surgical patients involve errors.1-3 The Institute of Medicine—now the National Academy of Medicine (NAM)—began its study of adverse events as the data accrued and discovered the surprising prevalence of errors. The NAM published its first report, To Err Is Human: Building a Safer Health System, in 1999.4 Initially, surgeons were skeptical of the findings in the report but gradually embraced the reality that errors were a critical factor in complications and poor outcomes. This realization led the American College of Surgeons (ACS) and the surgical community as a whole to begin studying surgical errors and to identify ways to broaden and improve the focus of surgical education.

As a first step in examining adverse events, the ACS and other stakeholders began investigating the causes of surgical errors. Because errors rarely were reported, the only source of information was closed liability claims. Surgeons had always assumed that surgical errors were largely the result of insufficient technical skill or medical knowledge; however, data from closed claims against surgeons indicated that there were other critically important factors involved.5-8 This revelation has empowered the surgical community to develop strategies to enhance error prevention and to improve outcomes.

In the process of seeking the causes of surgical errors, some of the preventive measures employed to prevent them were obvious and had been previously reported.3-8 Since then, more complex insights have evolved. The purpose of this review is to amalgamate information gained over time and to provide suggestions on how we can prevent errors based on what we have learned.

## Technical errors

Technical errors are common. However, these errors are rarely the result of deficient technical skill. In a 1999 report, researchers at the Harvard School of Public Health and at Harvard’s Brigham and Women’s Hospital, Boston, MA, collected data from closed claims that confirmed the importance of technical competence in the prevention of errors and that technical skill was a small part of technical competence.5

In 2007, the ACS Closed Claims Study reported data collected from closed claims and found that technical errors occurred in 229 of 460 liability claims.5 However, the surgeon reviewers found technical skill clearly deficient in only 11 percent of these cases. All of these cases involved scope-of-practice issues. Admittedly, it was impossible to judge the surgeons’ technical skills in 46 percent of cases involving technical errors. For these claims, the reviewers either did not have access to information regarding the frequency of technical failure in a given surgeon’s experience with a specific procedure or could not clearly determine the degree to which confounding circumstances contributed to the error.

Determining the technical skill of a surgeon requires knowledge of the frequency of errors, not the presence of errors. Furthermore, technical skill only can be measured correctly when the circumstances—systematic factors—surrounding a physician’s performance are taken into account. Our innate human limitations may lead to errors during the simplest procedures, and confounding circumstances, such as peritonitis, obesity, equipment failures, deficits in the institution’s culture, dense adhesions, and anatomic enigmas, decrease the likelihood of positive outcomes.

Even so, errors caused by the failure to stay within our scope of practice are unacceptable. The ACS study revealed scope-of-practice problems in several areas:
PREVENTING SURGEON ERRORS

TABLE 1.
ACS CLOSED CLAIMS STUDY: BEHAVIORAL FAILURES

<table>
<thead>
<tr>
<th>Types of behavioral failures</th>
<th>n</th>
<th>(Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicate with patient and/or family</td>
<td>157</td>
<td>(34)</td>
</tr>
<tr>
<td>Pursue an abnormal symptom or test result</td>
<td>117</td>
<td>(25)</td>
</tr>
<tr>
<td>Pursue a postoperative problem</td>
<td>115</td>
<td>(25)</td>
</tr>
<tr>
<td>Assess surgical problem before surgery</td>
<td>87</td>
<td>(19)</td>
</tr>
<tr>
<td>Enlist the support of proper consultant</td>
<td>5</td>
<td>(14)</td>
</tr>
<tr>
<td>See patient in a timely fashion</td>
<td>60</td>
<td>(13)</td>
</tr>
<tr>
<td>Cross coverage or continuity of care issues</td>
<td>54</td>
<td>(12)</td>
</tr>
<tr>
<td>Communicate with consultants</td>
<td>46</td>
<td>(10)</td>
</tr>
<tr>
<td>Stay within proper scope of practice</td>
<td>44</td>
<td>(10)</td>
</tr>
<tr>
<td>Assess comorbidities before surgery</td>
<td>26</td>
<td>(6)</td>
</tr>
<tr>
<td>Follow patient long enough postoperatively</td>
<td>29</td>
<td>(6)</td>
</tr>
<tr>
<td>Check test results</td>
<td>24</td>
<td>(5)</td>
</tr>
<tr>
<td>Maintain other practice patterns</td>
<td>62</td>
<td>(14)</td>
</tr>
<tr>
<td>At least one failed practice pattern</td>
<td>360</td>
<td>(78)</td>
</tr>
<tr>
<td>Total number of cases</td>
<td>460</td>
<td>(100)*</td>
</tr>
</tbody>
</table>

*Percentages sum to greater than 100 percent because reviewers could indicate more than one flaw per case.


• Failure to refer cases that require services outside of a surgeon’s areas of expertise
• Failure to consult intraoperatively when a case unexpectedly deviates from a surgeon’s area of expertise
• Failure to refer cases to a tertiary care facility when institutional ancillary care needs cannot be met within a surgeon’s work environment
• Failure of attendings to provide proctoring for trainees or trainee failure to request attending supervision
• Failure of aging surgeons to scale back their scope of practice
• Failure of surgeons to properly introduce new technologies into practice due to inadequate training or proctoring

Surgeons should realize that staying within their scope of practice can minimize technical errors, reduce complications, and improve outcomes.

Errors and professional behavior
Behavioral traits such as diligence, tenacity, and vigilance affect patient care. The ACS Closed Claims Study identified behavioral violations in 78 percent of cases in which an error occurred, including inadequate communication with the patient and family and failure to pursue a postoperative problem (see Table 1, this page).

Reviewers were required to distinguish between behavioral diligence and behavioral skill. For example, some surgeons have excellent communication skills; others rely more on diligence. The Accreditation Council for Graduate Medical Education (ACGME) includes “interpersonal and communication skills” among six core competencies that physicians should master in training. Nonetheless, surgeon-reviewers found that lack of diligence and insufficient time, rather than lack of behavioral skill, resulted in most of these communications deficiencies. In other words, most of the surgeons possessed what behavioral scientists call “behavioral capability” but did not always exercise it.
One review of closed claims in New York State found communication barriers in 24 percent of the 178 cases.

The relationship between behavior and knowledge is complex. The following behavioral aspects of patient care typically involve a degree of medical knowledge: failure to pursue an abnormal symptom or test result, failure to pursue a postoperative problem, failure to assess a surgical problem before surgery, and failure to assess comorbidities before surgery. Even so, the ACS Closed Claims Study found that, in most cases, while surgeons possessed the required knowledge, they failed to apply it. If knowledge was lacking, the behavioral failure to stay within a proper scope of practice or the failure to enlist the support of a qualified consultant still placed the errors within the realm of behavioral deficiencies.

Behavioral failures led to a marked increase in the incidence of diagnosis-related errors, including failure to diagnose, delayed diagnosis, and failure to perform diagnostic tests (see Table 2, this page).

Behavioral deficiencies also caused frequent treatment errors. However, the incidence of errors in treatment was not statistically related to behavioral failures. This finding is to be expected since, unlike the treatment category, diagnostic errors do not include the element of technical skill. However, when data related to the preventability of complications and technical errors are compiled, the profound significance of behavior among these claims is revealed (see Table 3, page 14). Hence, when a technical error occurred in the presence of a behavioral violation, complications and their consequences were markedly escalated.

Because behavioral failures do not always lead to errors, surgeons sometimes fail to grasp their significance. Behavior is determined by its consequences. Surgeons continue to violate good behavioral practices in the care of patients because errors resulting from bad behavior occur infrequently enough that their significance is overlooked. In addition to surgeons’ failure to recognize the consequences of negative professional behavior, surgeons are vulnerable to behavioral violations because we are overworked. Because reimbursement rates are low, surgeons often have a financial incentive to work longer or additional shifts.
Another factor contributing to the tendency of surgeons to overwork is the workforce shortage. Heavy caseloads may make it difficult to find time for attention to the behavioral elements of care. Combine this lack of opportunity for self-reflection with a failure to grasp the profound significance of our behavior, and errors are the inevitable result. We stop communicating. We examine images instead of patients, focusing all too often on incidental imaging or lab findings instead of patient complaints. We make decisions on the basis of numbers on a monitor reported to us by surrogates without the benefit of clinical correlation. We proceed without taking time for necessary forethought.

Good professional behavior enhances a surgeon’s knowledge base and technical skill and helps him or her avoid errors and achieve the best possible outcomes. Especially when we are overworked and fatigued, we must slow down in order to accomplish ordinary tasks. Medical knowledge should be adequate if we work within a proper scope of practice, take the necessary time to seek and find additional information when needed, and consult as appropriate.

Errors and cognitive skills
In the Harvard medical practice study cited previously, mistakes in judgment were observed in 169 of the 258 claims that resulted from errors, but the investigators made no specific reference to cognition. However, the surgeon reviewers who collected information for the ACS Closed Claims Study reported a complex relationship between medical knowledge, behavior, and cognition, although no specific data were collected. Other researchers have estimated that 80 percent of misdiagnoses stem from cognitive errors. Although difficult to measure, it is clear that cognitive errors are common and frequently have disastrous results.

Taking time to think is an aspect of diligent behavior; having the cognitive ability with which to think also is important. However, these qualities are not mutually exclusive; cognitive diligence and cognitive skill are both necessary to minimize errors.

In *How Doctors Think*, Jerome Groopman, MD, clarifies the complex interaction between thinking and knowledge. The ability to recognize when we do not know something can be used to prompt skillful thinking. Realizing that what we know is based only on a modest level of understanding, we learn to thoughtfully challenge what we think we know when it is questioned or when facts and data do not fit that piece of knowledge. Clinical certainty on the part of a surgeon can sometimes stymie meaningful thinking when it is used defensively to hide uncertainty. Uncertainty can be helpful and lead to reflective cognition, which is a tool for dealing with the care of a patient that involves conflicting facts or data.

Dr. Groopman defines several types of cognitive mistakes that lead to medical errors. He illustrates these

### TABLE 3.
**ACS CLOSED CLAIMS STUDY: PREVENTABILITY OF COMPLICATION BY OCCURRENCE OF TECHNICAL ERROR AND BEHAVIOR VIOLATIONS, N (%)**

<table>
<thead>
<tr>
<th>Preventability of complication</th>
<th>Behavior violations occur n = 360</th>
<th>No behavior violations occur n = 100</th>
<th>Row total</th>
</tr>
</thead>
<tbody>
<tr>
<td>When technical error occurs*</td>
<td>n = 173</td>
<td>n = 56</td>
<td>n = 229</td>
</tr>
<tr>
<td>Preventable</td>
<td>134 (78)</td>
<td>25 (45)</td>
<td>159 (69)</td>
</tr>
<tr>
<td>Not preventable</td>
<td>6 (4)</td>
<td>19 (34)</td>
<td>25 (11)</td>
</tr>
<tr>
<td>Impossible to judge</td>
<td>33 (19)</td>
<td>12 (21)</td>
<td>45 (20)</td>
</tr>
<tr>
<td>When no technical error occurs†</td>
<td>n = 187</td>
<td>n = 44</td>
<td>n = 231</td>
</tr>
<tr>
<td>Preventable</td>
<td>76 (41)</td>
<td>0 (0)</td>
<td>76 (33)</td>
</tr>
<tr>
<td>Not preventable</td>
<td>28 (15)</td>
<td>34 (77)</td>
<td>62 (27)</td>
</tr>
<tr>
<td>Impossible to judge</td>
<td>83 (44)</td>
<td>10 (23)</td>
<td>93 (40)</td>
</tr>
</tbody>
</table>

*Chi-square = 42.635, df = 2 (p < 0.000).
†Chi-square = 73.540, df = 2 (p < 0.000).

types of errors using real cases from his personal experience as a medical oncologist. For example, he defines an availability error as a cognitive mistake resulting in a faulty decision that is based on the ease with which a relevant example comes to mind. For example, experienced surgeons may think the common bile duct is the cystic duct because it looks like the last 100 cystic ducts they have seen.

Lawrence Way, MD, FACS, has demonstrated the concept of illusions as causes of cognitive errors that lead to adverse technical events. We suffer from the illusion that what we see is the cystic duct, causing us to injure the common bile duct and/or the common hepatic duct, all because we made an availability error—a cognitive mistake. We make these errors in haste, trying to save time, when, in fact, preventing the consequences of flawed cognition by thinking skillfully is a bigger and more effective time-saver. To think that what you see is possibly an illusion unless your dissection has established the critical view of safety requires no more than an instant.

Sometimes we make poor decisions based on affective errors in cognition. These errors result from a decision based on what we wish to be true. Surgeons often de-emphasize that which they fear. For example, a surgeon will choose to think that a postoperative patient’s fever and distention are due to atelectasis and ileus, when in reality a leaking anastomosis or intra-abdominal abscess has not been ruled out. Delayed diagnosis and treatment of complications frequently stem from cognitive mistakes classified as affective errors. In these circumstances, a surgeon’s medical knowledge is not applied sufficiently because of a cognitive error stemming from fear that proper evaluation will reveal a technical failure. Since this and other similar clinical patterns are often self-limiting, we do not easily learn that we must always think in terms of the worst clinical scenario to achieve the best outcomes.

**Aggressive versus restrained behavior**

If one thinks in terms of a bell-shaped curve, many surgeons in the middle portion of the curve can walk the line between care that is too aggressive and care that is too restrained. Others of us have personalities that tend toward one extreme or the other, which may lead to cognitive errors. Subconsciously, data and facts may be preferentially selected to confirm a plan of care in keeping with the surgeon’s personality. These cognitive errors occur because of confirmatory bias and are preventable only if surgeons recognize these tendencies and consciously avoid this type of cognitive mistake. For example, overly aggressive, over-confident surgeons must recognize when plans for antrectomy should be abandoned in favor of pyloroplasty to prevent the risk of duodenal stump leak or bile duct injury in the face of a technically challenging penetrating duodenal ulcer. Overly reticent surgeons who fear failure must continue with pancreatoduodenectomy instead of choosing a bypass procedure that denies the patient a reasonable chance for cure.

Dr. Groopman also observed that some mistakes are caused by franchise errors, which are based on the idea that “whom you see is what you get.” If you see a surgeon for gastroesophageal reflux disease, you get a laparoscopic fundoplication; if you see an internist, you get medical management. This situation, which is associated with confirmatory bias, becomes fraught with medical errors. For example, a general surgeon seeing a patient with back pain and an umbilical hernia may preferentially select facts and data, repairing the hernia and ignoring the back pain. Two months later, the patient presents to the emergency department with a ruptured abdominal aortic aneurysm.

Search satisfaction errors occur when we fall prey to the natural tendency to stop searching and thinking after making a major finding. For example, a surgeon seeing a patient with left-sided abdominal pain finds a small left inguinal hernia. Additional history of rectal bleeding is missed. The hernia is skillfully repaired, the sutures are removed, and the patient is released. The pain and bleeding continue, the patient sees a different physician, and colonoscopy reveals sigmoid carcinoma.

A surgeon’s biases toward a patient’s culture, religion, socioeconomic status, or sexual orientation also may affect patient care. One study of physician-patient encounters queried data from 193 physicians with 618 patient encounters. The study found that physicians had more negative perceptions of African-American
In addition to accepting individual responsibility for the care we provide, we must also be aware of, and participate in, systems of care. Systems of care are designed to protect us from error, not to shelter us from accountability.

and low-income patients than of Caucasian and/or upper socioeconomic status patients.13

In summary, both diligently taking time to think and skillful thinking are required to prevent cognitive errors that often lead to preventable adverse events. Our tendency to attribute these errors in thinking to a lack of technical skill or medical knowledge thwarts our ability to learn from our cognitive mistakes.

Systems affect quality of care
Surgeons work at the point of service. The quality of the care we provide is only partly determined by our surgical knowledge, technical skill, professional behavior, and cognition. The other important determinants of quality are systems factors—elements of care that involve relationships between individuals, their tools, and the environment in which they work.8

In the Harvard medical practice study, systems failure contributed to errors in 82 percent of the 258 claims involving patient injury.

In some cases, these systems closely aligned with the care we provide. The systems in which surgeons practice affect the quality of mechanical equipment, devices, and surgical instruments. They also affect institutional requirements for marking a surgical site and prompts for ordering prophylactic anticoagulants and antibiotics. Other systems factors are more difficult to associate with errors because they are remote to adverse events in time and place. These include decisions at the administrative level, such as a chief financial officer’s decision for or against participation in the ACS National Surgical Quality Improvement Program (ACS NSQIP®), or at the medical staff level, such as the rules set forth by the credentials committee for safely introducing new technologies into surgical practice. Human factors also include a health care institution’s policies regarding “as needed” nurses and nurse-to-patient ratios. Even the attitudes and knowledge of personnel at all levels are human factors among these systems that affect our ability to avoid errors at the point of service. Also included are patient-related factors such as the complexities of the primary surgical illnesses and comorbidities.

Peer review is a critical part of identifying the underlying cause of a negative outcome or near miss. These events are rarely the result of a single error. Even though a surgeon errs at the point of service, closed claims reviews and NAM reports have shown that the root cause of many surgical errors is systems failure.16 One group found that 69 percent of errors are caused at least in part by systematic breaches.8 But it is not a trade-off; systems help us succeed, and surgeon performance is essential for the success of systems. For example, when surgeons fail to use an institutional protocol for deep vein thrombosis prophylaxis, the system fails. Surgeons must be held accountable as individuals to work within the system.14 To enhance the reporting of errors, peer review systems are largely non-punitive, but this lack of penalization should not mitigate accountability for failing to participate in systems of care. Recall the ACGME’s sixth core competency: Be aware of and respond to systems-based practice.

One strategy to improve systems of care may be to use checklists. A standard surgical checklist, the Surgical Patient Safety System (SURPASS), was implemented in six hospitals and showed a significant reduction in complication rates.15 Reviewing cases performed without a checklist, another study of 294 claims identified 412 contributing factors and concluded that SURPASS likely would have prevented 29 percent of the errors identified.16

In addition to accepting individual responsibility for the care we provide, we must also be aware of, and participate in, systems of care. Systems of care are designed to protect us from error, not to shelter us from accountability.

Sample case study
The following sample case illustrates many of the causes of medical errors and the complex interactions that make it difficult to identify the true causes of surgeon failures.
An otherwise healthy adult patient presented to the emergency department (ED) with left lower quadrant pain, which had gradually increased over a two-day period, and mild nausea. The patient’s temperature was 100 degrees, and the physical exam was negative except for lower abdominal rebound tenderness and guarding. Lab assessment was normal except for a white blood cell (WBC) count of 14,000 with a left shift. An abdominal and pelvic computed tomography scan revealed sigmoid diverticulitis. The patient was admitted, responded to antibiotics, and discharged five days later.

A month later, a colonoscopy revealed only diverticular disease. During the next six months, two more attacks occurred that were somewhat milder but that required outpatient antibiotics; a laparoscopic anterior resection was performed.

When the stapled anastomosis was checked intraoperatively with transrectal air, some air bubbles were noted. However, ongoing attempts to identify additional bubbles revealed none. It was decided to accept the anastomosis as intact without further exploration.

The patient did well initially. However, on the fourth postoperative day, the patient complained of mild lower abdominal pain. The patient’s temperature was normal and tenderness was compatible with postoperative expectations. The WBC count was stable at 9,000. Because the surgeon was looking forward to beginning a long weekend off and the patient was eager to go home, a hasty generic handoff between the primary surgeon and call partner included plans for discharge on afternoon rounds.

That evening the call partner was busy and late for rounds. The patient wanted to go home. Finally, at the request of the patient, the surgeon was called. Happy to have one less patient to see, the call partner authorized discharge by verbal order.

The next evening, the patient presented in the ED with moderately severe generalized abdominal pain that had increased throughout the day. The abdomen was moderately tender with mild rebound in all quadrants but worse in the left lower quadrant. Blood pressure was 140/80, pulse was 96, and temperature was 99 degrees; the WBC count was 12,000. A transrectal Gastrografin study revealed extravasation of contrast into the left lower quadrant, and a computed tomography scan showed a large amount of free air throughout the abdomen. The patient was admitted and treated with antibiotics and intravenous fluids.

On rounds the next morning, the findings were unchanged, but later that evening, pain increased, blood pressure dropped to 90/60, and the pulse increased to 140. Oxygen saturation was 92 percent on room air. The surgeon was called, a fluid bolus and pressors were given, and the patient was taken to the operating room. A Hartmann's procedure was performed for a leaked anastomosis. In the operative note, the possibility that the circular stapling device may have misfired was mentioned.

Multi-organ system failure ensued. Three months later, after several more procedures for intra-abdominal abscesses, the patient was released from rehab with a granulating abdominal wound, loss of mental capacities, amputation of several digits, a healing tracheostomy site, and a colostomy.

This case involved a leaked anastomosis—a known, albeit infrequent, complication of anterior resection even in the hands of experienced, skillful surgeons. Having documented favorable prior experience with laparoscopy and the double-stapling technique, the primary surgeon’s technical skills and scope of practice were validated.

Although brought into question, systems failure related to a failed stapling device was never proven. Systems-related problems beyond our control often are sought to explain failures and avoid personal responsibility.

An intraoperative cognitive error may have occurred: Was it a false hypothesis error to conclude that the air bubbles were trapped air, and should the procedure have been converted to open? In any case, the team was diligent, making ongoing efforts to demonstrate additional bubbles, which failed and led to an informed but possibly incorrect decision to complete the procedure laparoscopically. Failing to think is unacceptable; failing to think accurately is human.

The clearly preventable errors that followed were caused by behavioral and cognitive deficiencies. Diligent professional behavior required that the call partner...
see the patient prior to discharge. This behavioral deficiency may not have occurred if the handoff had been more comprehensive. Regardless of the quality of the handoff, and even if the findings at the bedside led to discharge, diligent behavior required a clinical assessment. This exemplifies how so often more than one part of a system has to fail before an error leading to injury occurs. It also emphasizes the surgeon’s critical place within systems of care.

The on-call surgeon made additional behavioral errors in the ED, including failure to pursue an abnormal test and failure to cross-cover and provide continuity of care. These breakdowns may have been caused by fatigue while taking weekend call. Alternatively, and more incriminating, the behavior may have resulted from the fact that the patient did not “belong” to the call partner.

Human factors like fatigue, attitude, and competing priorities can affect cognition and behavior. The surgeon cherry-picked the available data, favoring the patient’s relatively mild subjective clinical presentation—99 degree temperature, moderate pain and tenderness, satisfactory blood pressure and pulse, minimal elevation of the WBC count—over the objective findings of excessive free air and leaking contrast. The delay in treatment led to organ system failure and the dramatic escalation of the consequences of the anastomotic leak. As is so often the case, the technical error alone might have been effectively managed with acceptable temporary, albeit significant, consequences, but adding behavioral violations and cognitive mistakes stemming from lack of diligence as second, third, and fourth errors created an unacceptable perfect storm.

Conclusion

Surgeons are subject to fatigue, distractions, time constraints, competing priorities, workload, burnout, and other factors that occasionally affect our professional behavior and cognition. Certainly, other variables over which we have little or no control can adversely affect our success at the point of service. Nonetheless, deficiencies in professional behavior and cognition are frequent, avoidable causes of errors.

REFERENCES

The American College of Surgeons (ACS) has a legacy of measuring outcomes to improve patient care. The “end result idea” introduced by Ernest Amory Codman, MD, FACS, was simple: follow each patient after an operation to determine whether it succeeded or failed, learn from the negative outcomes, and devise methods to ensure future success. At a time when postoperative morbidity and mortality were commonplace, adverse outcomes were logically the ones most scrutinized. Although it is still vitally important that surgeons and trainees understand the cause of negative outcomes, the advances made in surgical care in the last 100 years have made it possible to measure quality using a broader range of metrics than morbidity and mortality.

Patient-reported outcomes (PROs), which represent the views and perceptions of patients, are becoming widely recognized as important measures for use in improving patient care. Although they have their drawbacks, PROs help surgeons and other health care professionals provide patient-centered care. This article is a primer on PROs and how they increase patient engagement and foster shared decision making.
**What are PROs and PROMs?**

A PRO is an assessment of health status that comes directly from the patient without any interpretation by health care professionals. When patients tell their physicians how they feel or function or about their sense of well-being and their symptoms, they are providing PROs. Each aspect of an individual’s health status, also called a domain, is inherently subjective and differs from patient to patient. The power of PROs is that they can now be collected in a meaningful, rigorous, and scientific manner that accurately translates subjective aspects of health into objective data.

A patient-reported outcome measure (PROM) is the tool that translates the subjective information into objective data. Simply stated, PROMs are questionnaires or surveys that ask patients to gauge their views on their own health. Their responses are then scored, thereby assigning the patient’s perspective a numerical value. An example of this tool is the RAND 36-item Short Form Health Survey (SF-36). This particular PROM survey asks patients about their ability to perform routine daily tasks and queries them on any emotional challenges they may be experiencing. Each domain receives a rating value from 0 to 100—the higher the number, the better the patient views his or her health status. Scores from different patients or groups of patients can then be compared and tracked over time to assess change.

The factors and processes used to develop a PROM are important to understanding the validity of the results it provides. When PROMs are designed in accordance with rigorous scientific standards, they offer meaningful and accurate measurements to compare patient groups and to examine change over time.

We can think of PROMs in much the same way we think of rulers, yardsticks, tape measures, and other tools for assessing length. Objects come in many different sizes and thus there are many different types of rulers to appropriately measure them. Rather than measuring length, PROMs measure quality of life, including physical, mental, or social health and fitness. They can also examine body image, pain, and self-efficacy. Broadly speaking, using a PROM is similar to using other common measuring devices. (See Table 1, this page, for examples of how domains and PROMs fit into other more familiar measurement systems.)

**Guidelines for selecting a PROM**

Thousands of different PROMs have been developed. SF-36, EuroQol five dimensions questionnaire (EQ-5D), BODY-Q, Knee Injury and Osteoarthritis Outcome Score (KOOS), and the Pediatric Quality of Life Inventory (PedsQL) are all PROMs designed to measure specific domains from particular patients. For example, the SF-36 was designed to measure the impact that general physical and mental health status has on a person’s overall life across different patient populations. In this way, the SF-36 is a “generic” PROM that offers patients with completely different conditions the opportunity to answer the same questions, which allows comparisons between seemingly unrelated groups. For instance, generic PROMs allow the outcomes of ventral hernia repairs to be compared with outcomes for colectomies because generic PROMs only measure those domains

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**TABLE 1. PARALLELS BETWEEN COMMON MEASUREMENT SYSTEMS AND PROMS**

<table>
<thead>
<tr>
<th>Concept</th>
<th>Tools</th>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>Ruler, tape measure, yardstick, odometer</td>
<td>Meters, inches</td>
</tr>
<tr>
<td>Heart rate</td>
<td>Fingers and watch, electrocardiogram, pulse oximetry</td>
<td>Beats per minute</td>
</tr>
<tr>
<td>Postoperative complications</td>
<td>ACS NSQIP</td>
<td>Raw event rates Risk-adjusted odds ratios</td>
</tr>
<tr>
<td>Health-related quality of life</td>
<td>RAND 36-item Short Form Health Survey (SF-36)</td>
<td>Summary physical component score Summary mental component score</td>
</tr>
<tr>
<td>Pain and physical function related to osteoarthritis of the knee</td>
<td>Oxford Hip Score (OHS)</td>
<td>OHS</td>
</tr>
<tr>
<td></td>
<td>Hip Disability and Osteoarthritis Outcome Score (HOOS)</td>
<td>HOOS</td>
</tr>
</tbody>
</table>
that both operations share, such as the ability to complete housework.

Unlike generic PROMs, condition-specific PROMs are focused on a particular disease, set of conditions, or part of the body. The BODY-Q, for example, is a condition-specific PROM that was designed for obese patients and patients who undergo bariatric and cosmetic body contouring operations. Domains measured are specific to this population and include body image, physical appearance, effect of excess skin, psychosocial function, and others. Condition-specific PROMs are especially useful for evaluating outcomes associated with different approaches to treatment for a single disease. For instance, they can provide insight into how the body image of a young adult with Crohn’s disease might differ after undergoing an open versus a minimally invasive colectomy.

Choosing whether to use a generic or a condition-specific PROM depends on the intended purpose. Is the objective to gain an overall understanding of the patient’s health status, or is the goal to gain a more detailed view of the patient? Frequently, both generic and condition-specific PROMs are used together to get the full picture.

Other attributes of a PROM must be considered before selection. These can include content validity, construct validity, inter-rater reliability, test-retest reliability, responsiveness, and whether it is static or dynamic. “Static” is the technical term for PROMs that are administered on paper—they are static forms. “Dynamic” is the technical term for newer test methods that change depending on how one answers a question. A detailed description of each of these attributes is beyond the scope of this article; however, a good rule of thumb is to simply read the questions posed in the PROM. If the questions seem irrelevant or unrelated to what you are trying to learn from patients, then you should probably consider another PROM.

How do we collect PROs using PROMs?

PROMs are available in multiple formats. Traditionally, they were paper-based forms completed by patients during clinic visits or returned via mail. Because computers, and especially smartphones and tablets, are now ubiquitous, PROMs administered in electronic formats and accessible via handheld devices have become increasingly popular. For instance, the International Consortium for Health Outcomes Measurement (ICHOM) developed TechHub, an open marketplace that lists health information technology vendors who meet ICHOM’s standards for electronic outcomes measurement. Electronically captured PROs, called ePROs, are more efficient, less costly, and are user friendly. Data collected using electronic means have proven to be of equal validity to those collected using traditional methods. In the near future, electronic collection of PROs will be the norm.

Why should we collect PROs?

PRO data have been shown to enhance patient engagement and shared decision making when integrated into clinical care. These data provide an assessment of the patient’s experience of illness (such as symptoms, physical function, and vitality), their values and preferences, and their goals of care. For instance, orthopaedic surgeons at the University of Rochester, NY, routinely use PRO data in clinical care to assess whether physical therapy is helpful. If the therapy does not seem to be having a beneficial effect, surgeons can use the PROs to engage a patient in a discussion about whether an operation is a viable option. Similarly, if a patient presents for preoperative evaluation and has PRO scores that are as good as those of postoperative patients, then he or she may not need an operation. As such, PROs can be used to support patient-provider engagement by
Assessing the severity of symptoms; provide information to track the effect of operations on short-term and long-term patient outcomes; assist patients and providers to set priorities for office visit discussions; and inform treatment decisions through comparative effectiveness and resource utility research.

PROs allow surgeons to understand and measure the benefit of many of the procedures that we perform from the perspective of the patients themselves. Clinical outcomes do not always capture the aspects of health that many patients consider important, and frequently a gap exists between what outcomes matter to surgeons and which matter to patients. PROs complement traditionally measured clinical outcomes with the patient perspective (see Figure 1, this page).

The outcomes of surgical procedures can thus be viewed from two perspectives—the clinician’s and the patient’s. We assume that these two components go hand-in-hand and move in the same direction (ideal improvement: red circle to green circle). However, experience has shown that patients and surgeons sometimes have different definitions of a successful outcome (x-axis). Certain operations can be done solely to improve the quality of life (QoL) from the patient’s perspective (y-axis). It is critical that surgeons align our views of success with those of our patients. By measuring patient-reported outcomes, we can be sure we are moving in the right direction.

Significant progress has been made in the areas of survey methodology and quality of life research. For example, modern test techniques, such as those used by the National Institutes of Health Patient-Reported Outcomes Measurement Information System (PROMIS), can reduce the number of questions patients must answer but preserve data accuracy. Patients’ perspectives on their health outcomes now can be consistently and reliably measured in most surgical disciplines. The integration of PROs into the clinic and into outcomes assessments only will improve our ability to provide better care.4

The ACS will lead the way
The ACS continues to be a leader in surgical outcomes measurement to improve care, particularly through its Quality Programs, such as the National Surgical Quality Improvement Program (ACS NSQIP®). As part of this commitment, the ACS has begun merging all
of its clinical databases into one common platform and, in so doing, will begin complementing the rich clinical outcomes data in ACS NSQIP with PROs.

The College has the opportunity to make available the collection of meaningful PROs that will help promote continuous quality improvement, influence clinical care, foster patient engagement, promote performance excellence, and advance patient-centered innovation in surgery. This initiative is being guided by three key principles: (1) minimize patient/respondent burden, (2) maintain data accuracy, and (3) enable actionable improvements. Complementing the ACS NSQIP with PROs is not without its challenges and limitations. Keeping in mind our guiding principles, we plan to implement this initiative through iterative phases to ensure success and sustainability.

**Conclusion**

Historically, surgical decision making has been a relatively straightforward process. If a woman had breast cancer, she needed a mastectomy, and her surgeon would perform the operation. Consideration of the procedure’s effect on her body image was generally omitted from the treatment equation. Surgery is no longer only about prolonging life, but also about minimizing the negative impact of treatment, optimizing quality of life, and aligning treatment decisions with our patients’ goals. Minimally invasive surgery exists today because it can optimize PROs. Only by measuring clinical outcomes and PROs can we ensure the provision of optimal, high-quality, patient-centered surgical care. ♦

**REFERENCES**

Within the span of five years, two pieces of legislation that significantly affect physician payment and patient care were enacted—the Affordable Care Act (ACA) of 2010 and the Medicare Access and CHIP (Children’s Health Insurance Program) Reauthorization Act (MACRA) of 2015. With the passage of these laws, surgeons could no longer adopt a wait-and-see approach to national health care policy legislation. This article briefly summarizes the major payment provisions in the ACA and MACRA and their possible fate under the new presidential administration and Congress. It also describes lessons learned at one institution that developed bundled care packages to improve quality of care while simultaneously controlling cost.

The ACA and MACRA

With little fanfare but significant potential repercussions, the Medicare physician payment system changed in 2010 when the U.S. Congress passed the ACA—shifting the emphasis in determining how providers are paid from volume to quality. Significant portions of physician reimbursement would now be directly tied to quality metrics. In addition, physicians participating in these new payment models would now be directly responsible for costs incurred by all other practitioners during the episode of care. They also would be accountable for costs incurred in the first few months after patients were discharged from the index admission.

Although the ACA includes some adjustments to the Medicare physician fee schedule, MACRA imposes the most sweeping changes. Of particular

HIGHLIGHTS
- Identifies APM models that qualify as Advanced APMs for MIPS exclusion
- Describes bundling and ACOs as they relate to the Advanced APM plan
- Provides guidelines on developing bundled care packages to reduce costs and improve quality of care based on the experiences of Baystate Medical Center
significance when MACRA passed in 2015 was the repeal of the sustainable growth rate (SGR) formula, which was on the brink of causing reductions in physician payment of nearly 30 percent. Although the physician community initially greeted MACRA with a favorable response, largely because of the SGR repeal, the legislation imposes a number of important changes in the way Medicare will pay for services in the future. Most importantly, it attempts to better align quality with a reduction in unnecessary physician spending.

MACRA adds strong financial incentives for physicians to become more accountable for the quality of care they provide and for controlling costs. These incentives are provided through the Centers for Medicare & Medicaid Services (CMS) Quality Payment Program (QPP). The QPP has two major components: the Merit-based Incentive Payment System (MIPS), which adheres to the traditional fee-for-service payment model, and the Advanced Alternative Payment Models (APMs) that can be used to develop innovative reimbursement policies.

MIPS and APMs
Payment adjustments under MIPS will be based on a composite performance score derived from metrics: quality, resource use, advancing care information, and improvement activities. CMS began measuring performance in January, with payments based on MIPS measures beginning in 2019.

Payment rates will be adjusted plus or minus 4 percent per year, increasing to 9 percent. By 2022 MIPS is projected to be a budget-neutral program, which may imply a tournament model for physician rewards and penalties; that is to say, equal dollar amounts will go to physicians who attain performance measures above the benchmark with funding coming from those providers who are facing penalties. As such, participants may be required to achieve continuous improvements in an increasingly competitive environment. In addition, Medicare fees will increase by only 2 percent through 2022, and then will remain flat.

As an alternative to this payment structure, physicians may participate in an eligible Advanced APM. Physicians who participate in these new payment models will bear significant downside risk but will receive a 5 percent payment bonus and will be exempt from the administrative requirements and uncertainties of MIPS. In addition, these physicians may receive any additional payments that result from being part of an approved Advanced APM system.

As of November 2016, CMS had identified only six APMs that qualify as Advanced APMs for MIPS exclusion, including the Comprehensive End-Stage Renal Disease Care Model, the Oncology Care Model, and the Next Generation Accountable Care Organization (ACO) Model, among others. CMS estimates that as many as 90 percent of eligible clinicians will be in the MIPS program in 2017 and as few as 10 percent will be in an Advanced APM. It is anticipated that CMS will continue to broaden its definition of qualifying Advanced APMs.

Ramifications of the Republican sweep
November’s national elections gave the Republican Party control of both the executive and legislative branches of government. With a majority in both the House and Senate, and support from the President, efforts to repeal the ACA were under way at press time. However, without a 60-vote supermajority in the Senate, Republicans may be unable to repeal the entire law. Nevertheless, they may succeed in eliminating several consequential provisions. Those portions of the ACA strictly dealing with spending, revenues, or the debt ceiling can be repealed with a simple majority through the budget reconciliation process.

For surgeons and other physicians, the Medicare spending cuts included in the ACA likely will remain intact. These cuts, combined with decreased participant insurance coverage, will result in less provider revenue. The rising government deficit and debt, combined with an aging population, is likely to ensure that government efforts to control spending such as those prescribed in MACRA will continue.

In addition, MACRA passed through Congress with strong bipartisan support (92–8 in the Senate and 392–37 in the House). It is unlikely that Republican lawmakers will repeal their own legislation.
Central to the Advanced APM concept are bundling and ACOs. These two components enable the payment system to move from an emphasis on volume to value. They also guarantee Medicare cost savings and have a significant potential upside for the motivated provider.

Central to the Advanced APM concept are bundling and ACOs. These two components enable the payment system to move from an emphasis on volume to value. They also guarantee Medicare cost savings and have a significant potential upside for the motivated provider. Bundled payments have received bipartisan support and their development is likely to continue in spite of the potential dissolution of the ACA-created Center for Medicare and Medicaid Innovation (CMMI). In fact, even if Congress does dissolve the CMMI, it is likely that the U.S. Department of Health and Human Services will continue to promote innovations in payment through some other means.

Both population health management and value-based health care have strong bipartisan support and will likely thrive under the new administration. Health insurance payments will depend more heavily on outcomes. The control of rising health care expenditures will depend on paying for the quality of care provided, rather than the number of procedures performed. Already, the popularity of value-based health care has led to significant consolidation within the health care sector and greater transparency. Hospitals and physicians will seek to integrate in order to better control costs and improve the patient-reported experience.

**Ensuring success in a surgical bundle**

Beginning in 2013, Baystate Medical Center, Springfield, MA, entered into CMS’ Bundled Payments for Care Improvement initiative (BPCI) for all isolated coronary artery bypass grafting procedures covered by Medicare. The BPCI initiative comprises four broadly defined models of care, which link payments for the multiple services beneficiaries receive during an episode of care. Under the initiative, health care facilities enter into payment arrangements that include financial and performance accountability for episodes of care. These models may lead to higher quality and more coordinated care at a lower cost to Medicare.

The purpose of bundled payment is to decrease spending through several mechanisms, including a reduction in the number of unnecessary physician services provided during hospitalization, more judicious use of health care resources during the hospital stay, and a reduction in post-discharge costs, including unnecessary post-acute care services and avoidable readmissions. If the costs of an episode of care are less than the bundled payment amount, the providers (hospital and physicians) can keep the difference. If the costs of care exceed the bundled payment amount, however, the providers bear financial liability.

In the Baystate Medical Center BPCI APM, the episode of care includes a Medicare beneficiary’s inpatient stay in the acute care hospital, post-acute care, and all related services during the episode of care, which ends 90 days after hospital discharge. In addition, participating hospitals agree to a 2 percent up-front fee reduction.

Functioning in a bundled APM requires administrative, financial, and infrastructure support, which is best attained in a large institution. Hospitals must provide appropriate data, resources, and incentives. Our hospital has created a replicable model to implement bundled payment programs by emphasizing collaboration among our clinical divisions and those within our departments of health care quality and finance. We also have a physician health organization that is well-versed in risk management.

Despite these successes with the program, early on we learned some valuable lessons to ensure success in a bundled payment APM, including the following:

- The first step to success in a bundled payment arrangement is to reduce readmissions. After coronary artery bypass graft surgery, readmission rates are between 13 percent and 24 percent. As a result, predictor models have been developed, which quantified odds ratios for readmission with risk factors such as chronic obstructive pulmonary disease, renal failure, and diabetes. On discharge, we identify those patients at high risk for readmission. Our clinical coordinator then follows a patient at risk by phone, schedules early postoperative visits, enrolls the patient in a heart failure rehabilitation clinic, and coordinates care with the patient’s primary care.
physician. In addition, all postoperative patients entering our emergency department trigger an electronic notification to our inpatient service before their admission for expedited review and disposition.

- The post-acute disposition was the single greatest variable affecting a positive margin in our bundle. By altering patient and family expectations, earlier frequent daily mobilization, and possibly extending inpatient stays for an extra day, we were able to increase the percentage of patients discharged to home with visiting nurse services versus discharge to a skilled nursing facility. For those patients who went to a skilled nursing facility, close coordination with the facility decreased the post-acute length of stay, which led to reduced overall costs to the bundle and improved patient satisfaction. We also have developed a preferred provider skilled nursing facility network to align more closely with best practice standards, track outcomes, and improve communication between the primary cardiac surgical inpatient team and our post-acute care partners.

- To ensure that the Medicare payment amounts are fair, some adjustment for patient severity must be included in the calculations. If bundled payments do not account for severity of disease, providers may not want to provide health care services to sicker patients because of the risk of financial loss. More than ever, health care professionals must provide accurate and complete documentation to correctly document level of acuity and appropriate diagnosis-related group. Accurate coding, which incorporates key documentation, will improve benchmarking and expected morbidity and mortality. Medicare payments in a bundle require risk adjustments, stop/loss protection, and other insurance mechanisms to ensure fair payment for complex cases and protections from catastrophic outlier patient care.

- Coordination of care is essential. A dedicated care coordinator needs to follow this cohort of patients, beginning with preoperative education about length of stay expectations and the need for family support at home on discharge. During hospitalization, the care coordinator needs to identify hospital barriers to a timely discharge. At Baystate Medical Center, we were able to decrease our length of stay and facilitate the discharge of patients receiving Coumadin with sub-therapeutic international normalized ratios and close daily home blood work. After patients are discharged home, close follow-up by phone, with daily weights, medication reconciliation, and early office postoperative appointments, prevented emergency department visits. All readmissions were scrutinized for potentially avoidable events.

- During the index admission, physicians can reduce unnecessary medical expenses if they are properly engaged. At our institution, an engaged physician leads a multidisciplinary group of advanced practitioners, residents, bedside and charge nurses, pharmacists, rehabilitation specialists, and respiratory therapists to ensure the delivery of coordinated care.

It is also important to maximize transparency and identify relevant metrics within the service line. Physicians need to see differences in costs and outcomes and how their performance compares with that of their colleagues. Given the competitive nature of physicians and especially surgeons, peer comparisons can motivate change and drive down hospital costs. A study published in 2016 in the Journal of the American Medical Association found that peer comparison resulted in a 16 percent drop in unnecessary prescriptions. Baystate Medical Center administrators found that by sharing utilization metrics among the cardiac surgeons, they could successfully drive down hospital costs.

Medicare has already started publishing comparative data and patient-reported outcomes. The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey is the first national, standardized, publicly reported survey of patients’ perspectives of hospital care. By making quality and satisfaction reports publicly available, Medicare has created an incentive for physicians and hospitals to improve the patient experience.

Looking forward
In the future, surgeons likely will benefit from participation in an APM, such as a BPCI. At this time, however, to qualify for MIPS exclusion, the only clear
Advanced APM option may be to join a consolidated risk-bearing ACO with significant downside risk.

On December 20, 2016, CMS released the Advancing Care Coordination through Episode Payment Models (EPMs) final rule. The rule establishes three new Medicare EPMs for acute myocardial infarction (AMI), coronary artery bypass graft (CABG), and surgical hip/femur fracture treatment (SHFFT) procedures provided in designated geographic areas. The rule also includes provisions to finalize the Cardiac Rehabilitation (CR) Incentive Payment program and to integrate bundled payment programs into the QPP. Under the final rule, acute care hospitals that are reimbursed under the Inpatient Prospective Payment System and are located in 98 metropolitan statistical areas (MSAs) selected by CMS will be required to participate in retrospective EPMs for Medicare fee-for-service beneficiaries receiving care during AMI and CABG episodes. The agency will implement the SHFFT model in 67 MSAs where the Comprehensive Care for Joint Replacement program is already in place. An AMI, CABG, or SHFFT model episode will begin with an inpatient admission and end 90 days after discharge. The episode of care will include the inpatient stay and related care covered under Medicare Parts A and B, including hospital care, post-acute care, and physician services, within 90 days of discharge. CMS will continue to pay participating hospitals, providers, and suppliers according to the current Medicare fee-for-service rates.

The AMI EPM, the CABG EPM, and the CR Incentive Payment program will be tested for five performance years—July 1, 2017, through December 31, 2021. CMS estimates that 1,120 acute care hospitals will participate in the AMI and CABG models, and 860 hospitals will participate in the SHFFT model. CMS has indicated that these bundled payment models should qualify for the Advanced APM track of MACRA, thereby providing exclusion from MIPS.

The federal government will continue to support a payment system that encourages changing physician payment from fee for service to payment that is based on transparent performance metrics, patient experience, and patient outcomes. There is an early opportunity for significant financial reward from a high-value program that is focused on quality metrics, HCAHPS scores, care coordination, and the post-acute disposition. The next hurdle will be maximizing reimbursement through an optimized patient-focused APM.

Acknowledgment
The author is grateful to the bundled care team members at Baystate Medical Center for their assistance.

REFERENCES
Coding for nipple-sparing and skin-sparing mastectomies

by Eric Whitacre, MD, FACS; Megan McNally, MD, FACS; and Jan Nagle, MS, RPh

In December 2007, an American Medical Association (AMA) CPT [Current Procedure Terminology] Assistant Newsletter article was published indicating that a skin-sparing mastectomy should be reported with CPT* code 19304, Mastectomy, subcutaneous.1 The CPT article incorrectly indicated that nipple-sparing does not change the subcutaneous dissection performed. The correct code to report skin-sparing mastectomy is 19303, Mastectomy, simple, complete (total mastectomy). It is worth noting that the American College of Surgeons (ACS) did not provide the coding interpretation published in this 2007 CPT Assistant Newsletter article regarding the code to report for skin-sparing mastectomy. Moreover, the American Society of Breast Surgeons (ASBrS) was not a member of the AMA CPT Advisory Committee in 2007 and, therefore, could not contribute to CPT Assistant Newsletter articles.

In 2015 the ACS submitted a clarification to the 2007 CPT Assistant Newsletter article, which was published in the March 2015 issue.2 However, the earlier 2007 article was not deleted, retracted, or marked in any way to indicate that the information featured in the article was incorrect. Because the 2007 and 2015 articles are both maintained in the CPT Assistant Newsletter archives, confusion persists regarding correct coding for skin-sparing and nipple-sparing mastectomies. Some coding consultants continue to direct surgeons and coders to incorrectly report 19304 for procedures that should be reported with 19303.

Distinctions between complete mastectomy and subcutaneous mastectomy
A skin-sparing or nipple-sparing mastectomy for diagnosed carcinoma, or for patients who are at high risk for carcinoma, is reported with code 19303 regardless of the amount of skin removed or whether the nipple is preserved. These oncologic procedures require removal of the entire breast tissue in one or both breasts plus additional surgical work, such as attention to surgical margins, specimen orientation, and cold ischemic time.

In contrast, subcutaneous mastectomy is typically used to treat patients with severe symptomatic fibrocystic change or patients who are undergoing breast cosmetic procedures in which significant tissue removal is necessary to achieve symmetry. The incision is generally conservative and cosmetic, and some breast tissue is left behind. Thus, it is not a “complete” mastectomy.

What to include in the operative report
To clarify reporting, the operative report should include the wording “nipple-sparing complete mastectomy” or “skin-sparing complete mastectomy,” as well as the appropriate International Classification of Disease, 10th Revision, Clinical Modification code for diagnosed malignancy (such as C50.XXX or D05.XX) or for increased future breast cancer risk (such as Z15.01). Use of the specific term “complete mastectomy” will help direct the coders to correctly report 19303, Mastectomy, simple, complete.

*All specific references to CPT codes and descriptions are ©2016 American Medical Association. All rights reserved. CPT and CodeManager are registered trademarks of the American Medical Association.
To summarize, report code 19303 for a skin-sparing or nipple-sparing mastectomy for diagnosed carcinoma or for patients who are at high risk for carcinoma, regardless of the amount of skin removed or whether the nipple is preserved.

To summarize, report code 19303 for a skin-sparing or nipple-sparing mastectomy for diagnosed carcinoma or for patients who are at high risk for carcinoma, regardless of the amount of skin removed or whether the nipple is preserved. The “Coding and practice management corner” column in the September 2014 Bulletin provides additional guidance on breast surgery coding.4 ♦

**Note**

Accurate coding is the responsibility of the provider. This summary is intended only to serve as a resource to assist in the billing process.

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**REFERENCES**

Practice changes for reducing UTIs in colon and rectal surgery patients

by Mary Ward, RN, and Deborah Nagle, MD, FACS, FASCRS

Accounting for more than one-third of nosocomial infections in U.S. hospitals, urinary tract infections (UTIs) are associated with increased morbidity, mortality, and health care costs. Defined as a nonreimbursable, "reasonably preventable" hospital-associated complication by the Centers for Medicare & Medicaid Services, UTI became of particular relevance to surgeons after a study of New York and California registry data showed that 70 percent of nosocomial UTIs involved patients undergoing surgical procedures. Moreover, the challenge of nosocomial UTI for the colon and rectal surgeon was recently highlighted in a study using data from the ACS NSQIP, which showed that UTI rates after colon and rectal surgery (CRS) exceed risk-adjusted estimates on the basis of patient factors alone. The 2012 designation of UTI prevention as a National Patient Safety Goal emphasizes the importance of UTIs as a target for QI in both surgery overall and CRS.

These results echoed the findings of a previous ACS NSQIP study, which also identified CRS as a risk factor for UTI. The 2012 designation of UTI prevention as a National Patient Safety Goal emphasizes the importance of UTIs as a target for QI in both surgery overall and CRS.

The ACS NSQIP studies, as well as a 2012 report of risk factors for UTI after resection of colorectal cancer in the Nationwide Inpatient Sample, delineate a number of patient-related risk factors for UTI, yet fail to identify physician-controlled modifiable risk factors. However, Wald and colleagues, in a study of more than 35,000 Medicare beneficiaries undergoing surgery, demonstrated a 21 percent increase in UTI incidence for postoperative indwelling urinary catheterization (IUC) lasting more than 48 hours. These data—in conjunction with a 1999 study by Benoist and colleagues that called into question the long-held belief that pelvic surgery necessitates protracted IUC—forms the basis for our proposed intervention.

Why was the QI activity undertaken?

Because the perioperative management of IUC may be service- and surgeon-dependent at many institutions, researchers at Beth Israel Deaconess Medical Center, Boston, MA, sought to investigate whether standardized management of IUC placement and duration could reduce the incidence of UTIs in CRS. As part of our ongoing institutional efforts to reduce perioperative morbidity, we found that our UTI rate exceeded both the ACS NSQIP benchmark and the expected rates for UTIs in CRS. We analyzed potential contributing factors, including...
previously identified modifiable and non-modifiable risk factors.

We considered the length of time that the catheter remained indwelling and the method of IUC insertion as modifiable risk factors. We found no outcomes data in the literature on the optimal strategy for placing operative IUCs or the potential impact thereof. Our hospital practice for catheter placement was in line with the 2009 update of the U.S. Centers for Disease Control and Prevention Guideline for Prevention of Catheter-Associated Urinary Tract Infections. How was the QI activity put into place?

Based on the January 2012 ACS NSQIP Semiannual Report that placed our CRS UTI rate in the 10th decile, the division chief for colorectal surgery identified the problem, piloted interventions, met with the colorectal team to discuss interventions, engaged all team members, and selected a protocol to standardize and modify provider behavior through simple interventions.

Control group
An institutional program of daily reassessment of the need for IUC was instituted at our tertiary care hospital across all service lines in January 2010. However, no specific actions were attached to these guidelines, and we saw no significant decrease in UTIs. This group served as the control population against which subsequent interventions were compared.

Intervention group 1
In response to the persistently elevated UTI rate, a daily electronic order was developed to maintain an IUC for more than 24 hours. Specifically, an electronic health record (EHR) prompt was created such that each time an IUC was ordered to be inserted, a query appeared every 24 hours about the need for continued catheterization. The provider was required to enter clinical justification for the continued need for the IUC for the ensuing 24 hours, and no further orders could be entered until the prompt was addressed. All of the perioperative IUCs were removed within 48 hours unless there was clinical justification for maintaining use. The clinical notation of pelvic dissection or pelvic surgery was not considered to be sufficient for IUC use beyond 48 hours, as studies have documented the safety of removing IUC on the first postoperative day. This EHR order was activated in February 2011.

Intervention group 2
In July 2012, a system of service-specific sterile IUC placement was implemented. All patients who received CRS services were included. Patients who underwent colorectal procedures through general surgery and acute care surgery services were omitted.

Before the intervention, IUCs were placed in the operating room (OR) after perineal antiseptic preparation by a member of the operating team. Team members who performed IUC insertion included nurses, residents, and supervised medical students.

We changed our practice to specify that, for cases done in the lithotomy position, IUC be inserted after the surgeon had prepped the patient, scrubbed
and gowned themselves, and then draped the patient.

For cases performed in the supine position, the patient was fully prepped, including the perineum, in the frog leg position with antiseptic prep. The IUC was then placed and the patient was repositioned and draped. The surgeon or resident who placed the IUC changed gloves after placement. The catheter was suspended from the drapes over the inner thigh with a clamp so that it remained away from the anal area in the event of a transanal anastomosis or perineal procedure. We continued our 100 percent compliance with perioperative antibiotic administration.

ACS NSQIP criteria were used to define a UTI. Excluded from analysis were patients who had shown signs of a pre-existing UTI. Patients with enterovesical, colovesical, or colon or rectal vaginal fistulae were classified as having a preexisting UTI. The three groups from our institution’s ACS NSQIP abstracted data include the following: between January 2010 and February 14, 2011 (control group); February 15, 2011, to June 2012 (intervention 1 group: electronic order prompt); and July 2012 to December 2012 (intervention 2 group: sterile intraoperative IUC placement) were compared. To identify our cohort, we used the procedural terminology codes described by Ingraham and colleagues.14

We analyzed demographics, patient comorbidities, perioperative morbidity, type of operation (abdominal versus pelvic surgery), and rate of UTI. We analyzed patients who developed a UTI in our population and classified them as having no risk factors (that is, perioperative insertion alone), reinsertion of catheter in the postoperative period, or IUC for more than 48 hours.

What resources were used?
The CRS team, composed of attending surgeons and residents, nurse practitioners, and registered nurses, were involved from the inception of the new practice changes and continue to be engaged in maintaining the sterile IUC protocol.

No funding was allocated to piloting and implementing these changes, and no additional costs were incurred to develop or sustain this practice.

What were the results?
All of the analyses were conducted using IBM statistical package for the social sciences (SPSS) statistics version 21.0.0 for Macintosh. Categorical variables were analyzed using the X2 or Fisher’s exact test where appropriate. Continuous variables were compared using the 2-tailed sample t test or Analysis of Variance (also known as ANOVA) as appropriate. Multivariable logistic regression was performed to determine independent predictors of UTI. All of the variables with a p-value <0.05 on bivariate analysis were included in the model. Forward stepwise selection was used to determine final independent predictors. Throughout all of the analyses, statistical significance was determined by a criterion of p < 0.05.

A total of 811 cases were identified that met inclusion criteria across the three study periods: the control period (January 2010 to February 14, 2011) included 215 cases; intervention 1 (February 15, 2011, to June 2012) included 476 cases; and intervention 2 (July 2012 to December 2012) included 120 cases. Demographics, including patient comorbidities and American Society of Anesthesiologists (ASA) classification, were similar across all of the study periods. Operations without pelvic dissection—that is, segmental colectomy or total abdominal colectomy—comprised 63 percent of the whole. Overall, 37 percent of the cases required pelvic surgery, defined as

<table>
<thead>
<tr>
<th>TABLE 1. 30-DAY POSTOPERATIVE OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complication; n (%)</td>
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<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Overall morbidity</td>
</tr>
<tr>
<td>UTI</td>
</tr>
<tr>
<td>Length of stay, days; mean (standard deviation [SD])</td>
</tr>
<tr>
<td>Mortality</td>
</tr>
</tbody>
</table>
Based on the January 2012 ACS NSQIP Semiannual Report that placed our CRS UTI rate in the 10th decile, the division chief for colorectal surgery identified the problem, piloted interventions, met with the colorectal team to discuss interventions, engaged all team members, and selected a protocol to standardize and modify provider behavior through simple interventions.

**RECOMMENDATIONS TO OTHER INSTITUTIONS SEEKING TO REDUCE COMPLICATIONS**

- Don’t accept the status quo
- Engage the entire team
- Think flexibly about interventions
- Provide ongoing education to residents as they rotate through the service
- Question current practices and identify whether improvements can be made
- Understand that compliance is easier with system support
- Review Semiannual Report and interim Semiannual Report to access progress and sustainability
- Know that institutional adoption still remains a challenge

proctectomy, proctocolectomy, and abdominoperineal resection.

Within intervention group 2, 45 percent of the cases required pelvic surgery. This outcome was attributed to the fact that only colorectal surgeons adopted this intervention. This difference should theoretically bias toward a higher UTI rate in group 2. However, the UTI rate in the control group and intervention group 1 did not differ on the basis of surgeon specialty.

UTI occurred at a rate of 6.9 percent in the control group, dropped to 2.7 percent after intervention 1, and was 0.8 percent in intervention group 2 (See Figure 1, page 32). The decrease in UTI across the groups was statistically significant at p < 0.004 (see Table 1, page 33). After initiation of sterile intraoperative IUC placement, no ACS NSQIP UTIs were identified on the CRS service during an initial four-month study period (106 cases). In the ensuing two months, one patient developed a UTI after having ureteral reconstruction and double-J stent placement at the time of colorectal operation.

Mean duration of IUC for intervention group 2 was 2.2 days. Overall, 77 percent of the patients in this group had IUC removal by postoperative day two. IUC reinserter rate in this group was 11 percent. Our practice in the immediate postoperative period is to replace IUC for urinary retention rather than to use intermittent catheterization. For the control patients and patients in intervention group 1, documentation of IUC removal and reinserter was not consistently available to provide reliable data.

Bivariate analysis was used to further compare patients who developed UTI (n = 29) with those who did not (n = 782). Independent predictors of UTI on multivariable regression are shown in Table 3, page 36. Superficial surgical site infection predicted UTI development (OR, 3.7 [95 percent CI, 1.4–9.8]), whereas the study interventions were each protective when compared with controls (group 1: OR, 0.4 [95 percent CI, 0.2–0.8]; group 2: OR, 0.1 [95 percent CI, 0.0–0.8]).

Postoperative 30-day outcomes were notable for this significant decrease in UTIs, as well as an overall decrease in morbidity (p = 0.05). The decreased rate of UTIs contributed to a decrease in overall morbidity in the intervention 2 group to 24 percent compared with 35 percent for the control and intervention 1 groups (see Table 1, page 33).

All of the UTI patients were stratified as having no risk factors

continued on page 36
### TABLE 2. COMPARISON OF UTI CASES WITH NON-UTI CASES

<table>
<thead>
<tr>
<th></th>
<th>All n = 811</th>
<th>No UTI n = 782</th>
<th>UTI n = 29</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study group; n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>215 (27)</td>
<td>200 (26)</td>
<td>15 (52)</td>
<td>0.004</td>
</tr>
<tr>
<td>Group 1</td>
<td>476 (59)</td>
<td>463 (59)</td>
<td>13 (45)</td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>120 (15)</td>
<td>119 (15)</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Age, years; mean (SD)</td>
<td>61.3 (16)</td>
<td>61.2 (16)</td>
<td>62.3 (14.3)</td>
<td>0.73</td>
</tr>
<tr>
<td>Female; n (%)</td>
<td>440 (54)</td>
<td>422 (54)</td>
<td>18 (62)</td>
<td>0.45</td>
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<tr>
<td>Race; n (%)</td>
<td></td>
<td></td>
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<td>0.69</td>
</tr>
<tr>
<td>White</td>
<td>662 (82)</td>
<td>638 (82)</td>
<td>24 (83)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>61 (6)</td>
<td>60 (8)</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>12 (2)</td>
<td>11 (1)</td>
<td>1 (3)</td>
<td></td>
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<tr>
<td>Unknown</td>
<td>76 (9)</td>
<td>73 (9)</td>
<td>3 (10)</td>
<td></td>
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<tr>
<td>Body mass index; mean (SD)</td>
<td>27.1 (6)</td>
<td>27.2 (6)</td>
<td>25.6 (6)</td>
<td>0.17</td>
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<tr>
<td>Diabetes mellitus; n (%)</td>
<td>108 (14)</td>
<td>105 (14)</td>
<td>3 (10)</td>
<td>0.69</td>
</tr>
<tr>
<td>Pulmonary comorbidity; n (%)</td>
<td>120 (15)</td>
<td>115 (15)</td>
<td>5 (17)</td>
<td>0.43</td>
</tr>
<tr>
<td>Smoker; n (%)</td>
<td>131 (16)</td>
<td>126 (16)</td>
<td>5 (17)</td>
<td>0.80</td>
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<tr>
<td>Dialysis dependent; n (%)</td>
<td>8 (1)</td>
<td>8 (1)</td>
<td>0 (0)</td>
<td>1.00</td>
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<td>Steroid use; n (%)</td>
<td>127 (16)</td>
<td>121 (16)</td>
<td>6 (21)</td>
<td>0.44</td>
</tr>
<tr>
<td>Indication; n (%)</td>
<td></td>
<td></td>
<td></td>
<td>0.82</td>
</tr>
<tr>
<td>Colon cancer</td>
<td>181 (22)</td>
<td>173 (22)</td>
<td>8 (28)</td>
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<tr>
<td>Colon polyp</td>
<td>65 (8)</td>
<td>64 (8)</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Rectal cancer</td>
<td>70 (9)</td>
<td>67 (9)</td>
<td>3 (10)</td>
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<tr>
<td>Rectal polyp</td>
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<tr>
<td>Inflammatory bowel disease</td>
<td>115 (14)</td>
<td>109 (14)</td>
<td>6 (21)</td>
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<tr>
<td>Diverticulitis</td>
<td>153 (19)</td>
<td>149 (19)</td>
<td>4 (14)</td>
<td></td>
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<tr>
<td>Other</td>
<td>221 (27)</td>
<td>214 (27)</td>
<td>7 (24)</td>
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<tr>
<td>ASA Class; n (%)</td>
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<td></td>
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<td>0.89</td>
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<tr>
<td>I</td>
<td>19 (2)</td>
<td>18 (2)</td>
<td>1 (3)</td>
<td></td>
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<td>II</td>
<td>354 (43)</td>
<td>343 (44)</td>
<td>11 (38)</td>
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<td>III</td>
<td>364 (45)</td>
<td>349 (45)</td>
<td>15 (52)</td>
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<td>IV</td>
<td>64 (8)</td>
<td>62 (8)</td>
<td>2 (7)</td>
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</tr>
<tr>
<td>V</td>
<td>10 (1)</td>
<td>10 (1)</td>
<td>0 (0)</td>
<td></td>
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<tr>
<td>Independent functional status; n (%)</td>
<td>744 (92)</td>
<td>718 (92)</td>
<td>26 (90)</td>
<td>0.77</td>
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<tr>
<td>Procedure, n (%)</td>
<td></td>
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<tr>
<td>Segmental colectomy</td>
<td>460 (57)</td>
<td>449 (57)</td>
<td>11 (38)</td>
<td></td>
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<tr>
<td>Proctectomy</td>
<td>238 (29)</td>
<td>229 (29)</td>
<td>9 (31)</td>
<td></td>
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<tr>
<td>Total colectomy</td>
<td>50 (6)</td>
<td>46 (6)</td>
<td>4 (14)</td>
<td></td>
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<tr>
<td>Proctocolectomy</td>
<td>48 (6)</td>
<td>44 (6)</td>
<td>4 (14)</td>
<td></td>
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<tr>
<td>Abdominal perineal resection</td>
<td>15 (2)</td>
<td>14 (2)</td>
<td>1 (3)</td>
<td></td>
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<tr>
<td>Emergency case; n (%)</td>
<td>144 (18)</td>
<td>141 (18)</td>
<td>3 (10)</td>
<td>0.46</td>
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<td>Elective case; n (%)</td>
<td>453 (60)</td>
<td>442 (61)</td>
<td>11 (46)</td>
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<tr>
<td>Wound classification; n (%)</td>
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<tr>
<td>Clean</td>
<td>3 (0)</td>
<td>3 (0)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Clean/contaminated</td>
<td>489 (60)</td>
<td>469 (60)</td>
<td>20 (69)</td>
<td></td>
</tr>
<tr>
<td>Contaminated</td>
<td>159 (20)</td>
<td>153 (20)</td>
<td>6 (21)</td>
<td></td>
</tr>
<tr>
<td>Dirty/infected</td>
<td>160 (20)</td>
<td>157 (20)</td>
<td>3 (10)</td>
<td></td>
</tr>
<tr>
<td>Overall morbidity; n (%)</td>
<td>273 (33)</td>
<td>244 (31)</td>
<td>14 (48)†</td>
<td>0.07</td>
</tr>
<tr>
<td>Postoperative superficial surgical site infection; n (%)</td>
<td>58 (7)</td>
<td>52 (7)</td>
<td>6 (21)</td>
<td>0.01</td>
</tr>
<tr>
<td>Length of stay, days; mean (SD)</td>
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<td>6.1 (6.0)</td>
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<tr>
<td>Mortality</td>
<td>19 (2)</td>
<td>19 (2)</td>
<td>0 (0)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Indicates incomplete data availability.
†Figure represents morbidity rate other than UTI for this group.
TABLE 3. INDEPENDENT PREDICTORS OF UTI

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Odds ratio (95% confidence interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postoperative superficial surgical site infection</td>
<td>3.7 (1.4–9.8)</td>
</tr>
<tr>
<td>Study group (versus control)</td>
<td></td>
</tr>
<tr>
<td>Group 1 (EMR prompt)</td>
<td>0.4 (0.2–0.8)</td>
</tr>
<tr>
<td>Group 2 (Intraoperative placement)</td>
<td>0.1 (0.0–0.8)</td>
</tr>
</tbody>
</table>

What conclusions did we draw from the findings?
As the authors of this article reported in 2014, the protocol of sterile intraoperative catheter placement alone essentially eliminated UTIs associated with catheter placement. The somewhat simple change from preoperative to intraoperative sterile urinary catheterization also had significant impact on reducing UTIs in our CRS patients. This practice change was really a culture change that involved the CRS service. Nursing engagement continues to drive this practice and ensure compliance by all team members. This practice essentially eliminated UTIs that were associated only by the fact that an indwelling catheter was placed under sterile conditions.

REFERENCES
Despite advances in surgical technique, radiation therapy, and chemotherapy regimens, survival for non-small cell lung cancer (NSCLC) remains uniformly low. Most patients in the U.S. have advanced stage lung disease at time of diagnosis and are not amenable to surgical treatment. When the cancer has spread outside the confines of the lung, five-year survival is reported to be 4 percent.* For patients with earlier stages of disease (disease confined to the lung, or with nodal disease not including the mediastinum) treated with multimodal therapy, survival is better, but remains poor at 55 percent at five years.*

For patients with either nodal disease or primary tumors greater than 4 cm, adjuvant chemotherapy with a doublet regimen of two agents, including either cisplatin or carboplatin is recommended after surgical resection. Unfortunately, the lung adjuvant cisplatin evaluation, also known as LACE, meta-analysis determined the absolute benefit of traditional chemotherapy added to surgical resection to be 5.4 percent.† Efforts to improve these results have not resulted in significant change within the last two decades.

**Improving survival**

Alchemists, including Sir Isaac Newton, searched for the magical substance—the philosopher’s stone—to transform lead to gold, and to create the elixir of immortality. Today, thoracic oncologists are searching for the optimal regimen to treat an often incurable disease.

Unlike the alchemists of old, who had an incomplete understanding of the building blocks of matter, our understanding of the molecular drivers of cancer has had a dramatic effect on the management of more advanced-stage lung cancer. Highly specific agents that target epidermal growth factor receptor (EGFR) mutations, such as erlotinib, and anaplastic lymphoma kinase (ALK) gene rearrangements, such as crizotinib, are now available. By directly attacking and abrogating the abnormal cell signaling cascade, targeted therapy is emerging as the chemotherapeutic method of choice. Unfortunately, only an estimated 10 percent to 15 percent of patients with NSCLC adenocarcinoma have EGFR mutations, and only 5 percent to 6 percent of patients have ALK gene rearrangements. For patients without these mutations, immunotherapy is emerging as a potential option.

The programmed death (PD)-L1 and PD-L2 ligand is present in some tumors, allowing the tumor to evade the immune system by suppressing activated T-cells. A number of different cancers have responded well to PD-1 inhibition, preventing the immunosuppressive interaction of the tumor cell and the T-cell. Nivolumab is a monoclonal antibody against PD-1 that has demonstrated efficacy in advanced-stage lung cancer, both in squamous
ALCHEMIST studies may yield revolutionary therapy options

In 2014, the Adjuvant Lung Cancer Enrichment Marker Identification and Sequencing Trials, or ALCHEMIST, opened. The goals of the trials are to identify the prevalence of EGFR and ALK mutations in patients who are eligible for adjuvant chemotherapy, and to evaluate the benefit of targeted chemotherapy in the adjuvant setting. Patients with stage IB (>4cm) through IIIA disease are eligible. Depending on EGFR or ALK mutational status, patients are randomized to targeted drug therapy (erlotinib for EGFR mutant tumors or crizotinib for ALK-rearranged tumors) versus placebo. With emerging data on the role of PD-1 mediated immunotherapy, in 2016, a third arm was added to the study, which permits the inclusion of patients without ALK or EGFR mutations and randomizes them to nivolumab versus placebo. Patients with squamous cell NSCLC—as well as patients with adenocarcinoma NSCLC who are ALK and EGFR mutation-negative—are now eligible for inclusion in this landmark trial due to the addition of this third arm evaluating adjuvant immunotherapy in this setting.

A total of 1,060 sites are accruing patients in this nationwide trial. At press time, 1,517 patients were enrolled. The goal is to enroll 8,300 patients. Also as of press time, screening for EGFR and ALK mutations had resulted in 86 patients with EGFR mutations able to be randomized to erlotinib versus placebo, and 29 patients withALK rearrangements able to be randomized to crizotinib versus placebo. The goal of this study is to accrue 450 patients to each of these treatment arms of the ALCHEMIST trials, with a goal of accruing 714 patients in the immunotherapy adjuvant treatment arm.

The ALCHEMIST trials have the potential to revolutionize adjuvant therapy for patients with operable lung cancer. With the addition of the immunotherapy arm to this trial, all patients with operable NSCLC adenocarcinoma and squamous histology can and should have the opportunity to participate. We know that the current standard of care of cisplatin-based chemotherapy offers little benefit in the adjuvant setting. The addition of targeted therapy in the context of a tumor having a specific mutation—or immunotherapy to prevent the escape of tumor cells from our natural immune defenses—may improve long-term survival in patients with NSCLC.

and adenocarcinoma, regardless of PD-L1 expression on the tumor cell.

FIGURE 1. OVERALL SCHEMA OF ALCHEMIST

| Stage IB (>4cm), II, and IIIA NSCLC n = 1517/8300 |
| Surgical resection |
| Molecular testing |
| Adjuvant therapy |

EGFR mutation positive n = 86/450

- Erlotinib or placebo

ALK positive n = 29/450

- Crizotinib or placebo

EGFR & ALK negative n = 46/714

- Nivolumab or placebo

The sesquicentennial anniversary of the publication of Lord Joseph Lister’s (1827–1912) first paper on carbolic acid and antisepsis in *The Lancet* is March 16. Even though physicians, including Lister himself, abandoned the use of carbolic acid only two decades later, he remained the leading advocate of the application of germ theory in the care of surgical patients in Great Britain. Harold Ellis, CBE, FRCS, has called the achievement “the watershed between two eras of surgery, the primitive and the modern, since it was the first to be performed as an antiseptic procedure.”

Controversial from the start
Lister, a Scottish surgeon, struggled with the one-in-two mortality rate from wound infection that surrounded surgery in the mid-19th century. Thomas Anderson—a Glasgow professor and an expert in agricultural chemistry—advised Lister to read Louis Pasteur’s papers, “Recherches sur la putrefaction,” which described the role of microbes in spoiled wine and milk. Lister reasoned that the same phenomenon could occur in decomposing flesh. Lister and Anderson discussed the latter’s work to deodorize sewage and render it suitable for agricultural manure. Carbolic acid was a favored compound, removing the unpleasant smells without apparent ill effects on grazing cattle.

Lister made the connection between the stench of human waste and gangrene and the potential of carbolic acid to function as a disinfectant, and so he began to use carbolic acid in dressings in patients with open fractures. Of his first 11 patients, only two died, which was a result he viewed as a stunning improvement. Many surgeons adopted Lister’s so-called antiseptic system, including spraying carbolic acid over the operative field, a practice he advocated a few years later, and which would eventually be known as “Listerism.”

Other surgeons and scientists remained skeptical. Carbolic acid burned uninvolved skin and irritated the eyes, nose, and hands of anyone exposed to it. In 1886, Howard Atwood Kelly, MD, of the University of Pennsylvania, Philadelphia, said, “If used in strength sufficient to certainly prevent sepsis, the patient is very often killed along with the germs.” Furthermore, other surgeons reported rates of infection and death that were lower than Lister’s without using the chemical.

In 1881, German physician and microbiologist Robert Koch found that bacilli...
thrive[d] in wounds treated with carbolic acid. He advocated the use of pressurized steam to sterilize anything that came in contact with the patient, from instruments to the surgeon’s garb, an approach that proved effective in controlling surgical infection. Within a decade, asepsis supplant[ed] Listerism.10

Lister’s legacy

Why is Lister celebrated in the history of surgery? He was not the first to use carbolic acid or to apply antisepsis. In 1901, Dr. Kelly wrote that Jules Lemaire, a Paris, France-based physician, was the first to use carbolic acid in surgery in 1864, three years before Lister’s papers were published.11 In 1970, Owen H. Wangensteen, MD, FACS, opined that Ignaz Semmelweis’ use of hypochlorous acid in 1847 to prevent puerperal fever was rightly the first use of antiseptic in preventing surgical infection.12

Michael Worboys, former director of the Centre for the History of Science, Technology and Medicine, University of Manchester, U.K., argues that Lister’s contribution to the evolution of surgery is based on how he incorporated Pasteur’s findings into his practice of surgery.13 His exacting techniques of wound dressings and antiseptic mists, however ineffective, were based on his understanding of science. Lister’s work showed that surgery had evolved from the heroics of Scottish surgeon Robert Liston’s bravura 30-second amputations and its 300 percent mortality rate—the patient, the assistant who lost a finger, and a bystander who died from shock after nearly being sliced by Liston’s errant scalpel. Perhaps Lister’s contribution to modern medicine can best be summed up by Rev. Thomas Gariepy, CSC, professor and chair of healthcare administration, Stonehill College, Easton, MA: “Antiseptic surgery… fostered the alliance between science and medicine.”14

While carbolic acid vaporizers are now relics, Lister and Lemaire based their practices on Pasteur’s revolutionary discoveries. When Professor Koch, the next great figure in microbiology, determined that bacilli caused human disease, the field was thus prepared to accept asepsis as the next significant development in surgery. ♦

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Honoring mentors: An ACS tradition

by Sarah B. Klein, MPA

Mentorships in the surgical profession are greatly valued, and many mentor/mentee relationships have been formed through networking opportunities and formal programs offered by the American College of Surgeons (ACS). The College matches mentors and mentees through its Young Fellows Association, the Women in Surgery Committee (WiSC), and the Committee on Trauma. Many Fellows have expressed their gratitude to mentors in essays and other articles featured in ACS publications, whereas others have acknowledged their advisors by making tribute gifts to the ACS Foundation. Since its founding in 2005, the ACS Foundation has assisted in the development of tribute programs, and the contributions raised are used to sustain the legacy of inspiring surgical teachers. Notable examples are the Claude H. Organ, Jr., MD, FACS, Traveling Fellowship; the Thomas R. Russell, MD, FACS, Faculty Research Fellowship; and the Olga M. Jonasson Lectureship.

Claude H. Organ, Jr., MD, FACS

Soon after his death in 2005, the family and friends of Dr. Organ provided funding for the Claude H. Organ, Jr., MD, FACS, Traveling Fellowship, which serves as a lasting memorial to the ACS Past-President’s extraordinary life and work. Dr. Organ was a renowned general surgeon, educator, and advocate for underrepresented populations entering the surgical profession. In 1987, he became a founding member of the Society of Black Academic Surgeons (SBAS), and in 1993 he became the first and, to date, only male recipient of the Nina Starr Braunwald Award from the Association of Women Surgeons (AWS) for “outstanding service to the advancement of women in surgery.”

Dr. Organ’s commitment to mentoring residents was unwavering, as many residents and mentees who benefited from his guidance would confirm. “If he never did an operation (he did thousands), if he never gave a talk, wrote a chapter or wrote an article (he did hundreds of them), if he never held an office in a major surgical organization (he held dozens), he would still be a giant in American surgery simply for having helped so many of us make our own small contribution,” wrote John R. Potts III, MD, FACS, one of Dr. Organ’s mentees. Dr. Potts is now senior vice-president, surgical accreditation, Accreditation Council for Graduate Medical Education, and adjunct professor of surgery, the University of Texas Medical School at Houston.

The annual Claude Organ Traveling Fellowship is awarded to an outstanding young surgeon from the SBAS, AWS, or Surgical Section of the National Medical Association (see page 63 for information on applying for the 2017 fellowship). This year represents a milestone for the Organ Fellowship, as the 10th recipient will be named. Patricia L. Turner, MD, FACS, Director, ACS Division of Member Services, was the first Organ Fellow in 2008. She used her fellowship award to perform collaborative research on patient history and surgical outcomes with the anesthesia outcome research group at Cleveland Clinic, OH. Subsequent Organ Fellows have used the fellowship to cultivate their leadership and mentorship skills, and the 2013 Organ Fellow, Anees B. Chagpar, MD, MPH, FACS, used her award to study global cancer care management.

Thomas R. Russell, MD, FACS

The Thomas R. Russell, MD, FACS, Faculty Research Fellowship (Russell Fellowship) fund was established to honor
the former ACS Executive Director, under the leadership of whom the College advanced the mission of providing optimal surgical patient care. He was a proponent of surgical research and of those surgeons who followed this career path. Dr. Russell’s positive influence as a mentor was apparent when many of his mentees and friends generously contributed a collective $306,000 in a campaign led by ACS Foundation Past Vice-Chair Richard B. Reiling, MD, FACS, for the Russell Fellowship fund.

Carlos A. Pellegrini, MD, FACS, FRCSI(Hon), FRCS(Hon), FRCSEd(Hon), ACS Past-Pres and Past-Chair, ACS Board of Regents, presented the ACS Lifetime Achievement Award posthumously to Dr. Russell during the Convocation at Clinical Congress 2014 in San Francisco, CA. During the award presentation, Dr. Pellegrini remarked, “In choosing Dr. Thomas Russell, the College is not only recognizing his contributions and service to the organization’s mission, but also is recognizing a dedicated leader, a compassionate humanitarian, and a man who touched many lives in ways that left us all better people for having known him.”

Dr. Russell believed that the future of the surgical profession rests in the hands of the young surgeons who will develop into tomorrow’s leaders. Thus, the Russell Fellowship is targeted at young surgeons who embody the College’s mission of advancing excellence in patient care, identifying and supporting leadership potential, and encouraging a strong interest in research and education.

To date, two surgeons have been recipients of the Russell Fellowship: Kathleen B. To, MD, FACS, who is studying performance improvement in emergency general surgery at the University of Michigan department of surgery, Ann Arbor; and Anthony D. Yang, MD, FACS, who is working with a 55-hospital collaborative to improve venous thromboembolism prevention at Northwestern University Feinberg School of Medicine, Chicago, IL.

Dr. Jonasson, MD, FACS

The WiSC and friends and colleagues of Dr. Jonasson established the Olga M. Jonasson Lecture in 2007 to honor her legacy. Dr. Jonasson was a pioneer and trailblazer, exemplified by her position as the first woman to chair an academic surgery department in the U.S., and the first woman to serve as director of an ACS division. She was a devoted teacher and mentor to countless surgeons, both men and women. Many donors contributed funds to establish an endowment to ensure the ongoing presentation of the Jonasson lectureship.

“As one of the first women to have a successful career in surgery, Dr. Jonasson created a pathway for all of us to follow. Her leadership, determination, and tenacity in breaking down barriers enabled and inspired us to pursue our dreams and achieve success,” said Hilary A. Sanfey, MB, BCh, FACS, ACS First-Vice President, and Chair of the Olga M. Jonasson Lectureship campaign.

The first Jonasson Lecture was presented at the ACS Clinical Congress 2007 by Nancy L. Ascher, MD, FACS, who spoke on The Ultimate in Surgical Translation: Transplantation. Each subsequent lecturer has epitomized Dr. Jonasson’s key attributes of leadership, education, research, and service to others. Additionally, the lecture serves as an annual, living testament to Dr. Jonasson and her many groundbreaking accomplishments as a transplant surgeon and as an outstanding teacher and mentor for many women and minority surgeons.”
The tradition continues

More recent fundraising initiatives in gratitude to mentors also were completed through the ACS Foundation. As a result, the College offers fellowships and scholarships honoring ACS Distinguished Service Award recipient Murray F. Brennan, MD, FACS; the late Jameson L. Chassin, MD, FACS; and Dr. Pellegrini.

In 2015, David J. Brown, MD, associate vice-president and associate dean for health equity and inclusion, University of Michigan, Ann Arbor; and Rahul K. Shah, MD, FACS, vice-president and chief quality and safety officer, Children’s National Health System, Washington, DC, led the effort to establish a traveling mentorship award named for ACS Past-President and Past-Chair, ACS Board of Regents, Gerald B. Healy, MD, FACS, FRCS(Hon), FRCSI(Hon). The intent of the Gerald B. Healy Traveling Mentorship Award is to provide a young surgeon with the resources needed to travel and meet with one or more mentors. Recipients are expected to then report on lessons learned. Drs. Brown and Shah created this fellowship to honor Dr. Healy’s highly respected mentorship of many residents and medical students.

“Dr. Healy always looked out for our best interests, was selfless with his mentorship, and never pushed us to be a clone of him,” said Dr. Brown. Dr. Shah also expressed his admiration of Dr. Healy, stating, “Not a week goes by where I do not reflect on a point that was conveyed to me by Dr. Healy. One of my favorites is his imploping us to just walk down the hall or pick up the phone and speak to someone rather than sending an e-mail. The value Dr. Healy placed on ensuring we realized the value of the personal touch has been an invaluable part of my career.”

In 2016, the ACS Foundation began a new tradition on National Doctors’ Day with a fundraising campaign that provides the opportunity for all Fellows and ACS members to honor their mentors with a tribute gift. On March 30, the ACS Foundation is again participating in the 2017 National Doctors’ Day. Any donor who makes a contribution in honor of a mentor will be recognized in the ACS Bulletin, ACS NewsScope, on the ACS website, and at Clinical Congress. As a courtesy, an acknowledgement letter will be sent to the donor’s honoree or family, if in memoriam. For more information, visit facs.org/acsfoundation or call 312-202-5338.

REFERENCES

Communication is an essential component of the safe and effective practice of medicine and, in particular, surgery. In today’s digital age, communication takes place across various platforms.

A 2015 study by the Pew Research Center showed that nearly two-thirds of Americans (64 percent) own a smartphone, and that text messaging is the most widely used feature on these devices.* In the 18–29-year-old demographic, nearly 100 percent of the respondents said they used their smartphones for text messaging, whereas nearly 98 percent of respondents ages 30–49 said they use their phones to text message.

Texting in health care: The debate continues
Texting may be a popular and effective way to communicate with friends and family, but in recent years The Joint Commission and other stakeholders have debated its appropriateness in the health care environment. In May 2016, The Joint Commission acknowledged advancements that have resulted in enhanced security for text message data.† As a result, The Joint Commission revised its previous position that advised against secure texting of patient care orders and decided to allow licensed independent practitioners (LIPs) to use secure text messaging platforms to send patient care orders, provided the systems met certain criteria.

However, after concerns were raised about security issues related to transmitting orders via text in December 2016, The Joint Commission, in collaboration with the Centers for Medicare & Medicaid Services (CMS), decided to reverse its May 2016 position to

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allow secure texting for patient care orders and issued the following recommendations:‡

- All health care organizations should have policies prohibiting the use of unsecured text messaging, also known as short message service, from a personal mobile device for communicating protected health information.

- The Joint Commission and CMS agree that computerized provider order entry (CPOE), which refers to any system in which clinicians directly place orders electronically, should be the preferred method for submitting orders, as it allows providers to directly enter orders into the electronic health record (EHR).

- In the event that a CPOE or written order cannot be submitted, a verbal order is acceptable on an infrequent basis.

The Joint Commission decided that the use of secure text orders was unacceptable for a number of reasons. One concern raised in discussions with CMS was that text messaging of orders would place an increased burden on nurses. If more providers texted patient care orders, nurses would have to enter those orders into the EHR manually, which would add time and could lead to the introduction of errors. Another concern centers on the challenges this technology presents regarding detailed conversations. As the patient care order becomes more detailed, a conversation becomes more necessary—for example, a discussion regarding how medication might interfere with other prescriptions. Because text messaging is not integrated into the EHR system, crucial information could be overlooked.

Another reason The Joint Commission issued the new recommendations on text messaging is the possibility of a clinical decision support alert during the order entry process into the EHR, when the individual keying in the order may need to contact the ordering health care professional for more information. When the information is communicated verbally, the clarification is immediate, whereas an order by text could potentially face delays.

The Joint Commission will continue to monitor how advancements in technology shape this issue and will continue to consult with key stakeholders to determine how best to address the issue in the future. Any questions regarding text orders and The Joint Commission’s stance can be e-mailed to textingorders@jointcommission.org.


Disclaimer
The thoughts and opinions expressed in this column are solely those of Dr. Pellegrini and do not necessarily reflect those of The Joint Commission or the American College of Surgeons.
The retroperitoneal space, also known as the retroperitoneum, is defined as the area between the parietal peritoneum and the muscles and bones of the posterior abdominal wall. Sandwiched between this thin tissue layer and the rigid back are solid organs, hollow viscera, and vascular structures.

Traumatic retroperitoneal hematoma is a potentially life-threatening condition associated with both blunt and penetrating injury mechanisms to the structures in that region.

Hematomas are divided into three zones based on their location in the retroperitoneum. Zone I is a centrally located hematoma of the upper retroperitoneum and is concerning for injury to the aorta, inferior vena cava, pancreas, or duodenum. Zone II, or the lateral zones, are on either side of zone I and include the kidney and its associated structures as well as parts of the colon. Zone III is located in the pelvis and often associated with blunt pelvic fractures or iliofemoral vascular injuries. Each zone presents unique challenges to diagnosis, as well as treatment. Treatment is divided into operative and nonoperative based upon mechanism of injury and the location of the hematoma. Mortality ranges widely based on location and etiology of the hematoma.

A stealth killer
To examine the occurrence of injured patients with retroperitoneal hematoma from a blunt mechanism contained in the National Trauma Data Bank® (NTDB®) research dataset admission year 2015, medical records were searched using the International Classification of Diseases, Ninth Revision, Clinical Modification codes. Specifically searched were records that included an external cause of injury code that represented a blunt trauma mechanism, along with a diagnosis code of 868.04 (injury to other intra-abdominal organs without mention of open wound into cavity, retroperitoneum).

A total of 4,583 records were found, of which 4,167 records contained a discharge status, including 1,981 patients discharged to home, 1,023 to acute care/rehab, and 560 to skilled nursing facilities; 603 died (see Figure 1, page 47). Of these patients, 70 percent were men, on average 48.3 years of age, had an average hospital length of stay of 10.6 days, an intensive care unit length of stay of 7.9 days, an
Traumatic injuries often are visually obvious or easily diagnosed with routine studies in the trauma resuscitation area. However, given the location and occult nature of retroperitoneal hematomas, what you don’t see can kill you.

**Figure 1. Hospital Discharge Status**

Average injury severity score of 24.5, and were on the ventilator for an average of eight days.

Searching these records for the data field for comorbid condition number four (bleeding disorder) revealed that only 7 percent (331 of the 4,583) had a contributing factor, such as chronic anticoagulation, prior to sustaining an injury. Of those tested for alcohol, almost one-third (717 out of 2,471) tested positive.

With such a diverse presentation and potential constellation of associated injuries, it is no wonder that retroperitoneal hematomas left undiagnosed or undertreated can result in fatalities. Traumatic injuries often are visually obvious or easily diagnosed with routine studies in the trauma resuscitation area. However, given the location and occult nature of retroperitoneal hematomas, what you don’t see can kill you.

Throughout the year, we will be highlighting these data through brief monthly reports in the Bulletin. The NTDB Annual Report 2016 is available on the ACS website as a PDF file at facs.org/quality-programs/trauma/ntdb. In addition, information is available on our website about how to obtain NTDB data for more detailed study. If you are interested in submitting your trauma center’s data, contact Melanie L. Neal, Manager, NTDB, at mneal@facs.org.

**Acknowledgment**

Statistical support for this article was provided by Chrystal Caden-Price, Data Analyst, NTDB.
The American College of Surgeons (ACS) Children’s Surgery Verification™ (CSV) Quality Improvement Program officially opened its verification process in January with the goal of ensuring that pediatric surgical patients have access to high-quality care. This new program defines the resources necessary to achieve optimal patient outcomes for children receiving surgical care at certain health care facilities. The CSV program is administered by the ACS and the ACS CSV Committee and offers institutional verification to sites that meet the prescribed standards.

**A pressing need**

The ACS has a long history of activities directed toward the improvement of surgical care. The ACS developed the CSV program because a large proportion of children’s surgical care in the U.S. is provided in nonspecialized environments. Some of the procedures provided in these facilities are relatively simple, but others are done on high-risk patients and are of greater complexity. A specialized environment is associated with better clinical outcomes for these children, particularly high-risk patients needing congenital heart surgery, trauma care, and neonatal surgery. Furthermore, specialized pediatric anesthesia is critical for safe, contemporary children’s surgery. A specialized children’s environment also is important to achieve optimal outcomes at a population level for some relatively simple pediatric surgical problems such as intussusception, pyloric stenosis, and appendicitis in children ages five and younger.

The CSV program evaluates applicant centers to verify that optimal children’s resource standards are met and matched to the expected scope of practice at the hospital. Centers may provide Level I, Level II, or Level III children’s specific resources. To qualify as a Level I children’s surgical center, the hospital must be a regional, tertiary-care facility that is central to the children’s health care system. This facility must have the capability of providing leadership and comprehensive care for all aspects of children’s surgical needs. To fulfill this central role, the Level I center must have adequate depth of resources and personnel. For Level II designation, the children’s surgical center is expected to provide initial children’s surgical care, regardless of the complexity of the case, and definitive care when appropriate. The Level III children’s surgical centers serve communities that do not have immediate access to Level I or Level II institutions. These centers should be capable of providing prompt assessment, resuscitation, emergency operations, and stabilization and should be able to arrange for possible transfer to a facility that can provide definitive surgical care. To access the standards, visit [facs.org/quality-programs/childrens-surgery/childrens-surgery-verification/standards](facs.org/quality-programs/childrens-surgery/childrens-surgery-verification/standards).

**A collaborative effort**

This program is the result of the work of the Task Force for Children’s Surgical Care, a multidisciplinary group of leaders representing all aspects of the children’s surgical community. The task force began meeting in the spring of 2012 to develop best practices and approaches to optimize children’s surgical care. From these meetings, the task force collaborated with the ACS Division of Research and Optimal Patient Care to develop the requirements for verification. These standards are the nation’s first and only multispecialty benchmarks aimed at improving surgical care for infants and children. "The vision is to see that every child in need of surgical care will receive this care in an environment with resources optimal for his/her..."
individual needs,” said Keith T. Oldham, MD, FACS, Chair, Children’s Surgery Verification Quality Improvement Program, and surgeon-in-chief, Children’s Hospital of Wisconsin, Milwaukee.

The CSV pilot program launched in April 2015 at six sites of various sizes, types, and verification levels. All of the sites were visited, and the pilot was concluded successfully in the fall of 2016. The ACS CSV Committee finalized the standards manual and pre-review questionnaire (PRQ) based on lessons learned in the pilot phase of the program. A number of changes were identified in this process, such as the need for defined alternative training pathways for pediatric anesthesiology, pediatric emergency medicine, and pediatric radiology.

**Applying for verification**

Centers seeking verification must first submit a pre-application. The pre-application and PRQ must be submitted via the online application portal at accreditation.facs.org/programs/csv.

After submitting an application, centers seeking verification undergo an extensive site visit by a team of ACS surveyors, comprising experienced pediatric surgeons, pediatric anesthesiologists, and pediatric nurses who review the center’s structure, process, and clinical outcomes data. The *Optimal Resources for Children’s Surgical Care* manual drives the application and is used as a guide in conducting the survey.

The CSV program has garnered key endorsements from multiple specialty societies including the American Academy of Pediatrics, American Pediatric Surgical Association, and Society of Pediatric Anesthesiology. Verified centers are listed at facs.org/quality-programs/childrens-surgery/childrens-surgery-verification/centers. For more information, contact childrenssurgery@facs.org.

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“\nThe vision is to see that every child in need of surgical care will receive this care in an environment with resources optimal for his/her individual needs.”

—Dr. Oldham
ACS launches AHRQ Safety Program for ERAS

The American College of Surgeons (ACS), in collaboration with the Johns Hopkins Medicine Armstrong Institute for Patient Safety and Quality, Baltimore, MD, has launched the AHRQ (Agency for Healthcare Research and Quality) Safety Program for Enhanced Recovery after Surgery (ERAS). This new surgical quality improvement program is funded and guided by AHRQ.

The AHRQ Safety Program for ERAS will support hospitals in implementing perioperative evidence-based protocols to meaningfully improve clinical outcomes, reduce health care utilization, and improve the patient experience. This program aims to enroll at least 750 hospitals throughout the five-year contract. Hospitals within the U.S., Puerto Rico, and the District of Columbia are eligible to participate across five service lines: colorectal, orthopaedic, bariatric, gynecology, and emergency general surgery.

Participating hospitals will have access to the international leaders in ERAS, including representatives of surgery, anesthesiology, and nursing; prototype ERAS protocols developed for five procedures based on up-to-date evidence review; literature to support protocols; tools and educational materials to facilitate implementation; quality improvement specialist support; and coaching calls to support hospital work.

Program enrollment will begin in spring 2017. For more information, contact enhancedrecovery@facs.org.

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To provide a more comprehensive look at the American College of Surgeons (ACS) quality improvement efforts, the College has announced that the ACS National Surgical Quality Improvement Program (ACS NSQIP®) Annual Conference will now be the 2017 ACS Quality and Safety Conference. The meeting will take place July 21–24 at the New York Hilton Midtown, NY.

The annual ACS NSQIP conference has grown rapidly in recent years—the 2016 conference in San Diego, CA, drew nearly 1,500 surgeon champions, surgical clinical reviewers (SCRs), and other quality improvement professionals. The ACS Quality and Safety Conference will build on that success, featuring leaders in surgery as speakers and various presentations focused on ACS NSQIP, while offering expanded content on the following ACS Quality Programs:

- ACS NSQIP Pediatric
- Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program
- Children’s Surgery Verification™ Quality Improvement Program
- Surgeon Specific Registry

**Achieving quality**
The theme of the expanded conference, Achieving Quality: Present and Future, will serve as the basis of the meeting’s proceedings. To achieve the goal of improving quality, presenters and organizers are striving to accomplish the following objectives:

- Provide a forum to share the most up-to-date knowledge pertaining to local, national, and international quality improvement initiatives in surgery
- Present methods used to analyze clinical registry data and demonstrate practical ways to use the data
- Assist hospitals in analyzing, managing, and interpreting data by providing education on proven methods that will empower hospitals to make a positive impact on patient care
- Enhance the learning experience by offering breakout sessions that educate attendees on topic areas of interest to them, with consideration of their level of experience in ACS quality improvement programs

**Conference highlights**
In addition to talks from surgical leaders, the 2017 ACS Quality and Safety Conference will offer other notable events.

Keynote speaker Blake Haxton, a member of the 2016 U.S. Paralympic Team in rowing, will share his unique insight with attendees. Mr. Haxton contracted necrotizing fasciitis in March 2009, in his senior year of high school. The infection led to heart, lung, kidney, and liver failure, as well as the loss of both legs; however, after an intensive rehabilitation regimen, he was able to attend and graduate from college and law school.

Another conference highlight will be abstract competitions in four categories: Medical Student and Surgical Resident Abstract Competition, SCR Abstract Competition, Clinical Abstract Competition, and Abstract Poster Competition.

Clifford Y. Ko, MD, MS, MSHS, FACS, FASCRS, Director, ACS Division of Research and Optimal Patient Care, which oversees all ACS Quality Programs, is enthusiastic about the newly expanded ACS Quality and Safety Conference. “We are excited to have multiple quality programs of the American College of Surgeons coming together for this conference so that we can all learn how to get better, become more efficient, and provide high-value care in all types of settings,” Dr. Ko said. “This is the first time we’ve put together a conference like this, which we hope will be the first of many.”

Distal cholangiocarcinoma and pancreas cancer: A 13-institution study from the U.S. extrahepatic biliary malignancy consortium and the central pancreas consortium

Cecilia G. Ethun, MD; Alexandra G. Lopez-Aguiar, MD; Timothy Pawlik, MD, MPH, PhD, FACS; and colleagues found that while distal cholangiocarcinoma (DC) and pancreatic ductal adenocarcinoma (PDAC) are distinct entities, DC has a more favorable prognosis than PDAC. Current adjuvant therapy regimens are only associated with improved survival in PDAC, not DC. Treatment paradigms used for PDAC should not be extrapolated to DC, despite similar operative approaches, and novel therapies for DC should be explored.

This article and all other JACS content is available at www.journalacs.org.

Register for 2017 ACS Residents as Teachers and Leaders Course

Registration is open for the 11th annual Residents as Teachers and Leaders Course hosted by the American College of Surgeons (ACS) Division of Education. The 2017 program, April 28–30 at the ACS headquarters in Chicago, IL, is designed specifically for surgery residents and will address the essential nonclinical skills—teaching and leading—that are required for success as surgeons and members of the health care team.

The course faculty, all experts in resident education, will provide an interactive learning environment. Residents will learn to lead a team more effectively, resolve conflict, be better teachers, give constructive feedback, and apply these skills during and after residency. The number of participants is limited to allow ample interaction with faculty and to facilitate networking. This course is targeted at mid- to senior-level residents, but all are welcome to attend.

Registration information and a brochure are available at the course website at facs.org/residentteachers; early bird registration ends April 1. Note that last year’s course was oversubscribed, so register soon if you are interested in attending. Contact Cherylnn Sherman at csherman@facs.org or at 312-202-5424 with any questions.

22 cancer care facilities receive biannual CoC Outstanding Achievement Award

The Commission on Cancer (CoC) of the American College of Surgeons (ACS) has granted its year-end 2016 Outstanding Achievement Award (OAA) to a select group of 22 accredited cancer programs throughout the U.S.

Award criteria were based on qualitative and quantitative surveys conducted July 1 through December 31, 2016. The biannual award was established in 2004 to recognize cancer programs that strive for excellence in demonstrating compliance with the CoC standards and are committed to ensuring high-quality cancer care.

A CoC-accredited cancer program is eligible to earn the OAA after completing the accreditation survey and receiving a performance report that indicates an accreditation award of “Three-Year with Commendation.” Specifically, the program must receive commendation ratings for the seven commendation level standards and no deficiencies for the remaining 27 standards.

View the list of this year’s first group of OAA recipients on the ACS website at facs.org/quality-programs/cancer/coc/info/outstanding/2016-part-2.

Register for 2017 ACS Residents as Teachers and Leaders Course

Coming next month in JACS, and online now

Distal cholangiocarcinoma and pancreas cancer: A 13-institution study from the U.S. extrahepatic biliary malignancy consortium and the central pancreas consortium

Cecilia G. Ethun, MD; Alexandra G. Lopez-Aguiar, MD; Timothy Pawlik, MD, MPH, PhD, FACS; and colleagues found that while distal cholangiocarcinoma (DC) and pancreatic ductal adenocarcinoma (PDAC) are distinct entities, DC has a more favorable prognosis than PDAC. Current adjuvant therapy regimens are only associated with improved survival in PDAC, not DC. Treatment paradigms used for PDAC should not be extrapolated to DC, despite similar operative approaches, and novel therapies for DC should be explored.

This article and all other JACS content is available at www.journalacs.org.
Post-election health policy takes center stage at AMA HOD meeting

by John H. Armstrong, MD, FACS, and Jon H. Sutton, MBA

The American Medical Association (AMA) Interim House of Delegates (HOD) meeting took place November 12–15, 2016, in Orlando, FL. A total of 530 state medical society and specialty society delegates, including the six members of the American College of Surgeons’ (ACS) delegation, debated the policy implications of 32 reports and 101 resolutions. Occurring within a week of the national elections, a central focus of the meeting was the uncertainty about the future of the Affordable Care Act (ACA). On the other hand, the Stop the Bleed® program received an enthusiastic reception.

ACS delegation sponsors Stop the Bleed skills course
AMA meetings provide an opportunity for the ACS delegates to share College initiatives with physician leaders from a breadth of geographic locations, specialties, and career stages. In this spirit, ACS delegates, all of whom are Stop the Bleed instructors, along with Leonard J. Weireter, MD, FACS, Vice-Chair, ACS Committee on Trauma, presented the skills course to 125 practicing physicians, residents, and medical student delegates. Through four half-hour sessions, participants refreshed their hands-on skills in bleeding control and became advocates for bringing the course back to their communities. Course success was recognized before the entire HOD.

Surgical Caucus focuses on mass casualty readiness
The Surgical Caucus sponsored a one-hour educational session, The Hartford Consensus: Strategies to Enhance Survival in Active Shooter and Intentional Mass Casualty Events. Dr. Weireter shared an overview of the Hartford Consensus recommendations for effective response to active shooter and mass casualty events and highlighted the value of the Stop the Bleed course in improving survival of casualties from these events.

Orlando trauma surgeon Michael Cheatham, MD, FACS, gave a synopsis of the Orlando Regional Medical Center response to the Pulse nightclub shooting in June 2016. In addition to conducting relevant readiness drills, he emphasized the importance of including casualty family assistance and post-event hospital staff counseling in mass casualty plans.

At this meeting, the AMA endorsed recommendations from a 2015 call to action by eight health professional organizations and the American Bar Association to reduce the public health consequences of firearm-related injury.

U.S. elections put health care system in spotlight
Five resolutions covering a spectrum of opinions about AMA engagement in ACA reform were discussed. The five proposals were consolidated into one adopted resolution, which calls for the AMA, in collaboration with state and specialty medical societies, to actively discuss the future of health care reform with the new presidential administration and Congress.

AMA executive vice-president James Madera, MD, sent a letter to congressional leaders on January 3 emphasizing the AMA’s interest in proposals that “make coverage more affordable, provide greater choice, and increase the number of those insured.”

The ACS delegation focused on the ACS Health Care Reform General Principles, which promote a systems-based approach to health care quality and safety, patient access to surgical care, reduction of health care costs, and medical liability reform. (See “Looking forward” on page 8 of this issue for more information.)
At this meeting, the AMA endorsed recommendations from a 2015 call to action by eight health professional organizations and the American Bar Association to reduce the public health consequences of firearm-related injury.

**ACS DELEGATION AT THE AMA HOD**

John H. Armstrong, MD, FACS (Delegation Chair), acute care surgery, Ocala, FL

Brian J. Gavitt, MD, MPH (also Young Physicians Section delegate), general surgery, Cincinnati, OH

Jacob Moalem, MD, FACS (also Young Physicians Section delegate), general surgery, Rochester, NY

Leigh A. Neumayer, MD, FACS, general surgery, Tucson, AZ; Vice-Chair, ACS Board of Regents

Naveen F. Sangji, MD, general surgery resident, Boston, MA

Patricia L. Turner, MD, FACS, general surgery, Chicago, IL; Director, ACS Division of Member Services; Chair, AMA Council on Medical Education

**Maintenance of Certification**

General disaffection with Maintenance of Certification (MOC) requirements persists in multiple specialties, with particular concerns related to its use in credentialing and privileging decisions. The HOD adopted a policy that directs the AMA to increase efforts to ensure that MOC does not become a requirement for insurance panel participation, state medical licensure, and medical staff membership (initial and ongoing).

**Medical student and resident training**

Delegates agreed with a need for formal leadership training during medical school. The AMA now advocates for the creation of leadership programs that emphasize experiential learning of skills necessary to lead inter-professional teams. Delegates also recognized the importance of having training program policies that support residents who are breastfeeding. As a result, the AMA will now work with appropriate professional regulatory organizations to put policies for protected times and locations for breastfeeding into program requirements.

**Surgeon management of patients with perioperative pain**

A resolution intended to reduce perioperative opioid consumption was introduced, calling for hospitals to adopt practices for perioperative pain management, which include services dedicated to acute pain management. This proposal generated a great deal of concern among surgical and anesthesiology delegates. The HOD appreciated that surgeons are trained to manage the perioperative pain of their patients and may consult for additional services as needed. Thus, existing AMA efforts to promote appropriate clinical use of opioid analgesics were reaffirmed in lieu of the resolution.

**Next meeting**

The next meeting of the AMA HOD is scheduled for June 10–14 in Chicago. This meeting will be the first since the inauguration of President Donald Trump, and the ACS delegates anticipate that national health care policy will again dominate the discussion. ACS members with suggestions for potential resolutions should forward them to Jon Sutton at jsutton@facs.org.
The ACS Practice Management Course for Residents and Young Surgeons, Volumes I, II, and III, is designed to educate and equip participants with basic practice management skills and the knowledge to manage a surgical practice.

Using an interactive/lecture format, the three separate courses cover a variety of topics, including:

- Pros and cons of a career in private practice
- Surgical practice organization
- Coding for surgical residents
- Surgical financial management reports
- Insurance processing
- Accumulation planning
- Goal planning and risk management
- Negotiation
- Liability equation changes

NEW topic in each volume:

- **Volume 1**: Interpersonal and Communication Skills—An Important Competency for Risk Management
- **Volume 2**: Professionalism—A Critical Risk Management Tool
- **Volume 3**: Post-Adverse Event Communication—The Key!

To access the ACS Practice Management Course today, visit [facs.org/education/resources/elearning](http://facs.org/education/resources/elearning).

For more information, contact Olivier Petinaux, Senior Manager, Distance Education and E-Learning, at elearning@facs.org or 866-475-4696.
Plastic surgeons treat many complex wounds that require soft tissue reconstruction, such as diabetic foot ulcers, postoperative breast reconstruction, severe infection, and reconstruction after major trauma. Traditionally, structural defects rely on replacement with autologous tissue or allogeneic materials. Although a certain degree of success has been achieved, the final outcome has rarely been ideal.

In recent years, developments in regenerative medicine have provided new opportunities for more effective care. The essential part of regenerative medicine is tissue engineering, defined as the application of engineering and life science principles and methods toward the development of biological substitutes in order to restore, maintain, or improve the function of biological tissue.*

It was my great honor to be the 2016 Elias Hanna International Guest Scholar. With the support of this American College of Surgeons (ACS) scholarship, I also had the privilege of visiting Stanford University, CA, and the University of Chicago, IL, before going to Washington, DC, for Clinical Congress 2016. The trip was focused on understanding the impact regenerative medicine may have on the practice of plastic surgery in the future, particularly with respect to wound healing and breast reconstruction.

**Stanford University**

My first stop was Stanford University. My host was Geoffrey Gurtner, MD, FACS, Johnson & Johnson Professor of Surgery and professor of surgery and bioengineering. Dr. Gurtner has conducted many important studies in wound healing, with a focus on the interaction of tissue regeneration and fibrosis pathways during wound healing subsequent to skin injury. I had the opportunity to speak with the members of his research team and to attend the lab meeting.

The laboratory is equipped with state-of-the-art instruments for a variety of wound healing studies, and research topics include biomedical engineering, molecular biology, cytology, animal assays, drug release, genetic engineering, and tissue rejection reactions. Dr. Gurtner explained how he uses time management, delegation, and collaboration strategies to conduct high-quality research while still performing clinical work.

Because I, too, have done considerable research on regenerative medicine for wound healing, Dr. Gurtner invited me to speak at the plastic surgery grand rounds. I had a nice discussion with some senior physicians in the audience after the presentation, including Michael Longaker, MD, FACS, who also specializes in wound healing research.

I visited Dr. Gurtner’s clinic at the Stanford Advanced Wound Care Center, Redwood City, CA. In addition to plastic surgeons, the center hires physicians who specialize in metabolic diseases, cardiovascular surgery, rehabilitation, and infectious disease. The center is equipped with two hyperbaric oxygen chambers, along with other

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resources for providing state-of-the-art wound care.

Dr. Gurtner has conducted several clinical trials aimed at promoting the application of regenerative medicine principles in the treatment of chronic wounds, including the use of amniotic membrane products with live cells to enhance the healing of chronic wounds. With the increase in the elderly population globally, the incidence of diabetic ulcers, bed sores, and lower extremity arterial ulcers is expected to rise in the future, creating a great challenge for the medical care and social supportive systems. Therefore, a wound care center equipped with hyperbaric oxygen therapy and other cutting-edge wound care facilities is necessary to provide a full range of treatment options to patients with chronic wounds.

**University of Chicago**

My next stop was the University of Chicago, where I met with my host David Song, MD, FACS, chief of plastic surgery. Dr. Song is an internationally recognized expert in breast reconstruction and is the immediate past-president of the American Society of Plastic Surgeons. The incidence of breast cancer continues to rise in many countries, and consequently, the demand for breast reconstruction has increased. For women, breast reconstruction can significantly reduce the psychological trauma of patients after mastectomy. Breast reconstruction is now a mature technique with multiple approaches, including prosthesis and autologous tissue transfer. Although artificial implant is still the most common form of breast reconstruction, autologous tissue reconstruction generally is considered to yield better aesthetic results.

Dr. Song specializes in several methods of autologous breast reconstruction, including deep inferior epigastric perforator flap, superior gluteal artery perforator flap, superficial inferior epigastric artery flap, epigastric artery flap, and thoracodorsal artery perforator flap. I had the privilege of observing Dr. Song as he performed some of these operations and learned quite a few surgical techniques.

The trip was focused on understanding the impact regenerative medicine may have on the practice of plastic surgery in the future, particularly with respect to wound healing and breast reconstruction.
Dr. Song has conducted several clinical trials related to chest wall reconstruction, breast tumor resection, and breast reconstruction.

During my visit, I also participated in clinical teaching activities, such as journal club, and I had a chance to interact with residents, fellows, and the faculty regarding debated issues in wound care and breast reconstruction.

In a conversation with Dr. Song, he acknowledged the value of autologous fat transplantation for breast reconstruction and said he believes that adipose tissue-related technologies and products represent an important adjunct in breast reconstruction. Autologous fat grafts have been used for more than 100 years in plastic and reconstructive surgery. The early autologous fat transplant procedures had a high incidence of complications, such as infection, fat resorption, fat necrosis, and calcification. With improvements in liposuction, including refined procedures of purification, separation, and injection, autologous fat transplantation has become a reliable cosmetic and reconstructive surgical technique. The most common application is treating the facial defects caused by trauma or subcutaneous fat atrophy.

Whereas excessive adipose tissue can frequently be found in the abdomen or other parts of the body, it is usually possible to harvest enough fat for transfer with minimal donor site morbidity. Consequently, its application in the treatment of breast defects has flourished in recent years. In particular, recent studies have shown that adipose tissue contains a large amount of mesenchymal stem cells, which are a valuable cell source for regenerative medicine or tissue engineering. Cell-assisted lipotransfer, as described by Prof. Takaro Yoshimura from Japan, depicted a procedure that separates adipose-derived stem cells from adipose tissue and mixes them with fat to increase the concentration of stem cells within fat, thus increasing the survival and regeneration of the transplanted fat. However, the machine that can separate adipose stem cells from fat extracts has not yet been approved in the U.S. and is therefore unavailable at most hospitals, including the University of Chicago.

Clinical Congress
As the highlight of my visit, I traveled to Washington, DC, to attend the ACS Clinical Congress 2016. Since my residency, I have met several Honorary Fellows of the ACS, so I was excited to have the opportunity to attend Clinical Congress. The scale of the conference and the variety of educational sessions were amazing.

I appreciated the opportunity to attend a few scientific sessions for free. Maurice Nahabedian, MD, FACS, professor of plastic surgery, Georgetown University, Washington, DC, delivered a comprehensive overview on breast reconstruction at the session Atypical Breast Lesions: Defining and Managing this High Risk Population. After the session, I discussed with Dr. Nahabedian his surgical technique of complete coverage...
I appreciated the prospect of the ACS extending its reach beyond North America and promoting communication among the surgical communities around the world. Global outreach will benefit not only the ACS, but also surgeons and surgical patients worldwide.

Another session, Wound Care: Mentoring the Mentors, also was helpful for me. The speakers covered a range of wound care issues, including infection control, negative pressure wound therapy, nutrition support, and choice of dressings.

Thanks to the arrangement of the ACS International Relations Committee (IRC), International Guest Scholars from various countries had a chance to meet on several occasions, including the welcome reception and luncheon. We were invited to participate in the Opening Ceremony and the Annual Meeting of the IRC. I appreciated the prospect of the ACS extending its reach beyond North America and promoting communication among the surgical communities around the world. Global outreach will benefit not only the ACS, but also surgeons and surgical patients worldwide.

At a session for all of the IGS recipients, I was impressed by the diversity of the background of the scholars, ranging from basic research and clinical medicine, to surgical education and humanitarian aid. I gave a speech titled Paving the Way from Reconstructive Surgery to Regenerative Surgery. The concept of promoting tissue regeneration with bioactive scaffolds or cell therapy has captured the attention of the plastic and reconstructive surgery community. However, transplanting isolated adipose-derived stem cells into injured tissue often results in early cell death with limited therapeutic effects. Our study explored the use of cell sheet technology, which can exhibit excellent biological properties, resulting in enhanced wound healing and tissue regeneration.

Striking a balance between cost and quality
I was impressed with the quality of the medical services at Stanford University and the University of Chicago. The operating rooms housed all kinds of advanced equipment and devices. For example, feather sutures, which are used only for endoscopic or cosmetic operations in Taiwan, are used at these U.S. institutions for general skin closure. In the outpatient clinic, physicians have plenty of time to communicate with patients and their caregivers. However, high quality results in high medical expenses in the U.S., rendering medical insurance unaffordable for low-income Americans. These complex health care issues are being debated in many countries around the world.

For example, my research topic of applying adult stem cells in regenerative medicine and tissue repair will be an expensive treatment modality. Striking a balance between developing cutting-edge medical technologies and making them affordable for most people will be a challenge.

I would like to thank the ACS again for the award and the opportunity to attend the Clinical Congress. I believe the research done in the laboratory will eventually lead us to achieve the clinical application of regenerative medicine in wound healing and breast reconstruction. ♦

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The career path you chose to become a surgeon was not an easy one. Did you have a trusted mentor to help guide you? Tribute gifts—gifts made in memory of or in honor of someone—are a thoughtful way to say thank you.

March 30 is National Doctors’ Day, and the ACS Foundation will help you honor your mentor on this special day.

Make a donation on or before March 30, and the ACS Foundation will send an acknowledgment letter to your honoree (or family if in memoriam) noting the National Doctors’ Day celebration. A special recognition page, sponsored by the ACS Foundation, will feature all participating donors and honorees in the Bulletin, ACS NewsScope, and on the ACS website.

Your generous contribution will show your gratitude while simultaneously advancing the ACS mission of saving lives.

I have been fortunate in my life to have had many great mentors, some for my entire career and some for shorter time periods. Whether it was decisions in medical school or residency, early career needs, or recent job decisions, my community of mentors has always been there to encourage and empower me to succeed both professionally and personally. The lessons and guidance that have been given to me by Drs. Lohr and Gahtan are invaluable and lifelong. Though their mentoring was voluntary, I do hope to repay them by providing the same to my own mentees.

— Ruth L. Bush, MD, FACS, giving in honor of Vivian Gahtan, MD, FACS, and Joann M. Lohr, MD, FACS
"I gave in honor of Dr. Sawyers, who inspired me to be the best general surgeon I could be, to become a teacher of surgery, and become involved in the ACS. He was a superb surgeon and taught me so much about taking care of patients, being a meticulous and technically excellent surgeon, and to inspire students and surgical residents. He was very actively involved with surgery on a national basis through the ACS, the ABS, and the SSAT and challenged me to follow his lead."

— Kenneth W. Sharp, MD, FACS, giving in honor of the late John L. Sawyers, MD, FACS

"As an avid boater, I am well aware of the purpose of lighthouses. They serve as a tower and beacon in treacherous waterways and are illuminating. As a mentor, Dr. Murayama is my lighthouse. He has served as a tower and beacon to me throughout my career and has helped me, as well as so many others, safely navigate treacherous surgical waterways."

— Shanu N. Kothari, MD, FACS, giving in honor of Kenric M. Murayama, MD, FACS

"I chose to honor Dr. Numann, as she is a true surgical legend. Over the past 15 or so years she has hosted meetings for women surgeons in South Africa, Canada, Australia, Japan, and Thailand. Dr. Numann has been tireless in support of economically challenged surgeons and used her year as President of the ACS to travel around the globe to highlight the need for a global approach to education and to health care. She is an inspiration to all of us."

— Hilary A. Sanfey, MB BCH, FACS, giving in honor of Patricia J. Numann, MD, FACS
The American College of Surgeons (ACS) Division of Education and the International Relations Committee (IRC) have announced two international scholarships focused on surgical education. These awards will offer faculty members from countries other than the U.S. and Canada the opportunity to participate in a variety of faculty development activities to acquire new knowledge and skills in surgical education and training, which will be useful in improving surgical education and training in the scholar’s home institution and country. All application materials and supporting documents are due no later than May 1, 2017, for attendance at Clinical Congress 2017 in San Diego, CA, October 22–26.

Educational opportunities
The two scholars will participate in Clinical Congress 2017, including the Surgical Education: Principles and Practice Course, as well as other plenary sessions and courses that address surgical education and training across the continuum of professional development. This continuum may include the needs of practicing surgeons across their entire careers, as well as the needs of surgery residents, medical students, and other members of the surgical team.

Following the Clinical Congress, each scholar will visit two Level I ACS Accredited Education Institutes (AEIs) selected in advance based on the scholar’s interest areas in surgical education and training. At the conclusion of the Clinical Congress and his or her visits to the ACS-AEIs, each scholar will submit to the IRC and to the Division of Education a brief report outlining their achievements as a result of the scholarship, specifically focusing on achievement of the objectives outlined in the initial application. The scholarships will facilitate the scholars’ involvement in subsequent collaborative ventures in education and training under the aegis of the ACS Division of Education.

Each scholarship provides a stipend of $10,000, supporting travel and per diem in North America, and the cost of courses undertaken at the Clinical Congress and at the ACS AEIs. Clinical Congress registration and fees for attendance at the Surgical Education: Principles and Practice course will be provided gratis. Assistance will be offered to reserve affordable housing in San Diego.

Award criteria
Applicants must provide documentation of prior experience in surgical education and training, such as involvement in the development and evaluation of education modules, use of novel teaching and assessment strategies, or curriculum design. In addition, applicants must submit a one-paragraph description of their education philosophies, a list of specific educational goals and objectives for their visits, and evidence of support of these goals and objectives from the leadership at their home institutions. These documents will be reviewed by the Division of Education as part of the selection process. At least five years of experience is required beyond completion of all training and fellowships. Scholarships must be used in the year awarded; they may not be postponed.

Full scholarship requirements for this program may be reviewed at facs.org/member-services/scholarships/international/issurged. The application for the scholarship may be accessed at the bottom of the requirements page. Questions should be directed to the ACS International Liaison at kearly@facs.org.
First ACS/ASBrS International Scholar announced

Juan José Cossa Morchio, MD, FACS, a general surgeon at Clinics Hospital, Montevideo, Uruguay, was recently selected to receive the first American College of Surgeons/American Society of Breast Surgeons (ACS/ASBrS) International Scholarship.

Dr. Cossa manages complex breast cancer cases in a developing country that has one of the highest breast cancer incidence rates in the world. The $5,000 award will subsidize his attendance at the annual meeting of the ASBrS in Las Vegas, NV, in April 2017. He will then visit the National Accreditation Program for Breast Centers, located at ACS headquarters in Chicago, IL, to learn how to develop a multidisciplinary breast cancer program and database.

The next application deadline is anticipated to be in November 2017 for attendance and participation at the 2018 ASBrS annual meeting. ♦

Apply for Claude H. Organ, Jr., MD, FACS, Traveling Fellowship

The American College of Surgeons (ACS) is now accepting applications for the 2017 Claude H. Organ, Jr., MD, FACS, Traveling Fellowship. The deadline for receipt of all application materials is June 1, 2017.

The family and friends of the late Dr. Organ, an ACS Past-President, established an endowment through the ACS Foundation to provide funding for an annual fellowship to be awarded to an outstanding young surgeon from the Society of Black Academic Surgeons, the Association of Women Surgeons, or the Surgical Section of the National Medical Association. The fellowship, established after Dr. Organ’s death in 2005, is in the amount of $5,000 and enables a U.S. or Canadian Fellow or Associate Fellow younger than 45 years old who is a member of one of the aforementioned societies to attend an educational meeting or make an extended visit to an institution of his or her choice. The experience can be tailored to the recipient’s research interests.

Past awardees have used their fellowships in creative ways to develop their careers. The 2016 fellow, Stephanie Bonne, MD, is researching a successful hospital-based violence intervention program in San Francisco, CA, to help her to develop one at her home institution, Rutgers University Hospital, Newark, NJ, where she is assistant professor of surgery.

The full requirements for the Claude H. Organ Traveling Fellowship are posted at facs.org/member-services/scholarships/special/organ. Applicants will be informed of the award decision by August. Questions and application materials should be submitted to the ACS Scholarships Administrator at kearly@facs.org. ♦
Calendar of events

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

**MARCH**

Latin American Congress
March 14–17
Lima, Peru
Contact: Dr. David Ortega, scgperu@gmail.com, scgp.org/congreso2017/

Second European Meeting of ACS Region 15 Chapters
March 21
Munich, Germany
Contact: Dr. Norbert J. Senninger, senning@ukmuenster.de

**APRIL**

Alberta Chapter
April 7–8
Edmonton, AB
Contact: Dr. John Kortbeek, John.Kortbeek@ahs.ca

Minnesota Surgical Society: A Chapter of the ACS
April 7–8
Minneapolis, MN
Contact: Janna Pecquet, janna@msurgicalsociety.org, mnsurgicalsociety.org

Indiana Chapter
April 21–22
Indianapolis, IN
Contact: Tom Dixon, tdixon@ismanet.org, www.infacs.org

Japan Chapter
April 28
Yokohama, Japan
Contact: Dr. Kazuhiko Yoshida, kaz-yoshida@jikei.ac.jp

Florida Chapter
April 28–29
Orlando, FL
Contact: Stacy Manthos, smanthos@floridafacs.org

North Dakota and South Dakota Chapters
April 28–29
West Fargo, ND
Contact: Leann Benson, leann@ndmed.com

Northern California Chapter
April 28–29
Berkeley, CA
Contact: Christina McDevitt, nccacs@att.net, www.nccacs.org

**MAY**

Italy Chapter
May 4–5
Catania, Sicily
Contact: Dr. Antonio Di Cataldo, dicataldoa@tiscali.it, www.facsitaly.org

Chile Chapter
May 7
Viña del Mar, Chile
Contact: Dr. Owen Korn Bruzzone, Tel. +5 (622) 264-1878

Biennial Meeting of the Israeli Surgical Society
May 9–11
Kfar Blum, Israel
Contact: Dr. Joseph Klausner, klausner.joseph@tlvmc.gov.il

**2017 ACS Surgical Coding Workshop**
May 11–12
Oakbrook, IL
Contact: Jan Nagle, jlmdata@aol.com

**West Virginia Chapter**
May 11–13
White Sulphur Springs, WV
Contact: Sharon Bartholomew, wwacs@labs.net

**Ohio Chapter**
May 12–13
Cleveland, OH
Contact: Emily Maurer, emaurer@facs.org, www.ohiofacs.org

**Michigan Chapter**
May 17–19
Boyne Falls, MI
Contact: Carrie Steffen, carrie@michiganacs.org, www.michiganacs.org

**FUTURE CLINICAL CONGRESSES**

2017
October 22–26
San Diego, CA

2018
October 21–25
Boston, MA

2019
October 27–31
San Francisco, CA