Is your OR as clean as it could be? Evidence shows more is needed

Every OR has policies and procedures for environmental cleaning. But how do you know surfaces are truly free of pathogens that could transmit infection? The stakes are high. Environmental contamination plays a role in the spread of methicillin-resistant \textit{Staphylococcus aureus} (MRSA), vancomycin-resistant enterococci (VRE), and \textit{Clostridium difficile}, among others.

Evidence also shows that environmental bacteria, primarily coagulase negative \textit{Staphylococci}, are also the most common cause of deep surgical site infections (SSIs) related to implants, notes Philip Carling, MD, a researcher on environmental cleaning and an infectious disease specialist at the Boston University School of Medicine. Examples are mediastinitis after cardiac surgery and infections following orthopedic implants. Though the patient’s skin is thought to be a source, recent evidence suggests the OR environment may play an important role, as Dr Carling and his colleagues noted in the March 2011 \textit{AORN Journal}.

Cleaning can be improved, studies show. In a study in 6 hos-

Disaster management

Surgery by flashlight as Joplin team operates through tornado

It started out as a typical Sunday morning on call—a 7:30 am C-section, home for a nap, then a call-back at 3 pm for orthopedic cases. But that Sunday, May 22, 2011, turned out to be anything but typical for Staci Perry, a surgical technologist at St John’s Regional Medical Center in Joplin, Missouri.

When the devastating E-5 tornado hit that afternoon, a surgical team in OR 2 was about half way through an incision and drainage (I & D) on a female patient, and Perry was helping to set up another room for the next case. As a member of the call team, she was there to assist the RN and ST who covered the weekends with 12-hour shifts.

As Perry walked through a back hallway to get a piece of equipment, she heard the loudspeaker call out, “Execute Condition Gray,” the hospital’s alert for bad weather.

Looking out the windows on one side of the hallway, she saw rain swirling in what looked like “a bunch of little tornados.” Then out of the corner of her eye she “saw
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Editorial

What if in the future nurses and physicians sat down in the same anatomy classes? What if schools offered more joint learning opportunities?

That could go a long way toward building the closer collaboration needed to advance the culture of safety.

Nurses and physicians learning together could advance safety by building trust and avoiding the communication breakdowns that are at the root of so many errors.

The door to that kind of education is opening. In May 2011, 6 associations and 3 foundations set forth core competencies and action strategies for interprofessional education.

Joining in the initiative are the American Association of Colleges of Nursing, the Association of American Medical Colleges, and groups representing pharmacy, dentistry, and public health. Five more associations have signed on to the Interprofessional Professionalism Collaborative.

Good teamwork critical

Good teamwork is critical to so much of what is needed to improve care. In the OR, that includes preop briefings, efforts to prevent errors, and projects to provide safer, more streamlined care. In the broader community, it could lead to better coordination of care for patients with chronic illnesses such as diabetes and heart disease.

Teamwork will be key to new models of care like medical homes and new payment initiatives like value-based purchasing, both seen as ways to improve quality while trying to control costs.

The collaborative has developed 38 competencies covering 4 areas:

- asserting values and ethics of interprofessional practice
- leveraging the unique roles and responsibilities of interprofessional partners
- communicating with patients, families, communities, and others in support of a team approach
- performing effectively in team roles to deliver safe, timely, efficient, effective, and equitable care.

What would interprofessional behavior look like?

A set of 43 behaviors have been drafted by the collaborative. They would welcome your feedback. Examples are:

- determining the best plan of care after discussions with other professionals, the patient, and family
- demonstrating cultural competence
- interacting with other professionals to challenge the status quo when system issues seem to be ineffective or to jeopardize outcomes.

The collaborative is seeking funding to take the effort forward, starting with joint learning assessment and regional training initiatives. Contribute to the discussion. Share your suggestions and volunteer to be a pilot site at http://interprofessionalprofessionalism.weebly.com.

---Pat Patterson

Read more about the core competencies at www.aacn.nche.edu/Media/NewsReleases/2011/ipec.html
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Check out the complete listing of OR Manager webinars on our website, www.ormanager.com
Laryngospasms to sing at conference

Working in the OR can be intense and stressful. Music and humor are proven antidotes.

A group of nurse anesthetists discovered that when they sang “Breakin’ Up is Hard to Do” at a Christmas party at the Minneapolis School of Anesthesia in 1990. One of the students came up and said, “You know, you should do that song as ‘Wakin’ Up is Hard to Do.’”

It was a hit.

Later, while a couple of them were studying for an exam, a tune came on in the background, bringing to mind another parody, and that quickly led to—"Scopin’ USA," “Little Old Lady,” and others.

They named themselves the Laryngospasms and took their show on the road. They’ve performed around the US and Canada and will bring their tunes to a general session at the Managing Today’s OR Suite Conference September 28 to 30 at the Hyatt Regency Chicago.

They even poke fun at the OR’s perennial favorite topic, turnover time, with 2 renditions, “On Time,” set to the theme from the old TV show Rawhide, and “Wake Up Lil Susie,” a patient’s view of a fast-paced surgery center.

Why the name?

A laryngospasm, hardly a laughing matter, is a spasm of the larynx that can happen when a patient is extubated, resulting in a squeaky sound.

“It’s a bit of an inside joke,” says Gary Cozine, the group’s founder. All the Laryngospasm members are practicing certified registered nurse anesthetists (CRNAs), and a couple are married to CRNAs. Cozine had been in the OR on the day OR Manager interviewed him.

Not surprisingly, all also have singing backgrounds. Cozine regularly performs with bands in the Twin Cities area. Rick Leyh, another member, has sung barbershop, and Keith Larson, the most recent addition, has held numerous roles in community theatre productions.

Now in their 50s, the group also pokes gentle fun at the aging process.

In the group’s 20-some years of performing, Cozine says they have come to realize that through their music and onstage dialog with nursing audiences, they can give their colleagues a renewed perspective and appreciation for the care they provide.

The conference starts on September 28 with 9 optional day-long seminars. The keynote later that day kicks off the 2-day conference and exhibits, featuring general sessions and 32 breakout sessions. Continuing education offerings will also be available on the exhibit floor.

Keynoting is Eileen McDargh, CSP, CPAE, a master facilitator and award-winning author, on the topic, Radical Resiliency: Transforming the Future. She’ll talk about growing skills for adaptability, agility, and laugh-ability. She is author of Work for a Living & Still be Free to Live, The Resilient Spirit—Staying Right Side Up in an Upside Down World, and other titles.

View the program and register at www.ORManagerConference.com.

For a Laryngospasms preview, go to www.thespasms.com.
something much larger.”

Again the loudspeaker announced “Execute Condition Gray,” and glass started cracking in front of her.

As Perry ran back into the OR to alert the rest of the team, the walls started vibrating, they felt intense pressure in their ears, and the lights went out. All of the windows in the hallway where she had just been standing had blown in. Rain, glass, and debris were blowing into the ORs.

The physician assistant who was assisting the surgeon broke scrub and put his weight against the big wooden OR door that was threatening to blow in. As he struggled to hold it closed, leaves, rain, and bits of glass blew in under the door and around the edges. Meanwhile, Perry and the RN circulator fought to keep the OR door leading to the substerile room closed.

Though the worst of the storm lasted only about 30 seconds, it felt like “an eternity,” Perry told OR Manager.

**Focused on the patient**

Throughout, she says, the surgeon, anesthesiologist, and scrub tech kept their focus on the patient and procedure. “They were amazing,” she adds.

When the lights went out, the emergency generator went on and then back off after about 5 minutes. The only lighting was from emergency lights on the walls.

Perry gathered all of the flashlights she could find. She and the rest of the team held the flashlights so the surgeon could finish the case, the anesthesiologist could extubate the patient, and they could see to leave the OR.

By that time, a patient care specialist made his way out of the damaged recovery room to see if they were okay and went to look for a surface to transport the patient on. Finding a cart in the preop area, he maneuvered it through the debris-filled department. The team transported the patient to the preop area, which was damaged but usable.

“We grabbed blankets out of the warmer, which were still warm, piled them on the patient, and then put a lap sheet over the blankets to protect her from any falling debris,” Perry says.

**Help arrives**

Shortly after the team arrived in preop, firefighters came in. Patients were brought to the preop area from the heavily damaged emergency room because the preop area was in the inner part of the hospital.

“Minutes after the tornado hit, another surgeon came to the OR to make sure we were OK and help transport patients out. As soon as we got to the parking lot, other surgeons just started showing up to help us,” Perry says.

They were told to evacuate the building quickly because it might explode.

The I & D patient, who was awake and talking when they got her outside to the parking lot, was
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hospitals, reported in the AORN Journal article, the thoroughness of OR cleaning averaged 25%. Even the 3 best-cleaned objects (main door, main field light, and telephone) were cleaned on average less than 35% of the time. The article also summarizes the possible relationship between deep SSIs and OR environmental contamination and discusses the potential risk to health care workers of less visible blood contamination with hepatitis C virus on surfaces.

The study has been expanded to 15 ORs, with similar findings, Dr Carling told OR Manager. Though the sample isn’t large, he says the hospitals studied are diverse in size and geographic distribution.

Cleaning makes a difference. In 4 studies, routine disinfection cleaning was associated with on average a 40% decrease in the acquisition of MRSA and VRE. The studies are cited in a 2010 review by Dr Carling and Judene Bartley, MS, MPH, in the American Journal of Infection Control.

Surveyor focus

Accreditation surveyors are taking notice of cleaning. In several Veterans Affairs hospitals, surveyors have focused on cleaning of noncritical reusable medical equipment between patients, such as blood pressure cuffs, x-ray aprons, and wheelchairs, to see that the hospital’s policies and procedures are being followed, says Cynthia Taylor, BSN, MSA, RN, CGRN, nurse manager of the GI and bronchoscopy units at Hunter Holmes McGuire VA Medical Center, in Richmond, Virginia.

State surveyors in California have also been checking on environmental cleaning, including in the OR.

“Several facilities have received recommendations for improvement on their infection prevention process involving room cleaning, OR cleaning, and equipment cleaning,” says Shannon Oriola, RN, CIC, COHN, lead infection control practitioner at the Sharp Metropolitan Medical Campus, San Diego.

Surveyors have observed housekeepers and environmental services (ES) staff performing cleaning, she says. They ask what type of cleaning agent is being used and check that the agent is consistent with hospital policy. They also ask how long the product must stay in contact with the surface before it is considered safe for use. Some surveyors actually time how long the cleaning solution stays wet on the surface, Oriola notes.

It’s important to clarify who cleans which equipment, she advises. What will be the responsibility of the anesthesia techs, nursing staff, perfusionists, ES staff, and others? In one facility, a surveyor found an intra-aortic balloon pump with blood on it. Apparently, it was unclear who was responsible for cleaning it.

High-quality surface cleaning

Most ORs have environmental cleaning protocols based on recommendations from AORN, the Centers for Disease Control and Prevention (CDC), and others.

The CDC’s 2003 Guidelines for

More on the tornado and aftermath are at www.mercy.net.

—Judith M. Mathias, MA, RN

July 2011  OR Manager Vol 27, No 7 7
What’s necessary for C diff?

Eliminating Clostridium difficile from environmental surfaces is particularly difficult because C diff spores are resistant to heat and chemicals and can remain on environmental surfaces for months.

Though incompletely studied, disinfection with bleach following regular cleaning is recommended in settings where there is evidence of ongoing or “hyperendemic” levels of C diff or Norovirus transmission, advises Philip Carling, MD, a researcher on environmental cleaning at Boston University. Bleach can kill C diff spores, which standard disinfectants cannot.

Only one peer-reviewed laboratory study has evaluated the efficacy of bleach wipes, he notes. Though the study showed that the chemical (a detergent-bleach combination) used in the wipes killed C diff spores better than nonbleach chemicals, the effectiveness of the wipe itself was not evaluated.

Starting in 2008, the Environmental Protection Agency required that all products registered for activity against C diff must demonstrate they are efficacious against C diff spores. Claims for efficacy that include only the vegetative form of C diff are considered “false and misleading,” the agency said, because the vegetative form is not a concern for infection control (www.epa.gov/oppad001/clostridium_diff.htm).

At least one microfiber cloth is said to use bleach ‘catalytically’ every time the cloths are washed with any formulation of bleach.

“This is a new development because the initial versions of microfiber cloths were rendered unusable after exposure to bleach due to bleach affecting the microfiber structure. We have no published peer review data on their effectiveness and hope they will be studied objectively,” notes infection control expert Judene Bartley, MS, MPH.

Environmental Infection Control in Healthcare Facilities recommend:

• enhanced cleaning for high-touch surfaces that are likely to be contaminated
• monitoring the staff’s compliance with cleaning protocols.

The primary problem seems to be that many OR surfaces with significant potential to be a source of wound-contaminating organisms are not being cleaned according to the recommendations, Dr Carling wrote OR Manager in an e-mail.

He and Bartley offered suggestions for improving OR environmental surface cleaning. Bartley is a clinical consultant for the Premier Safety Institute and vice president of Epidemiology Consulting Services, Beverly Hills, Michigan.

Cleaning OR surfaces

A high-quality surface cleaning program for the OR requires a joint effort by the OR leadership, infection preventionist, and environmental services, Dr Carling advises. First, make sure policies, procedures, and specifics on disinfectants are adapted to the institution’s needs. Evaluate them to make sure they conform to CDC and AORN recommendations. Three types of OR environmental cleaning need to be addressed:

1. General cleaning using an Environmental Protection Agency (EPA)-registered disinfectant to remove visible dust, dirt, and debris from floors and horizontal surfaces; equipment; and as needed, walls/ceilings.

2. Between-case cleaning using an EPA-registered disinfectant for patient-contact surfaces and for appropriate removal of visible potentially infectious materials (blood and body secretions and splashed irrigating solutions containing these materials).

3. Terminal or end-of-day cleaning of surfaces and equipment with a disinfectant registered with the EPA.

Key principles

In reviewing the OR’s environmental cleaning protocol, some principles to keep in mind are:

• High-touch surfaces are critical in infection transmission.
• How thoroughly cleaning is performed is at least as important as what cleaning agent is used.

“It is the high-touch surfaces that are critical in the OR as well as in patient rooms,” Bartley emphasizes. Though a regular schedule is needed for cleaning less frequently touched surfaces, such as walls and ceilings, Bartley says both she and Dr Carling “believe undue attention is often paid to walls and floors beyond basic cleanliness.”

OR and ES staff need training, not only in selecting which cleaning agent to use but also in how to clean thoroughly.

“What is used is not as important as how it is used,” she stresses, quoting infection prevention expert William Rutala, PhD, of the University of North Carolina.

Unfortunately, Bartley says, there still are major gaps in understanding how to ensure optimal bacterial environmental cleaning. Researchers so far have not evalu-
ated the thoroughness of cleaning as a variable when studying the efficacy of cleaning agents in reducing infections. That issue is just beginning to be addressed.

Understanding the role of the thoroughness of cleaning will become even more important as hospitals and ORs consider “greener” practices, including safer cleaning agents when feasible, Bartley notes.

**Jury still out on wipes**

Another research gap concerns the widely used disinfectant wipes. “There is very little information on the clinical efficacy of sanitizing wipes,” Dr Carling comments. Though the wipes contain EPA-registered disinfectants as well as alcohol, he says only limited evidence has been published evaluating the wipes’ ability to remove environmental pathogens in clinical settings compared to other approaches. Study is also needed for microfiber cloths with or without detergents or disinfectants compared to standard cloths.

“We are aware that wipes are convenient and well liked for cleaning. But separating the effectiveness of the cloth from the cleaning agent is important for understanding the contribution of the disinfectant,” Bartley adds.

**Monitoring cleaning objectively**

A surface may look clean, but how do you know it’s actually been cleaned according to the hospital’s policies and procedures?

A new CDC toolkit, *Options for Evaluating Environmental Cleaning*, outlines elements of a program for objectively evaluating cleaning of high-touch patient surfaces. Included are a sample checklist and worksheet. The toolkit was developed by an expert panel and co-authored by Alice Guh, MD, MPH, and Dr Carling. (See resources.)

Two monitoring methods gaining attention are:

- a transparent fluorescent gel marker
- ATP (adenosine triphosphate) bioluminescence.

Traditional methods that may also be used are direct observation, swab cultures, and agar slide cultures.

**Fluorescent gel marker**

The clear fluorescent gel (DAZO, Ecolab) is applied to a high-touch surface prior to use. After cleaning, a black light is shown on the surface to determine whether gel remains on the marked surfaces. Removal of the gel provides physical evidence of the thoroughness of cleaning and is a simple way to provide objective feedback to the staff.

Dr Carling and his group have studied the use of the fluorescent marker as part of a structured approach to examine the thoroughness of cleaning in several clinical settings, including the OR. Their method is described in the *AORN Journal* article.

**ATP bioluminescence**

The ATP method (Hygiena, 3M, and others) tests for ATP, a molecule present in the cells of all micro-organisms and organic residues, using a handheld instrument called a luminometer. The amount

**Resources**

**AORN**

*Perioperative Standards and Recommended Practices, 2010*  
Recommended practices for environmental cleaning in the perioperative setting  
—[www.aorn.org](http://www.aorn.org)

**Association for the Healthcare Environment**

(formerly the American Society for Healthcare Environmental Services, or ASHES)  
*From Top to Bottom: Cleaning Operating and Procedure Rooms*  
Video/DVD demonstrates and explains cleaning protocols for the OR and other procedure areas.  
Part of 3-DVD series, *From Top to Bottom*, based on AHE’s *Practice Guidance for Environmental Cleaning*. Available in English and Spanish.  
Order from [www.envisioninc.net](http://www.envisioninc.net)  
—[www.ahe.org](http://www.ahe.org)

**Centers for Disease Control and Prevention**

*Clostridium difficile (CDI) Infections Toolkit*  
Carolyn Gould, MD, MSCR, and Cliff McDonald, MD, FACP, authors.  

*Options for Evaluating Environmental Cleaning*  
Alice Guh, MD, MPH, and Philip Carling, MD, authors.  
Includes checklist for monitoring terminal cleaning and environmental cleaning evaluation worksheet.  

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of ATP, both microbial and nonmicrobial, is quantified and expressed as relative light units (RLUs). (See related article, p 11.)

Dr Carling notes that 20% to 30% of visibly cleaned surfaces have very few bacteria. As a result, the ATP system can be used only to evaluate the thoroughness of cleaning if identical areas of the same surface are evaluated immediately before and after cleaning. Several studies have examined factors that may affect ATP readings, including residual detergent and disinfectants, ammonium compounds found in laundry detergents, and bleach-based disinfectants (Griffith, et al, 2000; Brown, et al, 2010; Boyce, et al, 2010).

Many ORs are not following recommendations.

‘whole-room/equipment decontamination’ aimed at horizontal nonporous surfaces when thorough cleaning of these surfaces removes environmental contamination?” she asks.

Dr Carling notes that studies by the Healthcare Environmental Hygiene Study Group have shown that most hospitals can achieve significant improvements in their environmental cleaning without a substantial additional fiscal commitment if they use a structured approach that includes an objective measurement method for surface cleaning, frequent feedback to environmental services personnel, and administrative support. Also needed to sustain the effort are administrative leadership and a culture that recognizes the role of ES personnel in patient safety.

Dr Carling serves as a consultant for Ecolab and Steris and holds a patent on the DAZO system.

APIC has a collection of environmental cleaning articles at www.ajic-journal.org/environmentalcleaning

References


Providing training for staff

To reinforce staff training, Dr Carling and Bartley suggest resources such as the training video/DVD from the Association for the Healthcare Environment, which has a module for the OR and procedural areas. The material was developed in collaboration with input from and review by the Association for Professionals in Infection Control and Epidemiology. (See resources.)

High-tech solutions?

New technology such as whole-room decontamination is receiving attention, particularly because of epidemic problems with multidrug-resistant organisms and C diff. Bartley stresses that all these methods require prior cleaning.

The irony, she says, is that the typical micro-organisms one might find in an OR rapidly re-establish themselves just by the staff bringing in clean equipment and supplies for new cases.

“Is there really a need for
Observation can sometimes give you an idea about how well the staff is complying with OR cleaning protocols, but it can’t tell you about organic residues that might remain on surfaces. Bacterial cultures of the OR environment can also have drawbacks.

To evaluate the effectiveness of its cleaning, a Connecticut hospital is using a test pioneered by the food industry that gives a quantitative measurement of biological material left behind after cleaning.

The adenosine triphosphate (ATP) bioluminescence test (Hygiena, 3M Clean-Trace, and others) is designed to measure ATP, a molecule in the cells of all microorganisms and organic residues. The test uses a specialized swab to sample a surface area. The swab is then read with a handheld instrument called a luminometer. The amount of ATP is quantified and expressed as relative light units (RLUs). Lower readings are typically associated with a cleaner surface and less soilage.

Because ATP is in all organic material, ATP-RLU measurements are good at identifying contaminated equipment and can be more useful than aerobic bacterial colony counts, which only measure living organisms.

The ATP test was used for 5 high-touch OR surfaces:
- OR table
- overhead surgical lights
- computer keyboard
- phone
- inside door handle.

All ATP swabs were taken 10 minutes after the surface was cleaned with a phenolic disinfectant-detergent and air dried. The measurements were taken periodically over 3 months in 4 of the hospital’s 27 ORs. The RLU measurements were plotted on a graph (illustration). Most of the measurements were 250 RLU or less, the level considered “clean” at the Hospital of Saint Raphael.

Dumigan says the results have been used for quality improvement and staff education. When the RLUs on the OR lights spiked, for example, managers and staff discussed possible reasons, such as whether the lights weren’t cleaned well the night before.

“The results spur a conversation about possible causes. It’s been a useful teaching tool,” she says.

For OR leaders who want to implement a standardized, monitored environmental cleaning program, she recommends the following steps.

### Identify responsibilities

Clearly identify who is responsible for cleaning which surfaces and equipment. Saint Raphael’s Operating Room Sanitation Standards outline cleaning responsibilities for RN circulators, surgical technologists, and OR environmental services personnel.

### Define terminology

Be sure the policy defines terms such as between-case cleaning, daily surgical cleaning, end-of-day OR cleaning, cycle cleaning (detailed weekly cleaning), and project cleaning (weekly stripping of floors and wiping of ceiling, walls, vents, etc).

### Consider a monitoring technology

Use of a monitoring technology, such as the ATP test or a fluorescent dye marker provides a method for monitoring how effective cleaning is over time. Each method has advantages and disadvantages, as outlined in the Centers for Disease Control and Prevention toolkit, Options for Evaluating Environmental Cleaning (www.cdc.gov/HAI/toolkits/Evaluating-Environmental-Cleaning.html).
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Dumigan says her organization likes the ATP test because “it gives an actual quantifiable number,” which can be tracked over time.

In contrast, the fluorescent dye test, which is also an objective method, doesn’t quantify the result, she notes.

The ATP test does have limitations. It’s relatively new to health care, and cut-off RLU values for considering a surface clean need to be established for types of cleaning solutions such as those made of phenol, ammonic, or bleach compounds. Also, values may differ among manufacturers’ luminometers. All of these require more research, notes John M. Boyce, MD, the hospital’s section chief for infectious diseases, who studies cleaning and disinfecting methodologies. He is conducting further studies comparing bacterial culturing to the fluorescent dye marker test and the ATP test. Dr Boyce is also a clinical professor of medicine at the Yale School of Medicine, New Haven.

A copy of the Hospital of Saint Raphael OR sanitation standards is in the OR Manager Toolbox at www.ormanager.com.

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The Hospital of Saint Raphael used the ATP test to sample the effectiveness of OR cleaning as part of a performance improvement project. Graph courtesy of Ola Balogun, MBA, HCM, assistant director, environmental services, and Heather Havill, epidemiology intern, at the Hospital of Saint Raphael.

FDA approves new drug to treat C diff

The Food and Drug Administration in May 2011 approved the first new drug in 25 years to treat diarrhea caused by Clostridium difficile, a pathogen that one study suggests may have surpassed methicillin-resistant Staphylococcus aureus as the leading hospital-acquired infection, according to the New York Times.

In clinical trials, fidaxomicin (Dificid) performed better than vancomycin, the only other drug approved to treat C diff, in keeping patients symptom-free 25 days after the end of treatment.

The drug, in tablet form, is taken twice a day for 10 days. ✤

—www.fda.gov
Meaningful use is a much-used term in the push for electronic health records (EHRs). Eligible hospitals, critical access hospitals, and physicians can earn federal incentives for adopting and demonstrating “meaningful use” of certified EHR technology (sidebar).

Your hospital’s meaningful use discussions may be taking place away from the OR. But your leadership team needs to be tuned into meaningful use and how it affects surgical services.

“When you look at all of the meaningful use criteria, almost all impact perioperative patients. The OR draws a significant number of the patients where data has to be captured,” says Marion McCall, BBA, RN, CNOR, CPHIT, director of the Client Solutions Group for Surgical Information Systems (SIS), a perioperative software company.

Hospitals stand to reap millions in incentive payments by meeting the government’s health IT objectives. There’s also a penalty—after 2015, those that don’t demonstrate meaningful use will forfeit part of their Medicare reimbursement.

In a government survey, 81% of hospitals said they plan to achieve meaningful use and take advantage of the incentives, and 65% plan to enroll during Stage 1 in 2011-2012. Hospitals are focused on meeting the Stage 1 meaningful use criteria.

Requirements will ramp up with Stage 2 criteria, expected in Fall 2011, later than anticipated. There is talk that the Stage 2 criteria might be postponed for a year.

**OR systems and meaningful use**

To qualify for the incentives, hospitals have to be using technology certified by the government’s Office of the National Coordinator for Health IT, known as the ONC. Certification is intended to assure hospitals and physicians that the systems they adopt are capable of performing the required functions. (A list of certified systems is at http://onc-chpl.force.com/ehrcert.)

Whether your surgery department has an OR-specific system or uses software that is part of the hospitalwide information system, your organization will need to complete an assessment to see if certification for the OR system is necessary, McCall says. If certification is necessary, your organization will need to determine which level of certification is necessary and whether your current vendor offers that level of certification.

EHRs can be certified in 3 ways, explains Pat Wise, vice president of the Health Information Management Systems Society (HIMSS):

- **Complete EHR:** The hospital’s system has every functionality for meeting all meaningful use Stage 1 core measures and menu measures.
- **Modular EHR:** The EHR has modules that meet meaningful use criteria.
- **Site certification:** The hospital seeks a site certification, a solution for organizations that have developed their own EHRs. The ONC recently issued an interpretation about certification of EHRs that have stand-alone, separate components, such as OR-specific information systems. But questions remain about how these systems will affect the hospital’s overall certification. HIMSS and others are seeking further clarification.

In the future, it’s likely that OR and anesthesia information systems that provide for computerized provider order entry (CPOE) and patient documentation will have to be certified, says Wise.

**No push for integration**

So far, the OR hasn’t seen the same push as other departments to have their perioperative information system be from the same vendor as the hospital’s EHR, says Mark Alphin of KLAS Enterprises, a company that compiles independent ratings of health care software.

Though the lab, pharmacy, and emergency department systems seek to exchange clinical information with a hospital’s EHR, OR systems have a greater need to exchange information with the materials management and patient financial systems, he notes.

For that reason, he says vendors of OR-specific systems continue to play a major role in the perioperative setting. Examples are GE Healthcare, Picis, and SIS. In the next few years, however, KLAS expects many users to shift to a surgery system that is part of a larger software suite, such as Cerner, Epic, or Meditech.

**Meaningful use and the OR**

Here’s a look at some of the Stage 1 meaningful use objectives and how they affect perioperative services. The objectives are paraphrased. A grid with all of the ob-

Continued on page 14
What is meaningful use?

The federal government is providing incentive payments for the “meaningful use” of certified electronic health record (EHR) technology through the American Recovery and Reinvestment Act of 2009 (Recovery Act).

Incentives will be paid to eligible professionals (eg, physicians), eligible hospitals, and critical access hospitals that are “meaningful users” of certified EHR technology. The Recovery Act specifies 3 components for meaningful use, including using a certified EHR:

- in a meaningful manner, such as e-prescribing
- for the electronic exchange of health information to improve the quality of health care
- to submit clinical quality and other measures.

Stage 1 criteria

Stage 1 criteria, which apply for 2011 and 2012, have 24 objectives for hospitals and critical access hospitals. To qualify for an incentive payment, 19 of the 24 must be met. These include:

- 14 core objectives
- 5 of 10 objectives from a menu.

There are also 15 clinical quality measures.

Beyond Stage 1

The government plans future rules with Stage 2 and 3 meaningful use criteria.

Stage 2

In general, Stage 2 criteria, proposed in January 2011, would increase the percentage of patients needed to meet specific criteria. It would also include new criteria for medication order tracking, electronic notes, and patient care plans, among others. The government may consider applying the criteria to hospital outpatient settings, not just the emergency department as in Stage 1. There also will be further requirements for use of health information exchanges.

Stage 2 criteria are expected to be issued in late 2011.

Stage 3

This stage would focus on achieving improvements in quality, safety and efficiency, focusing on decision support for national high-priority conditions, patient access to self-management tools, access to comprehensive patient data, and improving population health outcomes.


Drug-drug and drug-allergy interaction checks

Stage 1: The hospital has enabled this functionality for the entire EHR reporting period.

OR directors need to understand where the allergy and drug information will be maintained and how that is managed in the OR system, McCall suggests. Whether you are using an enterprise vendor or an OR-specific vendor, she says it’s important to assess if the vendor can import this data from the main clinical system and have nurses be able to act upon it throughout the perioperative continuum.

Patient demographics

Stage 1: More than 50% of all unique patients admitted have [certain] demographics recorded as structured data. (Applies to at least one entry for 80% of unique admitted patients.)

Most software vendors do this well, McCall notes. She advises perioperative leaders to assess if they are taking advantage of the admission, discharge, and transfer (ADT) data via an electronic interface to avoid potential errors from manual data entry.

Medication list

Stage 1: Maintain an active medication list. (Applies to at least one entry for 80% of unique admitted patients, or an indication the patient currently is not prescribed any medication.)

Many facilities still have gaps in how patients’ medication information flows through the electronic record system, McCall says.

An area for OR leaders to consider is the medications on physicians’ preference lists administered during surgery and how that data is entered in the patient’s active medication list. She says there’s still uncertainty about whether medications delivered in the OR by physicians or on the sterile field...
**Information systems**

**Meaningful use: How ORs can benefit from EHR push**

Electronic health records are expensive, resource intensive, and often painful to implement. But making the push promises benefits, not only for surgical patients but for the OR’s operational and financial health. Two nurse IS specialists with perioperative backgrounds talk about the prospects.

**Access to clinical data**

Better information about patients will be a click or two away. Rather than chasing faxes, preop nurses eventually will be able to retrieve information electronically from physicians’ offices, clinics, and labs.

“The ease of access to data on a patient should help in getting patients prepared for surgery in a more timely and efficient manner,” says Sheryl Johnson, RN-BC, MSHA, a former OR manager and deputy chief information officer for SwedishAmerican Health System, Rockford, Illinois.

For Stage 1 of meaningful use, hospitals need to test data exchange with one external entity, such as a clinic or physicians’ office. That’s expected to expand in Stages 2 and 3.

**Medication-allergy list**

**Stage 1:** Maintain active medication allergy list. (At least 80% of admitted unique patients have at least one entry or indication the patient has no known medication.)

Tracking medication allergies “is pretty seamless, whether it’s an enterprise vendor or a niche vendor, using standard interfacing,” McCall notes.

But ask how the list is being updated, she suggests. How can perioperative nurses make sure the allergy list is updated if they capture information about an allergy or see changes in a patient’s allergy status? Is that allergy information consistently shared through the care continuum?

**Safer medication use**

Ordering and giving medications will be safer as EHRs provide cross checks for correct dosages, allergies, and drug interactions. Eventually, EHRs will provide access to a patient’s medication history, including meds ordered by other specialists and taken at home.

An issue for OR directors to think about is whether ORs will be expected to have electronic verification of medications given during surgery, similar to the bar-coding systems now used on patient units, and how that will be accomplished, Johnson notes.

**More reliable handoffs**

Once clinical IT systems become more integrated, better access to patient data will make handoffs safer and more reliable.

For example, when a patient comes to surgery from the emergency department, “having all of that information in an electronic format will make the handover process easier for nurses—though I’m not saying it replaces a verbal handover,” says Deborah Tuke Bahlman, MS, RN, regional manager, Epic OpTime/Anesthesia, for the Oregon Region of Providence Health & Services based in Portland.

**Clinical quality reporting**

ORs, hospitals, and health care as a whole will have better information on patient care processes and outcomes. That promises to help in managing patients’ conditions, learning about effective treatments from large databases, and improving quality not only for individuals but populations. Hospitals will be able to participate in registries, such as the American College of Surgeons’ National Surgical Quality Improvement Program (NSQIP).

In Stage 1, hospitals are expected to report electronically on 15 clinical quality measures, a list that is expected to grow.

“You need to consider what the next steps are,” advises Bahlman. “If you’re on paper, you need to get to an EHR. It just makes sense from a quality measures perspective to [be able to] have built-in decision support and best practices.”

require surgeon-generated computerized entry.

“How do we streamline this process and not hamper the perioperative workflow while making sure we have a complete medication list?” she asks.

Another missing piece is capturing for the EHR medications that are given by anesthesia, which has been slow to automate.

**Vital signs**

**Stage 1:** For more than 50% of unique admitted patients age 2 and over, height, weight, and blood pressure are recorded as structured data.

For the OR, understand how vital signs for surgical patients are captured from monitors and placed in the patient record, McCall advises. “Many of the vendors do this well, and it offers a great workflow enhancement for the perioperative documentation process.”

She suggests making sure the OR’s monitors have the appropri-
Information systems

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ate drivers and accurate information is being transmitted to the record. It’s also important to make sure nurses understand how to validate the information and are comfortable making changes when necessary.

Record smoking status

Stage 1: More than 50% of all unique admitted patients 13 or older have smoking status reported.

“IT’s easy to capture the data because it can be added to the assessment tool,” McCall says. “You need to make sure it’s reportable and able to be captured for everyone. Some of the current niche and enterprise systems struggle to provide user-friendly data extraction and analytics tools.”

Problem list

Stage 1: Maintain an up-to-date problem list of current and active diagnoses. (Applies to at least one entry for 80% of unique admitted patients, or an indication that no problems are known.)

“Almost all vendors can do this, whether they’re a niche vendor or enterprise vendor,” McCall says.

Questions to ask: How is the patient’s problem list made available in the OR? Is the data shared by the physician or hospital system, or does it require manual entry by the perioperative staff? How is it updated? If additional diagnoses and comorbidities are identified during the preadmission testing phase, how are those reflected in the EHR?

A complete set of diagnoses is important not only for patient care but also for accurate billing and reimbursement, she points out.

Report clinical quality measures

Stage 1: Report quality measures to the Centers for Medicare and Medicaid Services or the state.

For Stage 1 meaningful use, hospitals must report on 15 clinical quality measures, which pertain to the:

• emergency department (2 measures)
• stroke (7 measures)
• venous thromboembolism (VTE) prophylaxis (6 measures).

Two of the VTE measures refer directly to surgery:

• VTE-1: VTE prophylaxis within 24 hours of arrival, including after surgery for patients on the day of or day after admission
• VTE-2: Intensive care unit VTE prophylaxis, which includes surgical patients.

Capability to exchange key clinical information

Stage 1: Perform at least one test.

A question for OR leaders to ask, McCall suggests is: Can your perioperative information system exchange key information, either by electronic data or in a PDF format? The hospital needs to test an exchange with an external entity, such as a clinic or physician’s office.

Electronic copy of discharge instructions

Stage 1: More than 50% of inpatients discharged who request an electronic copy of their discharge instructions are provided it.

Questions to ask, suggests McCall: What discharge information and instructions are being given to surgical inpatients at discharge? How does this compare to information given to outpatients? Is there a comparable standard of care?

Privacy/security

Stage 1: Protect electronic health information created or maintained by the certified EHR technology.

One area to check: How often are surgeons and others walking out of your facility with patient information on CDs, flash drives, or other media?

“OR directors need to understand and control the patient information that is leaving the facility,” McCall advises.

An approach some are recommending, she says, is to store patient images such as videos in the hospital’s picture archiving and communication system (PACS). Then physicians can review the images electronically through the PACS system rather than carrying them out the door without security controls. Patients who are provided with their own electronic health information should receive it in a secure form, for example, with user ID and password protection.

Stage 1 menu items

In addition to the 14 core meaningful use objectives for Stage 1, hospitals must pick 5 more from a menu of 10. Many of these also touch on perioperative services. Examples are:

• implementing drug formulary checks
• incorporating patient lab data into the EHR
• medication reconciliation
• generating lists of patients by specific conditions to use for quality improvement and other efforts.

Though a hospital’s road to a comprehensive EHR may be an arduous one, it’s widely agreed that the government’s health IT effort is journey toward more comprehensive and useful electronic records, and one would hope, safer and better care for patients.

—Pat Patterson
A report card on OR info systems

A new report card on surgery information systems is out, the first in 3 years. The report from KLAS Enterprises reviews the 8 top surgery software systems. KLAS is an independent firm that compiles user ratings of health care software. The new report, titled Surgery Management 2010: In Pursuit of Advanced Functionality, is based on interviews with 509 providers (users) at 426 organizations.

Adoption of the basic functions has hit a plateau; nearly 90% of respondents are using scheduling and nurse documentation. Surgery departments are now branching into other applications where hospitals can improve efficiency and profitability, KLAS notes. Among these are revenue cycle management, materials/inventory management, and patient tracking.

Most-used functions
Here’s a look at the most widely adopted functions:

- 68% of respondents are using some type of revenue management tool as part of their surgical information system. Examples are systems that allow departments to pull charges directly from physician preference cards. Epic, Surgical Information Systems (SIS), and Meditech had the highest percentage of customers using these tools.
- 66% of respondents use their surgical information system for inventory/materials management, up from 53% in 2007. Cerner and McKesson saw the biggest increase in adoption.
- 51% use patient tracking systems—electronic boards that track patients’ status through surgery. But there’s a big

range—91% of Cerner customers use patient tracking, while only 29% of Unibased System Architecture (USA) customers do. Other vendors fall in between.

- Anesthesia documentation is catching on but slowly, adopted by 27% in this study versus only 5% in 2007.

Thumbs up, thumbs down
Scheduling software, the function most ORs have been using the longest, is the area users are most satisfied with. Also highly rated are patient tracking and medical device integration, though these are still in limited use.

Tissue tracking and inventory/materials management cause the most frustration. Only 66% of organizations KLAS interviewed use inventory/materials management software in surgery, while 27% have automated tissue tracking.

Inventory/materials management “is an area that is still struggling,” Mark Allphin, research director, clinical/ancillary for KLAS, told OR Manager.

“We saw in the study that the complexity of getting the OR system interfaced with the materials management system and getting everything just so tends to be difficult.”

For tissue management, part of the challenge is defining tissue management, he says. “A lot of systems have the ability to keep an implant log, but that is different from tracking tissue from the loading dock to the point of use,” which standards and regulations require.

Many users report they are still tracking tissue on paper or using third-party software until their vendor’s functionality improves, KLAS finds. This is the first time tissue management was included in the surgery system ratings, and Allphin acknowledges the information is limited.

Advanced reporting
Though not specifically measured in the study, advanced reporting of data from their OR software is increasingly important to users, KLAS found in its interviews.

In general, the enterprise vendors (Cerner, Epic, and Meditech) “do not let them easily access the data they want,” KLAS finds. The nonintegrated systems, especially GE Healthcare, Picis, and SIS, “tend to perform much better in this area.”

Vendor ratings shift
Ratings for OR software vendors have seen a shift since the 2007 report (chart). Cerner and McKesson have dropped in the ratings. McKesson, number 3 in 2007, is now last at number 8. Cerner is down from 5th to 7th.

Leading the list are USA and Epic OpTime. The other vendors, Meditech, Picis, Surgical Information Systems, and GE Centricity Perioperative, remain in the middle of the pack.

In market share, Meditech is first with 731 installations followed by McKesson with 592; Cerner with
Information systems

425; and Picos with 331, according to HIMSS Analytics. Epic is fifth with 303 installations, and USA has 19 (chart).

System maintenance and ease of use seem to be the biggest frustration users have with McKesson’s Horizon Surgical Manager (HSM), Allphin says.

“We spoke with several sites that felt the system was more costly to maintain than they expected,” he notes.

“Customers also complained that the nurse documentation was not user friendly and took too long to complete.”

There was also optimism. “Several Horizon customers expressed confidence that future versions of HSM would resolve many of these issues,” Allphin adds.

Cerner continues to have success in selling its integrated software suite, as hospitals look to achieve a comprehensive EHR, KLAS finds. If the whole hospital adopts Cerner, the OR tends to go with Cerner’s SurgiNet system.

“We do hear about the positive impact integration has on SurgiNet,” Allphin says. “But a lot of customers are not as happy with the surgery-specific functionality.” In fact, he notes, SurgiNet received the lowest average rating for functional strength in the study, which refers to users’ satisfaction with particular features and capabilities of the software. Among frustrations KLAS says users expressed about Cerner were implementation and support after the implementation.

On the other hand, customers who have been using SurgiNet longer “seem to be much happier with the system,” Allphin says, and like its flexibility.

Cerner has made a jump in the number of customers using its materials capability—up to 73% from 20% in 2007. SurgiNet also had the highest adoption of nurse documentation and OR resource scheduling.

“What their mature customers, they are making strides,” Allphin observed. “It would seem the new customer base is what has caused some of the drop in their scores.”

How ratings are compiled

KLAS says the performance ratings are based solely on input from users of the software, which is compiled in a live database that is updated daily.

Software users (managers or above) submit their evaluations confidentially using a structured process. KLAS then conducts phone interviews to verify that the person submitting the evaluation is a manager or above (or has been approved by the manager to submit the data) and is not a consultant or a vendor. KLAS says

it validates the data using quality screens.

For the 2010 report, 39% of those submitting data were OR directors or managers, 31% were IT directors or managers, and 15% were chief information officers, with the rest consisting of CEOs, chief medical officers, administrative directors or managers, physicians, and RNs.

KLAS data and reports are available for purchase. Hospitals that submit data can access data at a reduced rate. More information is at www.KLASresearch.com.

**Dangerous bugs on patient, visitor cell phones**

Compared with cell phones of hospital staff, those brought into a facility by patients and visitors are twice as likely to carry dangerous, multidrug-resistant pathogens, finds a new study in the American Journal of Infection Control.

Turkish researchers analyzed samples from 200 mobile phones—67 belonging to staff and 133 to patients, their companions, and visitors.

Nearly 40% of the patient group phones and 21% of staff phones tested positive for pathogens. Seven patient phones had multidrug-resistant pathogens such as methicillin-resistant Staphylococcus aureus and multiple resistant gram-negative organisms. No such pathogens were found on staff phones.

“Specific infection control measures may be required for this threat,” the authors say.


**Anesthesia systems catching on as liability concerns start to ease**

Anesthesia information management systems (AIMS) have been slow to catch on, but the pace is accelerating. More than one-fourth (26%) of organizations with OR information systems now have an AIMS, up from 6% in 2007. And 63% of those that currently have only an OR system plan to purchase an AIMS, according to a new report from KLAS Enterprises, an independent firm that develops user ratings of health care software. (KLAS user ratings for AIMS are in the chart.)

Liability exposure, a reason for hesitation in the past, seems to be easing, notes Mark Allphin, research director, clinical/ancillary for KLAS. In fact, users think their liability is reduced with an AIMS. “[The system] makes very legible charts that lawyers hate,” said one user KLAS interviewed.

“As more anesthesia groups embrace these systems, the fear seems to be subsiding,” Allphin says. “In reality, they say they are protected. They have a tight record with all of the time stamps, medications given, and patient vital signs.”

AIMS users see other benefits as well. “A lot reported they are making better decisions, have better access to historical data, and the information is more accurate. It is easier to analyze and do a drill-down analysis,” he says.

Users also mentioned financial benefits they are seeing through more accurate, timely charges and the ability to use data to project revenue.

**Pain points**

The biggest drawbacks for AIMS, the study found, were limited integration and reporting capabilities.

“Most vendors can communicate smoothly with patient monitors, but most struggle with EMR (electronic medical record) and surgery management system integration,” KLAS reports. Currently, only Epic and Cerner offer fully integrated AIMS solutions, the report notes.

Reporting is another perceived weakness. “Reporting was an issue mentioned across the board by participants,” Allphin notes. “I think every vendor had room for improvement with regard to reporting capabilities out of its anesthesia system.”

Reporting capability is receiving more emphasis as organizations move toward meeting the meaningful use requirements for the government’s health IT incentive program, he adds.

**Push toward integration**

Integration is also more of a focus for the same reason. Though surgery and anesthesia have not seen as much pressure to move toward an integrated IS platform as some other departments, the pressure is increasing. There is a need for information to flow between the surgery and anesthesia systems as well as into the medical record.

“We are starting to hear more comments about folks looking at...”
integrated solutions,” Alphin says.

With some exceptions, he says nearly half of the pure best-of-breed clients interviewed said they plan to replace their vendor in the long run.

Though organizations haven’t adopted AIMS as rapidly as other systems, they usually are pleased once they go ahead.

“We have received nothing but positive feedback,” said one IS manager who was interviewed.

The KLAS report, titled Anesthesia Documentation 2011: Slow but Steady Progress, is based on interviews with 189 representatives from organizations that are using AIMS as well as information from other sources.

KLAS data and reports are available for purchase. Hospitals that submit data can access data at a reduced rate. More information is at www.KLASresearch.com.

Nurse-led protocol reduces catheter use, urinary infections

A nurse-driven urinary catheter-removal protocol helped reduce catheter use by 32% and catheter-associated urinary tract infections (CAUTIs) by 45% per 1,000 patient days over 18 months at one hospital.

The finding was different in the hospital’s ICUs, however, which report data to the National Healthcare Safety Network (NHSN). In the ICUs, catheter use dropped 50%, but infections paradoxically increased by 40%. The reason, the authors say, is that NHSN data is reported as catheters per patient day rather than by infections per 1,000 patient days. The protocol resulted in removal of catheters from low-risk patients, leaving catheters in high-risk patients as the denominator.

The nurse-driven protocol was the most successful aspect of the initiative, the authors note. They conclude that the NHSN denominator should be changed to CAUTI per 1,000 patient days to reflect the program’s results accurately.

The study by Michael Parry, MD, and colleagues from Stamford Hospital in Connecticut was presented at the Society for Healthcare Epidemiology of America meeting in April 2011 in Dallas.

—www.shea-online.org
Winning against SSI readmissions

The new federal Partnership for Patients, rolled out in April 2011, seeks to save 60,000 lives over the next 3 years by stopping millions of preventable complications and injuries. Part of the goal is reducing hospital readmissions by 20% by the end of 2013 over 2010 levels.

Surgical site infections (SSIs) are one of the 9 areas of focus. Infections, including SSIs, are a major source of readmissions. A report from Pennsylvania finds patients who developed infections in the hospital were nearly 5 times more likely to be readmitted, with the highest readmission rates in older patients and in patients who had surgery.

Pennsylvania hospitals are working to control SSIs with measures such as screening patients for methicillin-resistant Staphylococcus aureus (MRSA), preoperative washing with chlorhexidine gluconate (CHG), and ensuring appropriate antibiotics are administered at the correct time before surgery.

OR Manager spoke with OR managers and infection preventionists at 3 Pennsylvania hospitals who have made strides in reducing their SSI rates.

Award-winning effort

The Penn Presbyterian Medical Center in Philadelphia won the 2010 Delaware Valley Patient Safety Award for its successful approach to decreasing orthopedic SSIs in joint replacements.

Through a multidisciplinary working group, the hospital conducted 4 initiatives. In the 12 months after implementation, hip arthroplasty deep SSIs were reduced by 66%, and knee arthroplasty rates were down by 80%.

Penn Presbyterian improved its 30-day SSI rates for total hip replacements from 1.2% in FY2008 to 0.4% in FY2009. For the first 10 months of FY2010, the deep incisional SSI rate dropped to 0.2%.

That’s compared with the Centers for Disease Control and Prevention’s National Healthcare Safety Network (NHSN) 30-day total hip SSI rates of 1.35% to 2.2%.

For total knee replacement, Penn Presbyterian improved from 0.7% in FY 2008 to 0.1% in FY2009, compared with the NHSN 30-day rates of 0.77% to 1.63%.

The medical center has an orthopedic surgery volume of some 5,500 cases per year with 1,200 to 1,800 total joints. Orthopedics is about 45% of the total cases.

Stakeholders at the table

The multidisciplinary approach was key, says Steve Chapman, MS, RN, nurse manager of the OR.

“All of the stakeholders were at the table. They made the decisions, and we followed through and closed the loop,” says Chapman. “It’s just good, fundamental practice.”

The working group included directors of the OR and perioperative services and the chief of orthopedic surgery along with the orthopedic surgical staff and nurses, hospital epidemiologist, infection preventionist, director of central processing, and chief of anesthesia.

New initiatives

The initiatives included:

• Training OR staff on the basics of aseptic technique, maintaining sterility, and standardization of skin site preparation. A back-to-basics education program was provided for all OR and sterile processing personnel covering skin preparation, maintenance of the sterile field, sterile technique, and hand hygiene.

• Adopting a CHG-based skin antiseptic for skin site preparation. The standard surgical skin prep was changed to CHG for all joint replacements, which required developing a new OR process for skin preparation.

Changing from iodine to CHG was not difficult for the orthopedic surgeons once they saw the data presented by the working group and fellow cardiac surgeons who had exceptional outcomes with an earlier change to CHG, notes Chapman.

• Educating patients on CHG bathing before surgery. Patients are instructed to shower at home the night before surgery with a CHG product available over the counter.

At first, only the surgical site was wiped, but the orthopedic surgeons expanded this to the full body, as the cardiac surgeons were doing for their patients.

“It’s a nominal expense compared to the expense of an infected

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Infection prevention

Total joint, notes Chapman.

- Adding vancomycin to the preoperative antibiotic regimen and optimizing timing of preoperative antibiotics. Vancomycin was added to cefazolin as the standard antimicrobial prophylaxis for all joint replacements because of the frequency of MRSA postoperative infections.

The addition of vancomycin required a significant change in the process because vancomycin has to be infused over 1 hour, says Chapman.

New order sets had to be developed and implemented, and the staff had to be educated about starting vancomycin before the patient arrived in the OR suite.

Surgeons were advised to make sure the antibiotics had completely infused at least 15 minutes before making the incision to optimize tissue levels of antibiotics at the incision site.

Getting to zero on immediate use sterilization

St Mary Medical Center in Langhorne, Pennsylvania, decreased its overall SSI rate by 36% from 2009 to 2010 with more than 20 initiatives, bringing the SSI rate to less than half the state rate—2.31% vs 5.16%. Total savings in 2010 from reducing SSIs was $450,710. The hospital has 16 ORs and large orthopedic and cardiac services.

“The largest initiative we undertook and the greatest challenge was going to a zero flash sterilization policy,” says Karen Benedict, MSN, RN, CNOR, director of surgical services. (Flash sterilization is now termed “immediate use sterilization.”)

The rate, which was 4% in July 2010, is currently 0.009%. (The rate is the percentage of immediate-use loads compared to the total number of sterilized loads for the month.) For example, in January 2011, the rate was 6 loads out of 1,496 loads, or 0.004%.

Countering pushback

There was pushback from surgeons and nurses who were concerned that the policy would slow cases, and they wouldn’t have the instruments they needed, says Benedict. To counter this, the OR added 5 trays of instruments to each service at a cost of around $40,000.

Even then, the staff resisted. What made the difference, she says, was changing from saying, “You can’t flash” to “You can flash, but you have to explain to me or someone on the zero-flash team why an instrument or instruments have to be flashed.”

In the beginning, Benedict says the staff would call on her to hear their explanation. But once surgeons and nurses found it took longer to explain than to get another sterile instrument, she says the resistance went away.

Restricting attire, traffic

St Mary also adopted a strict scrub clothes policy. Only hospital-issued and hospital-laundered scrubs are now worn in the OR, and scrubs cannot be worn outside the hospital. Cloth caps are no longer allowed, and all hair has to be covered. Jewelry cannot be worn.

“We went back to a strict personnel attire policy, and we have stuck to that,” says Benedict.

To limit traffic during procedures, the cardiovascular and orthopedic services started putting yellow caution tape across their doors. Staff in those rooms must leave the OR through a door in the substerile room.

In another change, fewer patient beds are being brought into the OR in an effort to minimize equipment from outside the restricted area. Previously, surgeons wanted inpatients to be transferred to their beds after surgery. The staff now asks the surgeon if there is a therapeutic rationale for bringing the bed into the OR. If not, the bed is not brought in.

MRSA screening, CHG wipes

In January 2011, St Mary started MRSA screening for all surgery patients. Patients are screened during preadmission testing, and physicians are notified if patients are positive, notes Dawn Rumovitz, MSN, RN, CIC, infection control manager. Patients who are MRSA positive have their charts flagged preoperatively to assist with prophylactic antibiotic selection and timing.

CHG wipes have been added to the preoperative protocol for all procedures except those on the face and mucous membranes. Patients are instructed to shower the night before surgery and wipe the surgical site with the CHG wipes. On the day of surgery, nurses in the preop holding area wash the surgical site again with the wipes.

It is the surgeon’s preference whether to use CHG or iodine for the surgical skin prep, but Benedict says there has been a trend toward CHG.

Small hospital cuts SSIs, readmissions

Tyrone Hospital, a 25-bed crit-
New clinical evidence can take a long time to find its way into practice. How to accelerate that process is the subject of a new project by the Institute for Healthcare Improvement (IHI).

Project JOINTS, rolled out in 5 states in April 2011, focuses on accelerating adoption of evidence-based practices for preventing surgical site infections (SSI) after total hip and knee replacement surgery. The acronym stands for Joining Organizations in Tackling SSI.

Under a 3-year grant from the US Department of Health and Human Services, IHI will test the ability of its network, developed during its 5 Million Lives and 100,000 Lives Campaigns, to spread strategies for SSI prevention. The campaigns were a voluntary effort to protect patients from harms such as surgical errors, adverse drug events, and pressure ulcers.

Also participating in the project are the RAND Corporation and the University of California, Irvine.

The intent of Project JOINTS is to learn more about effective ways of disseminating new evidence and to increase its adoption, says the IHI project manager, Anila Hussaini, MPH, RN.

“Engaging RAND to conduct an independent evaluation of the impact of these strategies is a critical part of this project,” says RAND team lead, Eric Schneider, MD, MSc.

The 5 states participating are Arkansas, Colorado, Michigan, New York, and Tennessee. Five more states will join in January 2012: California; Maryland/Washington, DC; Mississippi; Oregon; and Wisconsin.

Based on what is learned, a national rollout is planned for late 2012.

Examples of strategies IHI will use are conference calls to brief clinicians on the evidence, a website, site visits, and listservs.

SSI prevention bundle

Project JOINTS will test adoption of an enhanced SSI prevention bundle of 5 evidence-based interventions, Hussaini explains. Three are based on newer evidence:
- preoperative bathing or showering with a chlorhexidine gluconate (CHG) product for at least 3 days
- preoperative nasal screening for Staphylococcus aureus, with treatment with mupirocin and CHG showering or bathing for patients who are positive for Staph
- use of an alcohol-containing surgical skin prep.

The other interventions, from the Surgical Care Improvement Project (SCIP), are:
- appropriate hair removal
- appropriate use of the prophylactic antibiotic.

How can new evidence be spread?

A hand hygiene “Don’t Bug Me” campaign is making a difference throughout Tyrone Hospital. Every department has a hand hygiene champion who monitors personnel hand hygiene.

Hand sanitizers are visible and accessible throughout the facility, such as near the elevators.

“I have watched physicians get off the elevator, see the hand sanitizer, and use it,” says Carey. “Everyone’s awareness has been raised, and it is changing the culture.”

—Judith M. Mathias, MA, RN
Updated AORN RPs for laser safety

Updated AORN recommendations on laser safety cover safe practices wherever lasers are used in the health care facility. The recommendations reflect the new ANSI Z136.3 Safe Use of Lasers in Health Care Facilities standard, expected shortly from the Laser Institute of America.

AORN’s revised “Recommended practices for laser safety in perioperative practice settings” were introduced at the AORN Congress in March 2010 in Philadelphia. Key points were covered by laser safety expert Vangie Dennis, BSN, RN, CNOR, CMLSO, administrative director for the Spivey Station Surgery Center, Jonesboro, Georgia.

These are highlights only. Please see the recommended practices (RPs) for complete information.

Leased laser equipment
Lasers are expensive and specialized, and many facilities choose to rent or lease the equipment. But that does not negate the facility having a laser safety program and assigning a laser safety officer (LSO), Dennis cautioned.

“When facilities bring in a leasing company, they sometimes think a laser safety officer is not needed because the company is the LSO. That’s not the case,” she said.

AORN’s Recommendation I states that a laser safety program should be established for all owned, leased, or borrowed laser equipment in any location where lasers are used in the health care organization.

In addition, the facility’s laser safety committee should review activities related to third-party laser systems. The LSO or an appointee should assess any rented or borrowed equipment for compliance with all federal, state, local, and facility requirements. That includes any personnel that leasing companies provide, Dennis noted, pointing out that these individuals have the same accountability and responsibility as the OR staff. Like other vendors in the OR, they need to have a background check and to meet health, safety, and patient privacy standards.

“One issue is how you define their competencies,” she said. “You have to be sure those individuals are as competent as they say they are by reviewing the employee’s credentials to ensure that the training is reliable and based on the appropriate content.”

Laser safety committee
Recommendation I also says that a “multidisciplinary laser safety committee or safety committee is integral to establishing and monitoring patient safety.”

Dennis commented, “The laser safety committee incorporates the entire hospital, not just the OR.”

In a facility with a small laser program, the program can report directly to the safety committee, she added.

Laser safety specialist
Under the AORN recommendations, “a laser safety specialist [LSS] or laser resource nurse should be designated and approved by the LSO to oversee safe laser use in each area where a laser is used.” That includes, for example, the OR, the eye clinic, neonatal intensive care unit, and any other units where lasers are employed.

The LSS “becomes an extension of the LSO,” Dennis said. “It could be a resource nurse or a surgical technologist, but [the person] should be approved by the LSO to oversee safe laser use in the OR.”

The LSS is responsible for monitoring compliance with the facility’s laser policies, she noted.

For example, if the facility’s policy states that laser eyewear will be inspected upon distribution, the LSS must carry out the inspection.

The LSS is also accountable, Dennis explained. “If the LSS distributes the eyewear, and it is not in good condition, and somebody in the OR sustains an eye injury, who would be accountable? The LSS, because that person is an extension of the LSO.”

Laser specialist in every room?
Must 2 nurses be present in a room where a laser is used? Dennis says that’s the most common question she receives.

Under the AORN recommended practices, the basic principle is that patients and personnel in the laser treatment area should be protected from unintentional exposure from the laser beam.

AORN’s recommendation is similar to that in the previous 2004 RPs, stating: “The laser assistant (eg, RN, laser technician) should not have competing responsibilities that would require leaving the laser unattended during active use.”

Two related statements:
A new benchmarking tool from the Association for the Advancement of Medical Instrumentation (AAMI) will help sterile processing departments measure their performance with others across the country.

Using the online tool, available by subscription, managers can fill out a survey of more than 130 benchmarking measures on topics such as staffing, budgeting, productivity levels, error rates, and performance monitoring.

Another measure is the number of certified workers in a department.

“Certification is of a great deal of interest to managers,” says Judy Veale, one of the sterilization experts who developed the tool.

AAMI says the tool also helps a department examine its relationship with clinicians and the role of sterile processing in the rest of the hospital. There are questions, for example, on how much the department participates in policy development.

### Reviewing results

After answering the questions, managers can review the results and compare their facility with others. They will be able to select hospitals by region, size, or work volume.

The size of a facility is not necessarily always the key measure, Veale says.

“The work volume is the key measure. People will be able to compare their own data to departments that have comparable work volume in terms of the number of surgical procedures performed at a facility annually.”

The introductory annual price was $600 for members and $700 for nonmembers until June 30, 2011.

—[www.aami.org/spb](http://www.aami.org/spb)

### Laser education

Laser education should be reinforced and competencies validated periodically and when new laser equipment, accessories, or safety equipment is brought into the practice environment.

### Documenting compliance

Regarding documentation, Recommendation X, says “documentation should be completed to enable identification of trends and demonstrate compliance with regulatory and accrediting agency requirements.”

Among items to be documented are the on/off laser activation and deactivation times for head, neck, and chest procedures.

The rationale is to encourage collaboration among disciplines for the prevention of surgical fires when energy sources like lasers, electrosurgery, and electrocautery are used in the head, neck, and chest area. The fire safety precautions are outlined in the AORN RP as well as in recommendations from ECRI Institute and the Anesthesia Patient Safety Foundation (www.apsf.org/resources_video.php)

### References


The technology of pain relief is improving constantly, and ambulatory surgery centers (ASC) are finding that staying abreast of this growing specialty serves patients as well as their bottom line.

For the increasingly complex orthopedic procedures that are migrating to the outpatient setting, pain management is a critical element. Sufferers of chronic pain or pain associated with lengthy recovery may make repeated visits to the ASC.

As consultant Amy Mowles summarizes: “The development of new technologies, such as MRI and CT scanning for accurate, noninvasive diagnosis of pain disorders, and sophisticated new treatments, such as spinal cord stimulation, intraspinal drug therapy, and radiofrequency ablation, have greatly increased the number of patients with pain disorders who can enjoy an improved quality of life.”

Pain management procedures are ideally suited to the ASC, she notes, paying well and building patient loyalty.

Mowles, president of Edgewater, Maryland-based Mowles Medical Practice Management, assists ASCs in developing pain management specialties. She has developed a total of 34 ASCs with pain management as their single specialty.

“The vast majority of ASCs do pain management,” she says.

**A growing market**

One is the Tucson Orthopaedic Surgery Center, which performed 2,800 pain procedures in 2010, in addition to its orthopedic specialty. The two specialties may be related from a patient’s point of view, according to administrator Stuart Katz: “Patients with chronic pain tend to put off surgery as long as they can, instead opting for pain management by injection. Then some have pain long after their surgery, which is not helped by medication, so these patients then return for an injection.”

More than half of Tucson’s patients are covered by Medicare. The market is increasing as the population ages, Katz notes: “It’s not exponential, but I predict more growth.”

The newer pain management technologies grew out of obstetrics. To help control labor pain, physicians used epidural injections. Now, they use imaging equipment to locate the source of chronic pain and can choose from 30 different procedures to control it, including spinal cord stimulators and a variety of methods to burn or freeze nerve endings.

Mowles notes that the cost of technologies such as MRI and CT scanning is improving constantly, and...
setting up the specialty is relatively low, and Medicare and other insurers pay readily. “Any ASC that does not have a pain component is missing the boat,” she says. “You should not have to fight to get it paid for.”

Follow the rules
Unlike treatment of surgery-related pain, which is the responsibility of the anesthesia provider, management of chronic pain is a medical specialty, subject to board certification.

State licensing rules may address space and other requirements. Medicare Conditions for Coverage rules apply. The national average payment is $294 per procedure, down from $333 in 2007. Medicare pays additional amounts for additional procedures, even if all take place during the same visit. Payment for facility use may also apply.

State regulations vary widely and vary in their financial impact. For example, in some states, the surgeon is permitted to operate the C-arm, saving the expense of an X-ray technician. However, an efficient technician might be better skilled and save the center time and therefore money.

Other staff include a registered nurse dedicated to monitoring the patient during sedation and a technician to arrange for supplies and room preparation. Some cases require use of an anesthesiologist, but Medicare and private insurers often deny additional payment for that function.

Mowles agrees that ASCs considering adding pain management need to research the regulations.

“Some of my clients think Medicare rules don’t apply to pain management, but they do.” On the other hand, ASCs are more appropriate than physicians’ offices for pain therapy. In fact, she notes, New York and Pennsylvania do not allow those procedures in physicians’ offices. What physicians may do is to evaluate patients and then prescribe medication. If a more invasive procedure is called for, it must be done in an ASC.

Costs and benefits
The cost of adding a pain management practice depends on what equipment an ASC already has. According to the equipment vendor Xraytrader.com, the major capital investment would be for a C-arm and fluoroscopy table. The company estimates the equipment cost for furnishing a new procedure room at $125,000, covering:
- a refurbished C-arm
- a basic fluoroscopy table
- patient monitoring equipment
- transportable stretcher
- recovery recliners
- crash cart
- IV poles
- stools for clinicians.

Consumable supplies include an epidural tray, drugs, and contrast media. The other expense is for staff, which can account for 45% to 50% of overall operational costs for a pain procedure.

Medicare’s standard fee is $294 per procedure plus the facility fee as described above. The patient’s time in the facility averages 87 minutes (range 15 to 179 minutes), while the average procedure time is 8 minutes (range 2 to 23 minutes), according to a report from the Accreditation Association for Ambulatory Health Care (related article).

“Although professional fees paid by Medicare to ASCs are typically 20% to 30% lower than those paid to an office, this is frequently compensated for by the fact that the additional facility fee averages 65% to 80% of the professional fee,” Mowles explains.

The specialty also attracts patients with other insurance, such as workers compensation. Mowles estimates that private insurers reimburse at rates averaging 120% to 250% of Medicare rates.

“In short,” she says, “net incomes for ASCs average 40% higher than in offices.”

Not like other patients
ASCs need to consider one more factor before deciding to add pain therapy to their mix of specialties, according to Mowles. While the great majority of ASC patients visit the center only once for their surgery and from then on interact with their physicians in the office, that is not true of pain patients.

From the reception desk to the nurse managers to the billing department, staff must be aware that their initial interaction with the patient may well determine whether that patient returns. If staff members create a pleasant, comfortable setting during that first visit, the patient will return many times.

“You’ve got one chance to make them feel comfortable, because you’re not the only game in town,” Mowles says. “These are frequent flyers.”

—Paula DeJohn
Pain management procedures have exploded in ambulatory settings, just as GI endoscopy and cataract surgery did previously. More than 1.5 million low-back injections for the treatment of pain or mobility problems are conducted each year, and that number is expected to rise as the population ages. Injections for low-back pain account for 6 of the top 20 ASC procedures, according to the Centers for Medicare and Medicaid Services.

A new report offers data facilities can use to benchmark their facility times for these procedures and learn from strategies of best performers.

The study is the first for this procedure in the ambulatory setting, says Naomi Kuznets, PhD, senior director and general manager of the Accreditation Association for Ambulatory Health Care (AAAHC) Institute for Quality Improvement, which issued the report.

“We looked at the national health statistics and decided this was a good area to study and to understand better, especially with the aging population,” she told OR Manager.

**Benchmarking results**

A total of 107 organizations submitted information on 2,227 cases. All 103 participants that provided facility information were freestanding, with 78% being independent and 67% multispecialty. Data were collected from January to June 2010 for preprocedure, procedure, and discharge times and patient outcomes. Clinical information, such as types of symptoms, injection types, and locations, is included. But only the procedures times are used for benchmarking because, the Institute notes, they reflect processes not dictated by clinical guidelines and for the most part, are within the organization’s control.

Overall, for total facility time (preprocedure, procedure, and discharge times):
- The median was 86 minutes, with an average of 87 minutes (range 15 to 179 minutes).
- The shortest total time was 15 minutes, and 2 facilities had times of a little over 30 minutes.

Highlights for the 3 phases follow.

**Preprocedure times**

The median preprocedure time (patient check-in to needle-in) was 48 minutes with an average of 50 minutes (range 5 to 122). Organizations with the shortest times attributed their results to factors such as gathering patient information and preparing before the day of the procedure.

The organization with the shortest time (5 minutes):
- follows a strict schedule when giving patients times for their appointments
- has a strict schedule for physicians and staff
- doesn’t schedule many patients, considering the time needed for the procedure. This decreases possible patient waiting times, which the staff believes increases patients’ compliance with appointment times
- calls patients the day before to remind them of the procedure time.

The organization with the second shortest time (approximately 7 minutes) attributes it to being a single specialty facility and calling patients before the procedure for an assessment. On the day of the procedure, the staff needs only to review patient information and have patients sign consent forms.

The organization with the third shortest time (approximately 10 minutes):
- has dedicated staff for pain management—nurses and radiation techs who are familiar with each physician’s preferences and how the physician performs the procedure
- preregisters each patient before the initial date of service and streamlines the admission process for subsequent visits
- has prep staff work together to prepare each patient so 2 patients are ready at any time
- uses an electronic health record that helps physicians with reports between cases, improving room turnover time; instead of dictating by phone, physicians use the computer in the procedure room, where they can choose from 80 templates for their procedure reports
- has all available staff, including the radiation tech, nurse, and

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**Best performers share their results.**

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A new bill introduced in the US Congress June 3, 2011, if passed, would place ambulatory surgery centers (ASCs) on what the ASC industry says is a more equal footing with hospital outpatient departments (HOPDs) in their Medicare payment updates.

ASCs currently are reimbursed at 56% of the amount paid to HOPDs.

“The current reimbursement structure is illogical and unsustainable,” said David Shapiro, MD, board chair of the ASC Association, which supports the legislation.

“Without a fix, patients will be driven to seek care at HOPDs, which will cause their out-of-pocket expenses and Medicare costs to rise,” he said.

The bill, titled the Ambulatory Surgery Center Quality and Access Act (HR 2108), would also require the government to implement a quality reporting system for ASCs by 2013 and to develop an ASC value-based purchasing program by 2015.

The quality reporting program would be modeled after those for hospitals, physicians, and others. One intent is to allow objective review and meaningful comparisons among surgical care providers, Shapiro said.

Also, unlike current law, which would penalize ASCs immediately for failure to report quality data, the bill would postpone penalties until after 2014. The Centers for Medicare and Medicaid Services (CMS) has said it plans to issue rules for ASC quality reporting in 2012.

The value-based purchasing program would provide bonuses for high-quality ASCs if Medicare achieves savings in overall spending for eligible outpatient procedures.

Addressing another frustration of ASCs, the bill would allow a physician to give patients disclosure notices on the same day as their procedures. Currently, notices must be given at least 24 hours in advance of performing a procedure in an ASC except for emergencies.


physician, help with turnover between cases.

Procedure times
The median procedure time (needle-in to needle-out) was 7 minutes, with an average of 8 minutes and a range of 2 to 23 minutes. The shortest times were from 2 to 3 minutes. More than a quarter of participating facilities had times under 5 minutes, and more than 80% were under 10 minutes.

Discharge times
The median and average discharge times (needle-out to discharge) were both 29 minutes (range 2 to 74 minutes). Facilities with the shortest times said they rarely sedated patients for the procedure. Among other strategies for best performers:

• Physicians provide patients “with excellent presurgical explanations and expectations of the procedure.”
• Patients are discharged from the procedure room, unless they receive sedation or a cervical epidural.

Patient outcomes
The study did include a few patient outcomes. Within 7 to 10 days after the procedure, participants reported that approximately 80% of the study patients were contacted to obtain outcomes information. In findings:

• 95% were able to schedule the procedure within a reasonable period of time.
• 82% were performing usual daily activities.
• 78% said their pain had improved.
• 53% had reduced pain medications.

—Judith M. Mathias, MA, RN

Reference
Do you know a colleague who deserves to be OR Manager of the Year?

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Cloud Gate, the sculpture by Anish Kapoor, in Chicago’s Millennium Park. Photo by Patrick Pyszka.

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At a Glance

Updated guideline on GI scope reprocessing

The Multisociety Guideline on Reprocessing Flexible GI Endoscopes has been updated from its original 2003 edition.

Among changes:
• added details on critical reprocessing steps, including cleaning and drying
• reprocessing issues for scope attachments, such as flushing catheters.

There is also discussion of issues that have incomplete data to guide practice, such as endoscope shelf life, microbiological surveillance testing after reprocessing, and scope durability and longevity.

The update, endorsed by 11 organizations, was issued by the American Society for Gastrointestinal Endoscopy and the Society for Healthcare Epidemiology of America. ❖


Hospital robotic surgery claims termed ‘misleading’

Information on hospital websites touting their surgical robots overestimate benefits, largely ignore risks, and are strongly influenced by the manufacturer, a study finds.

An analysis of 400 randomly selected US hospital websites found 41% described robotic surgery:
• 37% showed robotic surgery on their home pages
• 73% used the manufacturer’s stock images or text
• 33% linked to the manufacturer’s website.

Despite a lack of evidence that robotic surgery is better than conventional surgery, 86% of websites said robotic surgery was clinically superior, and 32% described improved cancer outcomes. None mentioned risks.

Though the public regards hospital websites as authoritative, in this case, hospitals have outsourced patient education to the device manufacturer, making claims unsubstantiated by the literature, note the authors from Johns Hopkins. ❖


Mortality drops for high-risk surgery

Operative mortality dropped substantially in the past 10 years for patients having 8 high-risk cancer and cardiovascular procedures, researchers report.

Higher hospital volumes and market concentration for several cancer procedures were responsible for much of the drop, with decreases of
• 67% for pancreatectomy
• 37% for cystectomy
• 32% for esophagectomy.

Smaller decreases were attributed to volume for lung resection (16%), abdominal aortic aneurysm repair (11%), and aortic-valve replacement (9%). Hospital volume was not associated with declining mortality for coronary artery bypass and carotid endarterectomy.

Referral to high-volume centers should continue to be encouraged, the authors say. But for most high-risk procedures, strategies such as OR checklists, outcomes measurement and feedback, and quality improvement collaboratives are likely to be more effective, the authors note.

The study included 3.2 million Medicare patients from 1999 to 2008. ❖