Audio Companion for SESAP® 16
PATIENT SAFETY/ SYSTEMS OF CARE — Category 14

Contributors:

**John A Weigelt, MD, FACS**
Professor of Surgery and
Chief of the Division of Trauma and
Critical Care
Medical College of Wisconsin
Madison, WI

**John T Paige, MD, FACS**
Professor of Clinical Surgery
Department of Surgery
LSU Health New Orleans School of Medicine
New Orleans, LA

Financial Disclosures

In accordance with the ACCME’s Accreditation Criteria, the American College of Surgeons must ensure that anyone in a position to control the content of this enduring material has disclosed all relevant financial relationships with any commercial interest. Therefore, it is mandatory that both the program planning committee and speakers complete disclosure forms. Members of the planning committee were required to disclose all financial relationships and speakers were required to disclose any financial relationship as it pertains to the content of the presentations. The ACCME defines a ‘commercial interest’ as “any entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients”. It does not consider providers of clinical service directly to patients to be commercial interests. The ACCME considers “relevant” financial relationships as financial transactions (in any amount) that may create a conflict of interest and occur within the 12 months preceding the time that the individual is being asked to assume a role controlling content of the educational activity. The ACCME also requires that ACS manage any reported conflict and eliminate the potential for bias during the session. The planning committee members and speakers were contacted and the conflicts listed below have been managed to our satisfaction. However, if you perceive a bias, please advise us of the circumstances on the evaluation form. The requirement for disclosure is not intended to imply any impropriety of such relationships, but simply to identify such relationships through full disclosure, and to allow the learners to form its own judgments regarding the presentation. Oakstone Publishing, LLC has assessed conflict of interest with its faculty, authors, editors, and any individuals who were in a position to control the content of this CME activity. Any identified relevant conflicts of interest were resolved for fair balance and scientific objectivity of studies utilized in this activity.


Dr John T Paige reports: Grants: HRSA, Intuitive, Inc., and Acell, Inc.
Surgical Care Improvement Project Had Ambitious Goals

The National Surgical Infection Prevention Project (SIPP) was the predecessor to the Surgical Care Improvement Project (SCIP). It basically tried to implement adherence to proper selection of perioperative prophylactic antibiotics, the timing of their administration, and their duration in the postoperative period. It eventually developed into the SCIP project, which added several other evidence-based components. By the end of its development, there were 4 major components involved. One is preventing surgical site infection. This included the antibiotic use that was part of SIPP. It also eventually included, as the evidence came out, maintaining normothermia in colorectal surgery patients, maintaining normoglycemia in cardiac surgery patients, and the proper technique for hair removal during a case, which basically was to clip rather than shave. The other area of focus was the proper use of beta-blockers in the perioperative setting. Initially, with the evidence, this was everybody, but eventually became those people who were on beta blockers should receive the beta-blockers in the perioperative setting. The other 2 components were proper venothromboembolism prophylaxis in the perioperative setting and proper techniques to prevent a postoperative pneumonia. I think it was developed in 2004. The goal of the project was — I guess we would consider it ambitious nowadays — to decrease surgical site infections by 25%, I think by 2010. It did not achieve this, but the other goal was to try to increase adherence to what was considered consensus-based, evidence-based processes that were in the literature.

Was Surgical Care Improvement Project Successful

The National Surgical Infection Prevention Project (SIPP) worked in the sense that it did promote adherence to the procedures and processes that were promoted. By the end of the Surgical Care Improvement Project (SCIP), everybody was compliant. There was more than 90% adherence to proper timing, which was typically within 30 minutes of the incision. Adherence also included discontinuing antibiotics in the postoperative period within 24 hours. Clipping with the hair was also adhered to. The problem was that while these interventions were associated with decreased surgical infections (SSI), there are many other factors that affect SSI rates. The goal of 25% SSI reduction was not reached. The project was good in that people are now thinking about evidence-based interventions and doing them. It demonstrates how complex the whole process is of taking a patient through an operation, and that there are other aspects, multiple variables that are involved that impact outcomes. So, in this aspect, the project was successful.

Institute for Healthcare Improvement Sought to Reduce Waste, Errors

The Institute for Healthcare Improvement (IHI) is a very interesting organization. It was established in 1991 and was lead mainly by Don Berwick. The goal of the IHI was to try to remove waste within the system — waste with using tests, waste with costs — and to reduce errors in the health care system in the United States. In its first 10 years, the IHI focused on trying to address issues within the hospital microsystem. The best way to think of a microsystem is a line of service or entity where you provide care for a patient as a group of practitioners and clinicians. Good examples of microsystems would be the OR, the ED, and the ICU. The idea was to focus on these microsystems using evidence-based best practices to reduce waste and errors within them. As they moved into their second decade, which was 2000s, they moved towards innovative interventions to transform the systems, research and development. They came out with their 100,000 Lives Campaign and Five Million Lives Campaign — the idea was to try to save 100,000 lives or 5 million lives through broad-based interventions within the system. The last decade, they have been focusing on what they call The Triple Aim. And The Triple
Aim is this idea of improving population health, improving patient experience while reducing costs. I would encourage anyone interested in quality and patient safety in health care to go to their website. They have lots of interesting materials and, in particular, they have courses you can take related to various topics at no cost.

**Do Bundles of Care Reduce Surgical Site Infection?**

One of the things the IHI came up with is bundles of care. A bundle of care basically combines 3 to 5 evidence-based practices or tasks that collectively are believed to improve care outcomes. The best example I can give for this is the prevention of ventilator pneumonia. You have a ventilator pneumonia bundle of care — the head at 30°; the head of the bed up at 30°; you give them prophylaxis to prevent gastric ulcers; you give VTE prophylaxis because they are immobilized on the vent, and then you use protocols for checking how well they are breathing on their own. All of these hope to decrease ventilator pneumonias. It has been said that bundles of care are “just a way to get surgeons to do things that the hospital wants us to do.” This goes back to the whole debate about and the evolution of the physician or surgeon in health care practice. The old paradigm was the idea of the physician as an autonomous practitioner who was the captain of his ship, kind of doing his own thing. We are moving towards a paradigm of the physician as a member of a care team following evidence-based medicine guidelines who is more a coach directing his team to try to improve quality of care. It was the idea of, “I want to practice medicine how I have done it and how it has worked for me” versus this idea of, “Oh, this is what the evidence shows, and this is how we can best take care of this patient,” if we look at the population or the disease process in general. We implement bundles of care to help make sure we are providing the care the evidence seems to indicate will lead to the best outcome. In general, a lot of surgeons and physicians do not want to be use “cookbook medicine,” following algorithms. But there is evidence usually that supports their use. ATLS protocols are “cookbook medicine” that have been shown to work, and we teach that to everybody. By using a standardized manner in which to take care of a trauma patient in the “golden hour” of care, we help save lives. I think one of the other aspects of bundles of care or trying to apply best practice approaches is it decreases our variation in how we care for a problem in a patient population. By doing that, we can learn more from the care we provide and hopefully end up identifying which of the elements of each of those bundles are most important to get the best outcome we can. But, if we all keep doing our own thing, we do not learn very much, and we will continue the huge variations that occur within the practice of medicine.

**AHRQ’s Goal Is to Make Health Care More Efficient, Effective, Safe**

I think the Agency for Healthcare Research and Quality (AHRQ) is a great organization for helping to develop this type of research. If you remember the Institute of Medicine report, *To Err is Human*, this kind of started the idea of AHRQ. In their follow-up reports, they were talking about trying to make health care more efficient, more effective, and safer. The AHRQ’s mission reflects that. Its idea is to make health care safer, have higher quality, and make it more accessible, equitable and affordable. It has adopted those kind of recommendations that came out of those early reports showing there were a lot of preventable deaths. That is its mission. It does that through a variety of activities. One of the big ones, which I think most of our listeners are at least familiar with, is that they were part of the process for creating Team STEEEP, the teamwork training program that has had a national implementation. This was initially a Department of Defense project, but then AHRQ partnered with them and now it is one of these things that is used in training and helping to promote teamwork and team improvement throughout the country. So, they have lots and lots of impacts. They have a sentinel event or actually
they have a morbidity mortality and various other things to help with patient safety. Full disclosure, I did get an AHRQ grant early on in my career to simulation-based team training.

AHRQ Has Developed Safety Indicator and Guidelines

**Patient Safety Indicator:** The AHRQ developed the Patient Safety Indicators in conjunction with the University of California at San Francisco and Stanford. They were trying to develop the idea of preventable adverse events — something that has a negative impact on the patient. You can have varying degrees of negative impact, the extent of deaths would obviously be the worse negative impact, but it could be anything — a little transfusion reaction or other event that might not have significant impact the outcome. They were looking for indicators they identified which included accidental puncture or laceration and venothromboembolism and wound dehiscence in the postoperative period.

**STEEEP Guidelines:** The Institute of Medicine has also promoted STEEEP: suggesting that our medical care should be safe, timely, effective, efficient, equitable; and patient-centered — STEEEP.

“Never Events” Do Not Allow for Human Error

One aspect I am not as ecstatic about is this concept of “never events”, and that is from my background in doing team training and work in human factors. These “never events” are events that should never happen. One “never event” is pneumothorax with central line placement. While we should try to make these events go toward zero, the issue and axiom in human-factors engineering is that humans make mistakes. You cannot make a system totally safe. We are only human; mistakes are going to happen. The famous expression is “to err is human”, and to say that something is a “never event” takes that whole concept away, which I do not agree with. The National Quality Forum developed this term, and more recently they have softened that and now call these “serious adverse events.”

Checklists Help Teams Avoid Slips

The AHRQ has established the use of a checklist as part of our lives. In their patient safety primer on checklists, they describe them as “algorithmic lifting of actions to be performed in a given clinical setting, and the goal is to ensure that no step will be forgotten.” The idea is to try to create a listing of actions you will check through in order to make sure you remember everything. This is based on human-factors engineering. You can never have a safe system. I get nervous when I go to a hospital and they say they are safe. If you think of high-reliability organizations and the characteristics of high-reliability organizations, they are able to operate in highly dynamic, high-risk environments consistently and with a minimal amount of adverse events or occurrences. A good example would be the nuclear energy industry, the offshore oil drilling, or the aviation industry. Take the example of aircraft carriers. Flying and landing on aircraft carriers requires high reliability to be successful. The idea is these checklists are employed in all of these industries in an effort to make sure you do not forget anything — when you are preparing to take off and land, when you are going through the processes within a nuclear power plant for preparing or cleaning rods, etc. You do not want to forget anything. You want to make sure you hit everything that is going to help ensure that safety. This idea has been brought and applied in clinical medicine.

**Slips:** The really good thing that checklists are good for is to prevent what we call *slips*. A slip is when you forget something that is usually reflexive. It could be due to a lapse in concentration, a distraction, or you are tired. Checklists are really good at helping to prevent this type of thing.
Mistakes: The other type of failure, or err, that can occur is a mistake. A mistake is more when you have your attention or behavior on it and you just do not have the experience or enough training, so you make a mistake. Checklists are really great for slips; they are great to have people make sure they are not forgetting anything or missing something. One of the great acronyms I have heard in terms of teamwork that I think applies for making mistakes is HALT. As a team leader, if you are hungry, angry, late, or tired, it is going to impact your ability to be a good leader, be a good coach, be a good team member, and to potentially be able to catch everything you need to catch. That is why you need a team. So, the checklist is a way to help ensure that you are hitting everything you need to hit.

Constraints Help Prevent Adverse Events

There are basically 3 big buckets you can create for employing what I would consider a constraint to help prevent an adverse event, catastrophic event, or sentinel event — all these things as team member. You can have a physical constraint, a procedural constraint, or a cultural constraint.

Physical Constraints: People encounter physical constraints when they go to the gas station. A green-handled nozzle is diesel fuel. The diesel nozzle will not fit in an unleaded automobile because it has been made too big to fit into the tank. That is a physical constraint. There are physical constraints in health care. The oxygen tubing is what must be hooked up to the anesthesia machine. Other gases have connectors that will not allow them to be placed where the oxygen should go. This is the way to ensure you can mitigate or trap an error.

Procedural Constraint: Procedural constraint is what checklists are in my opinion. It is the proper steps to take to help trap errors. If you cannot prevent an error, you want to trap it. And once you trap that, you want to be able to mitigate it if it is happening. You then want to decrease its impact. In surgery in the United States, there is a procedural constraint — time out. The Joint Commission requires it. “Time out” is basically a form of a checklist that you do, and they have mandated this as a way to help prevent catastrophic — wrong site, wrong person, wrong procedure — surgery.

Cultural Constraints: Culture is the way we do things. In a culture of safety, safety is the primary priority. Nothing else supersedes it, so a great example of that is aviation. So, we all fly everywhere and have probably been delayed recently and the pilot comes on and says something like this, “Well, this flight switch light bulb is not working up here in the front. Probably is not important, but we got to wait for them to change it.” The light bulb, which seems unimportant, is a part of the whole culture of safety. Safety is the primary priority. We are going to be delayed. We are going to wait for the light bulb. Even though it might not be super important, it is important enough because it might involve a safety issue. I love to give the example of an aircraft carrier where they are conducting exercises. One of the flight deck attendants lost his wrench. Losing a wrench on an aircraft carrier can be a big deal because if it gets sucked into an engine, you got a big problem. He told the authorities and told his commanders, so they stopped everything. They stopped all the flights and everybody walked the deck until they found the wrench, then they resumed. This is very disruptive. So, later on, the commander of the aircraft carrier had everybody line up on the deck and they called this guy out. They gave him a bottle of champagne. This is the whole idea of a culture of safety — a culture where it is okay to say, “Hey, something has happened,” because you recognize that if they do not, it can lead to a very catastrophic event. In health care, we are not quite there yet. We have a ways to go before that happens.

Checklists: Implementation Is Essential

We take a “time out” in the OR, but we have not expanded the “time out” to other places. The World Health Organization created the surgical safety checklist, the checklist used in the New England Journal of Medicine article published that was the international study where they employed the checklist.
It decreased morbidity and mortality significantly. They have tried to make it simple, and they have tried to focus on the really important things. I think the key to a really strong checklist is not making it too burdensome, being able to know what the task at hand is, focusing on the outcomes, identifying any conflicting demands to be able to do that, and then focusing on the people who are using them and taking that into account as well. Checklists are conceptually great and you can create a really good checklist, but proper implementation is essential. It involves components of organizational change, cultural change, follow-up, and training. If you do not do those things, implementation will not be conducted in a manner that will make it effective. A really good example of this is the study in Ontario where they reportedly employed a standardized checklist throughout the entire province and showed it did not make a difference.

Characteristics of High-Reliability Organizations

High-reliability organizations are organizations that promote cultures of safety. They have a number of similar characteristics. There is a preoccupation with failure — not safety, but failure — the idea of trying to identify and improve weakness within the system. This helps people be continuously mindful, and I think the best 1-line description for high-reliability organizations I have heard was the idea of promoting mindfulness in lieu of mindlessness. The idea is you have to constantly be thinking and mindful in looking out. If you go into automated mode or mindlessly go through the perfunctory performance of things, it is not going to work. This is why I think checklists fail. What does the “time out” become? Often it is not a mindful process; it is a mindless process. It is another thing we just have to check the box to get through, and then it is not as useful. It goes back to this idea of cultural constraints. It has got to be the culture.

Reliable Teams Have Similar Characteristics

You can have team care within your clinic, you can have team care in the ICU, and you can have teamwork in the OR, so to address team care, let us talk about teamwork in the OR. **Team:** A team is more than the collection of people coming together. There is a major difference in the interaction of people on a flight deck and the interaction of individuals in the OR. On the flight deck you have an expert team. In the OR nowadays you have a team of experts. This means that in the OR everybody has their area of expertise. The anesthesiologist has expertise, the surgeon has expertise, the circulating nurse has expertise, but they are not a team. They are a group of individuals coming together. They are a group. In a team, there are 2 or more individuals who have a common purpose, and they work together towards that common purpose. The best work I have found about teamwork is by Eduardo Salas. He did meta-analyses of studies throughout all industries and came up with what he called the Big Five of Teamwork. **Characteristics of Reliable Teams:** The Big Five of Teamwork are 5 characteristics of what he would call highly reliable teams — teams that are consistently able to perform well in rapidly changing, high-risk, dynamic environments. First is this idea of having effective team leadership. Another is the idea of mutual performance monitoring. I often use the term cross monitoring, this idea of being able to monitor your colleagues to identify if they are being overburdened or they are not being able to do something. The third core component is this backup behavior of the second component, helping each other out if someone needs to be helped out. These kind of work together with team orientation, the idea you are a team, thinking you are a team, and, finally, to be able to be adaptable in highly dynamic, changing environments.
Mechanisms Identified to Help Teams Work Together

The Big Five have what Salas calls the 3 coordinating mechanisms to help teams work together and interact with each other, and that is this idea of a shared mental model. This idea of being on the same page, we call it, this idea everybody understands where we are going. Here is the example I like to use: We train third year medical students in trauma resuscitation. We talk about the ATLS protocol, which is a great example of a shared mental model. If everybody understands the algorithm, the ABCDE of the primary survey, that is the shared mental model. The shared mental model allows backup behavior and adaptability which is anticipatory. Another coordinating mechanism that you must have is mutual trust. You have to trust your team members. You have to trust them that they have your back. You have to trust them they are going to do their job, and then you have to communicate effectively. I often refer to effective communication as closed loop communication. You should repeat back orders to make sure that the person who gave the order, command, or request has been understood properly. This goes back even to the mutual performance monitoring because when you repeat it back, if you misinterpreted it, you have the whole team able to hear that mistake or maybe 1 member might catch it. Five heads are better than one. So, that is the Big Five with the coordinating mechanisms. And I think that is a great way to look at teamwork and try to promote teamwork when you are doing the training.

Creating an Atmosphere of Teamwork

I often argue we do not have a team. I talked about this idea of a team of experts. I think the literature shows that oftentimes we have what we would call a lack of role clarity. Various members of the team do not have a good sense of what their roles are, what they are supposed to be doing. In my opinion, we still have too much of hierarchy — this idea of captain of a ship creating where “it is my way or the highway” that really is very destructive to team interaction and team performance. If that is the leader’s approach, nobody is going to offer up that you might be missing something, and it should not be expected you can catch everything. Many heads are better than one, and the evidence addresses the wisdom of the crowd. The more people you have involved, the more likely you are going to catch things or get information, ideas, or thoughts that are going to help with the patient care. This is very useful in creating what we call the flattened hierarchy. In this idea, there is still a hierarchy; as a surgeon you are still ultimately responsible. You are going to make the final decisions related to surgery, but you want every member of your team to feel comfortable speaking up if there is a concern or they notice something, even if it might not be something you need to act on. At least they are willing to give you that information to help. 

Ineffective Teamwork: The literature has shown pretty clearly that ineffective teamwork increases the number of technical errors in the Operating Room. It increases the number of patient safety events, which could increase the mortality and morbidity of a case. The best way to kind of prevent these catastrophic areas to have layers of defense — multiple defensive stops — to help trap and mitigate errors, and teamwork should be one of them. Your OR team should be one of your last ones. But if you have ineffective team, they are a liability.

Operating Room Facing Cultural Change

Like the earlier example of rewarding the gentleman who told everybody about his wrench, I think the Operating Room is going to undergo a cultural change. I am doing simulation-based team training with the students. We have tried to incorporate it through multiple levels of the medical school. As I mentioned, we do the ATLS training. This is part of the curriculum. When we are going to teach them how to take care of a MVC with open book pelvis and intra-abdominal splenic injury with
hemorrhage, we bring in the nurses. ATLS is all about having a team to work. We have brought in the senior ICU nurses to make it a team training event. They learn to work together. It becomes interprofessional education, which WHO defines as 2 or more professions coming together to learn from, with and about each other. The idea is that it is not just sitting in the same room and getting a lecture; it is working together. Simulation-based training is great for that because the nurses are given their roles that they would have in a trauma resuscitation, and the medical students are given their roles. They learn from each other, and they learn with each other, and they learn about each other. They learn about their roles. When I ask the students what they think about this simulation, they often respond by saying it was great to work with the other professions. When I follow-up with asking what was great about it, they say that usually they are working with an imaginary person, but this way, they understand each other’s roles as well as their own. They learn from each other. It works best if we do this with the senior nursing students who have had their burn talk. The medical students come in, and they have not have had their burn talk. The medical students come in for the burn patient, they go through this whole process where they are trying to resuscitate the patient and then we do the debrief. I ask, “Okay, how do you resuscitate a major burn?” The nurses go in to talk about the Parkland formula and that sort of thing. And then you see the medical students with their eyes wide open asking, “How do you know all of this stuff?” The point is this: They did not even ask during the resuscitation. The beauty of doing this early is to help them understand 2 things: First, they are in a team, and other team members can bring important things to the table. Secondly, these are skills. I always tell them, “I am teaching you skills. They are not innate things. And when you got into the real world, you are going to see effective and ineffective examples of this. And if a surgeon blows up in the OR and is yelling and screaming and throwing things or whatever, that is ineffective teamwork. You have to realize that this is ineffective teamwork. You understand what team skills are and know you should not model this.” Cultural change is a very long process, at least 10 years. I tell my students they have to help get rid of that hidden curriculum we see where people model behavior. So, if you go into an OR that is dysfunctional in terms of teamwork, it will take a lot of work, a lot of effort. You have got to both get them young and work at the clinical level with the professionals.

Avoiding Fires in the OR

Fires occur in the Operating Room at a rate of about 600 a year. If you think about the number of operations done all year, every year, it is not huge, but the problem is they can be catastrophic. Fires in the OR are one of the things you want to try to get down to zero if you can. And they can be prevented in a sense. At most institutions, including mine, you are required now to do a fire-risk assessment with our “time out.” You want to be able to prevent these rare potential catastrophes. Because if you have an airway fire, you can really have a very, very bad outcome. The idea is we do this risk assessment. So, what do you need for a fire?

**Ignition Source:** You need an ignition source. In pretty much every operation we have an ignition source because we use electrocautery. Lasers are another great example. Those things will ignite — that energy, boom.

**Fuel Source:** You need a fuel source. We have plenty of that — paper drapes, sponges, a lot of things that can burn.

**Oxidizer:** And then you need the oxidizer. There is plenty of that in the OR too. Having an awareness of the fire risk is helpful.

**Risk Factors:** One big risk factor is if you have supplemental oxygen. You have supplemental oxygen, especially if you are operating in the upper chest or above — so head, neck, and upper chest. we kind of protect the face to drape it off and create a little tent there. Well, with that tent, you get very high concentrations of oxygen. You have to be very careful and aware about that sort of thing. The other thing that is a fuel source is the prep we use. We pretty much use ChloraPrep™ all the time except for
open wounds. We use Chloraprep because it has been shown to be very effective as an antiseptic cleanser. Why is it so effective? It has alcohol in it that is very flammable. So, at our institution, if you are using Chloraprep, you must wait for at least 3 minutes after application until they say it has dried. And the other comment that the manufacturer I am sure has recommended this, is that If you a very hairy region, the manufacturer recommends you wait an hour for it to dry. The other thing we make a big deal about, although it does not happen too much, is sometimes in that neck area you will get some pooling of prep over the drapes, especially our impermeable drapes, and you create a reservoir for that alcohol to be ignited.

**Responses to Fires in the OR**

Surgeons do not know as much as we should about the energy sources we use in the OR. And SAGES has developed what they call FUSE, Fundamental Use of Surgical Energy, and it is a great resource. You can get certified in it if you want. It teaches all about the various types of energy as well as what to do with surgical fires. One of the key steps, which I think is really important for a surgical fire, is to try to remove the fuel sources. You try to basically get rid of the oxidizer, smother it out. This is probably more common in the setting of a tracheostomy — you are doing a tracheostomy, you are going down and opening up your trachea. Then boom, you have a fire. What should you do? Everybody talks about disconnecting the oxygen as the first thing to do, but one of the other first things you do is remove that tube. Why are you removing the tube? Because it is a fuel source, and it will continue to burn. You extubate the patient with the fire in the trachea, but the main thing is to remove the oxygen source, smother it and remove the source, and kind of remove all the fuel source.

**Re-Admission Rates Dependent on Multiple Factors**

In this world of safety, there are all sorts of metrics these days. One of these is re-admission. We obviously are going to live with this metric. From a human-factors engineering perspective, re-admission is a system issue. If you are going to send patients home, to skilled nursing facility, or to a long-term acute care facility, you have to make sure you have a team and people understand what care the patient needs. If you do not have that, patients potentially could be back. So, it is a system issue. It is an easy thing to measure, unfortunately, and I think that is part of the issue. It is required by the Affordable Care Act. Risk factors for re-admission include having a high ASA at the time of operation, which means the patient is pretty sick. With that, he probably has a lot of comorbidities and a lot of issues going on. They might be coming back if they have higher age, if they have a low socioeconomic status. As a surgeon, I cannot fix that nor can the patient. There is a higher risk for operating on people with lower socioeconomic status; they are not necessarily going to have the support systems that will help keep them from coming back. They might not have a primary care doctor that they can talk to, or they might not be able to afford the home health that would prevent them from coming back. The bigger the operation, the more moving parts, and the greater the likelihood you might have something that might bring somebody back in. Some surgeries — pancreatic surgeries, colorectal surgeries and colon resections — have a higher rate of re-admission. Finally, if the patient has a longer length of stay, he is more likely to come back. Again, this is reflective of the degree of seriousness of the illness. If there is a complication in the initial postoperative period, the patient is going to be in the hospital longer and have more issues, so when they go home, they could potentially have more issues that are going to bring them back in 30 days to be count as a re-admission. As a surgeon you can do certain things to try to avoid re-admission, but there are kind of more global, systemic things that require everybody working together to decrease these metrics.
Interventions to Lower Re-Admission Rate

One intervention many have done including our colorectal people is the Enhanced Recovery After Surgery (ERAS) movement. This is the idea of employing evidence-based findings in the pre-, peri- and postoperative period to get patients out earlier. It has not been shown that if you leave the hospital earlier it is not associated with the higher re-admission. Our colorectal physicians do the whole ERAS kind of colorectal protocol, and I think that is to try to help with getting people out earlier and then prevent re-admissions. I would love to do ERAS for hernia repair, but we are not there yet because it is time consuming and it is a big step. And part of it is changing thoughts such as trying to convince the anesthesiologist that people coming in for a hernia should be able to have a protein drink in the morning. But many operate on reflex. Also, all of these things add more labor to the entire process.

Common Practice Terms Defined

Guidelines are certainly a part of best practices or certainly generate best practice.  
**Standards vs Guidelines:** A standard is something that will help you to assign a quantifiable measure. It is what is required. It is an acceptable level of quality or kind of care in a system. A guideline is additional recommended guidance. It is how to do what you do. It is not what is required but is advice on how to act in a given situation. It is not mandatory, but it is a way to help people proceed and treat individuals with certain characteristics and certain situations.

**Policies vs Procedure:** A procedure is the proper steps to take, which goes back again to how you do it. And, where a policy is kind of more a global view of why do we need to do this, what is the reason for doing it. So guidelines are not necessarily absolute, but they are ways to apply certain therapies, tasks, etc., to patients with certain conditions. I think they are useful. The most useful guidelines to which I refer to a lot are the National Cancer Consensus Network (NCCN) guidelines. They are very useful. They have them listed. The nice thing about those guidelines is they bring together all the disciplines. They bring the radiation oncology, oncologists, GI depending upon what the cancer is, surgeons, surgical oncologist, and they come up with they see as the best evidence for the whole gamut — the workup, treatment based on staging, follow-up, etc.

Levels, Grades Used to Rate Quality, Strength of Evidence

Most guidelines these days have some kind of evidence behind them, and then the classification of that evidence is somewhat related to the strength of the guideline. In 1989, Sackett published an article with the levels of evidence. He had 5 levels. Level I was evidence from large, randomized, controlled trials that had clear-cut results. Level II evidence was from smaller, randomized trials that have kind of unclear results. Level III evidence for him was cohort or case-controlled studies. Level IV evidence was historical, cohort, or case-controlled studies. Level V evidence was case series or studies with no controls. This has been expended out a little bit to have IA, IB, IC, and this is from the Center of Evidence-Based Medicine. IA is a systematic review of randomized, controlled trials that are very similar, so they are homogenous. IB is one individual RCT,. IC they call it an “all or none study.” Then you have like IIA, again cohort studies as a systematic review. IIB is an individual cohort study. IIC is kind of outcomes of research. IIIA is, again, a systematic review of case controls. IIIB is an individual case-control study. IV is case series, or very poor quality case control or cohort studies. And then finally V is expert opinion, which unfortunately is what we get too often. That is level evidence of the studies, and then they have practice recommendations, which are graded as to how strongly it should be followed. Grades are A, B, C, D, E. This leads to a little confusion because people are unclear on the difference between a level and a grade. So, grade is how strongly is it recommended.
A Grade A recommendation is a very strong recommendation, and that means you have a lot of Level I evidence or very consistent findings from multiple Level II, III, or IV studies. You really should follow that unless there is a compelling rationale not to. Grade B evidence is recommended, and that is when you have your Level II, III, or IV evidence and generally consistent findings. In general, you should follow that, but be alert that there might be changes. There might be new information, and the patient preferences can be taken into account. Grade C recommendation is optional, and that goes down to inconsistent findings from Level II, III, or IV evidence. That means non-randomized, controlled studies and that it is basically optional; you can be flexible in your decision making. And then Grade D recommendation is expert opinion basically. The NCCN is a great example of that. They are constantly updating their guidelines based on new evidence. You should be alert, and you should know that guidelines are not static and that they constantly can change, which is a part of lifelong learning.