

Ambulatory Surgery Centers

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OR performance

Six strategies for boosting outcomes as Medicare/Medicaid pay tightens

The message coming out of Washington is clear: Do more with less. Under Medicare's hospital inpatient value-based purchasing (VBP) program launched July 1, 2011, DRG payments will be tied to performance on quality and patient satisfaction metrics. This is part of the government's plan to link payment more closely with improved quality. The program is budget neutral. Hospitals will essentially have to work harder for the same reimbursement.

At the same time, the government is looking for new ways to reduce Medicare and Medicaid

payments. Congress is debating plans to reduce the federal deficit, and entitlement programs are on the table. Medicare makes up 43% of hospitals' revenue on average. The cuts would be on top of the \$400 billion reduction already built into the Patient Protection and Affordable Care Act.

What does all this mean for OR directors? As expectations rise and resources tighten, directors will be evaluated on their ability to improve surgical outcomes while reducing costs and boosting efficiency. Here are 6 opportunities to focus on.

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OR economics

Bundled payments: Demo aligns hospital, MDs on total joint surgery

Would receiving a single payment for procedures like total hip and knee replacement bring hospitals and surgeons into closer alignment? Would care be delivered in a more coordinated manner with higher quality and greater cost-effectiveness?

It's the way more Medicare reimbursement may be going. The Centers for Medicare and Medicaid Services (CMS) is conducting demonstration projects on bundled pricing (sidebar, p 9). In these projects, Medicare pays one

amount to a hospital for an episode of care, and the hospital splits the payment with physicians and other providers. CMS sees bundled pricing as one path toward more coordinated and cost-efficient care.

Hillcrest Medical Center in Tulsa, Oklahoma, was the first of 5 hospitals to participate in the

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Vol. 27, No. 11, November 2011 • *OR Manager* (ISSN 8756-8047) is published monthly by Access Intelligence, LLC. Periodicals postage paid at Rockville, MD and additional post offices. POSTMASTER: Send address changes to *OR Manager*, 4 Choke Cherry Road, 2nd Floor, Rockville, MD 20850. Subscription rates: Print only: domestic \$99 per year; Canadian \$119 per year; foreign \$139 per year. Super subscriptions (includes electronic issue and weekly electronic bulletins): domestic \$149 per year; Canadian \$169 per year; foreign \$179 per year. Single issues \$24.95. For subscription inquiries or change of address, contact Client Services, clientservices@accessintel.com. Tel: 888-707-5814, Fax: 301-309-3847. Copyright © 2011 by Access Intelligence, LLC. All rights reserved. No part of this publication may be reproduced without written permission.

OR Manager is indexed in the Cumulative Index to Nursing and Allied Health Literature and MEDLINE/PubMed.

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Editorial

In this age of data and measurement, we may not think of compassionate care as something that can be measured. It's an intangible yet critical aspect of care and healing.

With the intense focus on austerity, tight reimbursement, and managing costs, there's a danger compassion could get lost.

Patients are worried. In a new survey, 67% said they were concerned about how changes in health care would affect their caregivers' ability to communicate effectively and provide emotional support.

Tellingly, only 54% of patients thought health professionals give compassionate care—but 78% of physicians thought they did.

The survey led by Beth A. Lown, MD, of Harvard Medical School, was published in the September 2011 *Health Affairs*.

What is compassionate care?

Patients and physicians generally agreed these elements were the most important:

- being treated respectfully
- clear communication
- communicating test results in a timely and sensitive manner
- being treated as a person and not just a disease
- being listened to
- being involved in treatment decisions
- trusting their physicians.

The evidence is there

We were surprised to learn there actually is strong research evidence on the impact of compassionate care on patient outcomes, costs, and other aspects of care.

Effective communication has been shown to improve outcomes for diabetes control, pain, and quality of life in cancer. Good communication is also associated with a decline in malpractice claims.

Providers who score highest on

The moment of human connection.

patient communication measures have lower costs for diagnostic testing than those who score lowest.

The reverse is also true—patients who ask questions, request clarification, and make their concerns known receive more information and support from their providers.

Compassionate care is being taught.

The Schwartz Center for Compassionate Healthcare at Harvard offers rounds at 230 health care facilities in 33 states, giving clinicians time to talk openly and honestly about the issues of caring for patients. Many sites offer CEUs. Information is at www.the-schwartzcenter.org/

The best news

The best news about compassionate care—there's no cost to delivering it. The warm hand on a patient's arm, the smiling eyes over the mask, focused attention in reviewing discharge instructions, and listening for a patient's questions don't require extra time or resources. And these gestures could well deliver better outcomes.

The caregiver who conveys compassion may never be aware of its impact. But that moment of human connection may be the very thing that eases a patient's anxiety about a procedure or helps patients remember information critical to their recovery and healing after surgery. ❖

—Pat Patterson

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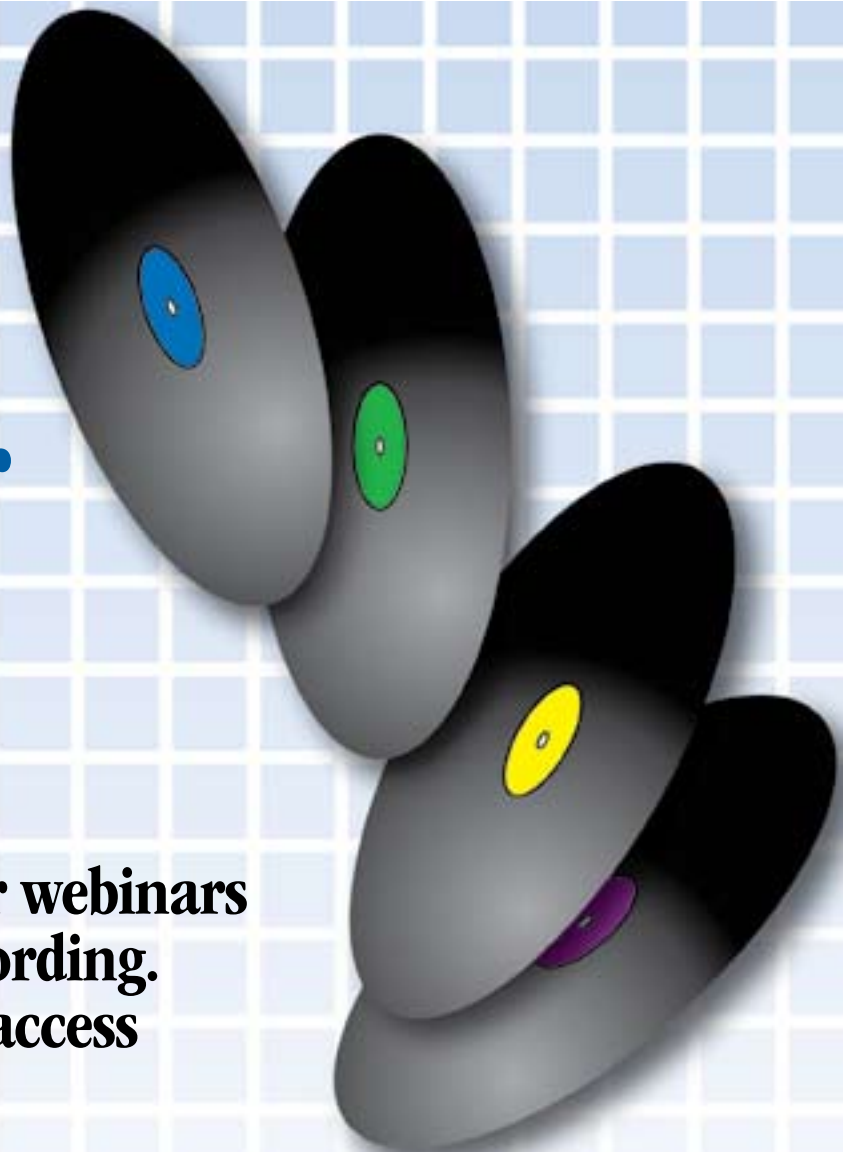
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Home laundering can leave bacteria on uniforms

Home washing machines may not always use hot enough water to eliminate bacteria like methicillin-resistant *Staphylococcus aureus* (MRSA) and *Acinetobacter* from hospital uniforms, according to a study in the November 2011 *Infection Control and Hospital Epidemiology*.

Researchers in the UK tested nurses' uniforms worn at work plus fabric swatches experimentally contaminated with MRSA and *Acinetobacter*.

Uniforms from the ICU, emergency department, and infection diseases, hematology, and gynecology units were tested.

UK hospitals ending in-house laundry services

The study was conducted because changes in Britain's National Health Service have led many hospitals in the UK to end in-house laundry services.

Results showed that home washing the uniforms with deter-

“
Ironing killed remaining microbes.
”

gent and a water temperature of 140°F (60°C) did eliminate both types of microorganisms. At a lower temperature of 104°F (40°C), MRSA was eliminated, but large amounts of *Acinetobacter* remained.

In the UK, energy-saving washers often operate at temperatures near 40°C. (In the US, a typical warm setting is 90°F to 111°F, while hot is 111°F, and cold is 70°F to 90°F, according to Whirlpool customer service. “Energy Star” washers in the US use 37% less energy and 50% less water than noncertified machines.)

Using a hot iron on uniforms after a 104°F wash did eliminate the *Acinetobacter*. The effect of tumble drying the uniforms was not tested.

“The results stress the importance of ironing hospital uniforms after washing them in a domestic washing machine that operates at less than 60°C,” said John Holton, PhD, FRCPath, one of the authors.

The researchers said they studied these 2 types of bacteria because both are often linked to health care-associated infections (HAIs) and represent 2 important bacterial types. MRSA is gram-positive, and *Acinetobacter* is gram-negative. They say they expect their results are applicable to other types of gram-positive and negative bacteria.

AORN recommendations

AORN recommends laundering surgical attire in a health care-accredited laundry facility, not in the home, noting that home laundering is not monitored for quality, consistency, or safety.

The UK researchers note there is some debate about whether nurses' uniforms are a vehicle for transferring microbes from one patient to another. A recent review found there is evidence that nurses' uniforms become contaminated with micro-organisms but little evidence that uniforms are responsible for HAIs (Wilson J A, et al. *J Hosp Infect.* 2007;66[4]:301-307). ❖

Reference

Lakdawala N, Shah M, Holton J. Effectiveness of low-temperature domestic laundry on the decontamination of healthcare workers' uniforms. *Infect Control Hosp Epidemiol.* Published online ahead of print September 20, 2011.

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1. Use PAT to improve quality

Ensuring quality and avoiding complications will be the keys to qualifying for VBP incentive payments. Avoiding wasteful care also will be essential for succeeding under new bundled payment systems, including accountable care organizations (ACOs). One of the most powerful tools for impacting these issues is preadmission testing (PAT).

The first priority is to create standardized protocols for preoperative testing based on procedure, surgical invasiveness, comorbid conditions, and other factors. Work with the departments of surgery, anesthesia, and medicine to build consensus around testing algorithms.

As part of this effort, collaborate with anesthesia providers to develop a standard preop risk assessment tool to flag potentially high-risk patients.

Once protocols are in place, develop scheduling processes that ensure elective surgery patients are evaluated at least 3 to 5 business days prior to their procedure. Better-performing ORs have a phone screening process for triaging patients to either a normal preop timeline or additional testing.

An effective PAT process can dramatically improve patient outcomes, helping to minimize complications that lead to unreimbursed care. Well-designed protocols also reduce costs from unnecessary testing. And optimizing patients presurgically lowers costs associated with same-day cancellations and case delays.

2. Hold a daily huddle

Another way to optimize OR performance is to anticipate scheduling issues. In better-performing ORs, leaders hold a “daily huddle” every morning to review cases for



Build consensus on preop testing.

the next 3 days and resolve scheduling concerns before they become problems.

The huddle should be attended by the anesthesia medical director, the OR nursing manager, the PAT manager, and a representative from central sterile processing. Critical issues include:

- **Do any patients have medical problems that could delay the case or lead to a cancellation?** For example, a patient on Coumadin (warafin) should not be scheduled as the first case of the day because INR [international normalized ratio] labs might be required before clearance.
- **Do any cases present unusual supply needs?** If the schedule includes patients receiving an implant, a manager should verify that the correct implants are on site.
- **Are there ways to improve the schedule logistically?** For instance, when looking at an orthopedic block, try to make sure same-side shoulder surgeries are scheduled sequentially. Alternating between right-shoulder and left-shoulder cases will lead to excessive positioning time.

A strong daily huddle process can reduce cancellations and first-time delays and help minimize complications.

3. Use the WHO checklist to improve processes and outcomes

Initially, the VBP program will be

based primarily on process measures, but it is likely to expand to cover outcome measures as well. Clinical directors can help ensure good processes *and* improve outcomes by leading the adoption of a checklist, such as the World Health Organization (WHO) Surgical Safety Checklist.

Research shows that the WHO checklist can significantly reduce postsurgical complications and mortality (A B Haynes et al. *N Engl J Med.* 2009; 360:491-499). This is important, because one long-term goal of all health care reform initiatives is to shift emphasis to actual patient outcomes.

The WHO checklist will support compliance with VPB measures such as Surgical Care Improvement Project (SCIP) protocols for antibiotic prophylaxis.

Another Medicare initiative penalizes hospitals that have certain hospital-acquired conditions (HACS). One HAC is retained foreign objects. The WHO checklist prompts the team to ask at the end of the case whether instrument, sponge, and needle counts are correct, helping to ensure counts are conducted. The checklist can also improve performance on new quality-reporting measures related to deep vein thrombosis, respiratory failure, and other postoperative complications

4. Control labor costs

Given the growing demand for payment cuts, clinical directors will increasingly be held accountable for the OR's overall cost performance. Labor costs are a major portion of department overhead, and managers will need to keep worked hours per OR minute at or below the appropriate benchmarks. As a point of reference, a West Coast health system consisting mainly of community hospitals uses a labor benchmark of 0.13 nursing hours per OR minute. This

is calculated by dividing total nursing hours (including nurses and surgical technologists) by total OR minutes.

OR management teams can use a variety of tools to address nursing costs:

Flexible staffing

A flexible staffing matrix can reduce nursing labor costs by more closely matching worked hours to case volume. Periodically review volumes by day of the week and hour of the day and adjust the schedule appropriately.

Specialty teams

Specialty nursing teams can function more efficiently and allow for better skill allocation. Consider creating a dedicated nursing team for key services such as cardiovascular surgery, neurosurgery, obstetrics, and orthopedics. Specialty teams also improve surgeon satisfaction, an important factor in maintaining OR revenue. A recent study from the Netherlands found that fixed OR teams who worked together on consecutive cases for hernia and laparoscopic cholecystectomy had shorter case preparation and turnover times (Stepaniak P S, et al. *Arch Surg*. 2010;145:1165-1170).

Process efficiency

In general, efforts to improve process efficiency will help reduce labor costs. For example, improving preadmission testing (as discussed above) can enable OR management to reduce nursing FTEs and transfer tasks from nurses to more cost-efficient clerical assistants. For example, the task of scheduling calls between patients and PAT nurses could be given to a clerical assistant, reducing the hours nurses spend on nonclinical work.

To avoid disruption, it is advisable to adjust nursing staff

Daily huddles can reduce delays.

changes over a 1-year period. Managing a staff decrease through attrition is a realistic expectation for most ORs.

5. Reduce supply costs by targeting waste

Most ORs have a product evaluation committee to help control spending on supplies and equipment. These committees can help keep overpriced products out of the department, but they have little impact on actual utilization or supply management. Clinical directors who aim to improve an OR's cost structure need to address the high expenses that result from supply waste and poor inventory practices.

Surgical supply packs are a major opportunity for better cost management. Significant numbers of items in a pack can go unused during a procedure, which can represent 10% or more of an OR's total supply expenses.

Clinical directors can reduce waste significantly by improving the department's supply pack systems:

- First, work with the surgical staff to update surgeon preference cards and keep them current. Outdated cards are a leading source of waste.
- Lay out on a table all the items from a surgeon's preference card and ask the surgeon which items can be deleted. Do this annually for each surgeon.
- Analyze actual waste patterns to

identify items that can be trimmed from supply packs.

Reducing the total number of supply packs allows for better management of pack contents.

Better inventory practices will also help control costs. To the extent possible, the OR should hold high-cost implants on consignment. Better-performing ORs have converted 90% of their implant inventory to a consignment basis.

ORs can also do a better job of controlling expenses on high-cost capital equipment. Create a policy requiring every proposed equipment purchase above a threshold (for example, \$100,000) to be accompanied by a formal business plan that projects utilization, reimbursement, operational costs, and expected return. The plan should be signed by the clinical director and surgeons advocating the purchase. Review equipment business plans annually to verify actual performance against projections.

6. Increase OR utilization

One of the most effective ways to improve cost efficiency in the OR is to reduce wasted OR time. Clinical directors can help their OR adjust to lower payments by bringing utilization as close as possible to the benchmark rate of 85%. Several initiatives are key:

Adopt a more efficient OR scheduling model

Many hospital ORs assign time to surgeons in 4-hour blocks. Better-performing ORs have proven that 8-hour blocks promote better time utilization with less waste.

Set utilization standards

Allocate block time to surgeons based on their utilization (not seniority) and make retention of a block conditional on maintaining target utilization thresholds.

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OR performance

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Create open rooms

An OR schedule needs to be flexible enough to accommodate late add-on cases and make room for independent surgeons. Approximately 20% of rooms should be held open for add-on scheduling.

Balance the drawdown

Surgeons now need to spend more time in the office to generate cases, so there is a growing demand for late afternoon OR time. Reconsider the department's current drawdown policy to ensure adequate staffed rooms after 3 pm.

Free up unscheduled time

Most ORs do not have strong policies for reclaiming unscheduled block time from surgeons. Create an automatic block release timetable that meets the needs of the various specialties while providing management with ample opportunity to fill up OR time.

New core competency

Clinical directors who successfully implement these initiatives will also be addressing the challenges facing anesthesiologists. Improving OR utilization will enable anesthesiologists to increase their revenue while minimizing downtime between cases. Emphasizing safety and efficiency also will give anesthesiologists greater opportunity to demonstrate their value in driving surgical performance. Anesthesiologists can play a major role

Target waste in supply packs.

in leading PAT initiatives and implementing safety protocols. As these efforts bear fruit in fewer complications, improved surgical outcomes, and improved revenue, the pressure from the hospital administration to reduce anesthesia stipends will likely diminish. In addition, as anesthesia providers help the OR achieve full VBP payments, control costs, and maintain profitability, the administration will likely ease calls to reduce anesthesia stipends. The key to all these outcomes is the ability to lead quality improvement within an environment of cost control and efficiency. To serve effectively in the coming years, OR clinical directors will need to master the art of doing more with less. ♦

—Jeffrey Peters, President,
Surgical Directions, LLC

—David Young, MD, Medical
Director, Perioperative Services,
Advocate Lutheran General Hospital,
Park Ridge, Illinois

Next month: OR leaders share strategies for meeting economic challenges.

How are you adjusting to financial challenges?

How is your OR coping with the economic challenges? Have you made major inroads on improving quality or saving money through OR logistics, supply management, or staffing?

Share your progress with our readers. Contact Pat Patterson, editor, for a possible interview at ppatterson@accessintel.com.

Older patients better drivers after surgery

Older patients drove more safely than younger ones after ambulatory surgery, finds a study presented at the 2011 American Society of Anesthesiologists meeting in October in Chicago.

With ambulatory surgery becoming more common and increased use of short-acting anesthetics, "our team recognized that patients may have a need to drive sooner than the 24-hour waiting period typically recommended," said the lead investigator, Asokumar Buvanendran, MD.

The researchers tested 198 patients having same-day surgery using a driving simulator that depicted a drive from the hospital to their homes. Patients were tested immediately before surgery and again right before they were to leave the center after minor surgery performed under sedation.

More cautious drivers

In the simulation, researchers measured the amount of "weaving" on the road and the number of accidents and driving violations. Weaving after surgery was essentially the same as before surgery, indicating the drugs had effectively worn off by the time patients were discharged.

Older patients drove slower and had better weaving scores than younger patients. Their more cautious driving led to an overall safer driving score.

Patients' driving proficiency after minor surgery with sedation was similar to their proficiency before surgery, the researchers conclude. They add further research is needed on the effects of age and driving, both under controlled conditions and in the real world. ♦

Fast facts: Medicare bundled payment

What is bundled payment?

Instead of paying separately for each service, Medicare makes a single “bundled” payment for an episode of care, such as hospital and physician care for a total joint replacement.

What’s the goal?

The goal is to encourage hospitals, doctors, and other providers to work together to better coordinate care for patients. The aim is to help improve health, improve quality, and lower costs, according to the Centers for Medicare and Medicaid Services (CMS).

What are the projects?

- **ACE (Acute Care Episode) Demonstration:** 5 hospitals in 4 states (Colorado, New Mexico, Oklahoma, and Texas) are in a bundled payment demonstration for orthopedic and cardiac services started in 2009.
- **Bundled Payments for Care Improvement initiative.** This

new project is more flexible than ACE.

- Providers can select the conditions to bundle and decide on the care delivery structure. CMS will test 4 models of bundled payment, 3 retrospective and 1 with prospective payment.
- Gain sharing. Applicants for the new demonstration may include gain sharing with physicians and other practitioners as part of their proposals.

How does this affect patients?

- When a hospital participates, bundled payment applies to all Medicare patients who receive care from the hospital and participating physicians who meet the episode definitions.
- Patients have the right to choose another provider who isn’t participating in bundled payment.
- Patients won’t receive finan-

cial incentives under the new models.

- For quality, CMS:
 - requires applicants to provide quality at or above what Medicare patients currently receive
 - will monitor quality measures
 - may terminate a provider’s participation if quality decreases or there are other significant concerns.

Resources

Centers for Medicare and Medicaid Services

Medicare Acute Care Episode (ACE) Demonstration.

www.cms.gov/DemoProjectsEvalRpts/MD/ItemDetail.asp?ItemID=CMS1204388

Bundled payments for care improvement.

www.innovations.cms.gov/areas-of-focus/patient-care-models/bundled-payments-for-care-improvement.html

Bundled payments

Continued from page 1

original bundled pricing pilot, the ACE (Acute Care Episode) Demonstration Project, launched in 2009. The pilot involves certain orthopedic and cardiac procedures. Hillcrest placed a bid with CMS to accept a discounted amount for each of the 9 orthopedic DRGs. In turn, the hospital shares the payment with the participating physicians, including surgeons and anesthesiologists.

The idea is that the hospital will gain volume, and Medicare will reap savings. In the demo, Medicare saves 4.4% on the base rates

for total joint surgery. Patients receive a small financial incentive from Medicare for using Hillcrest—50% of the amount Medicare saves; that is, the difference between the usual DRG payment and the contracted amount, or about \$250 to \$300 for a total joint replacement.

“The payment to the hospital includes all facility and professional services incurred during the visit, from admission to discharge,” explains Nancy Harrison, ACE demonstration director for Hillcrest’s parent organization, Nashville, Tennessee-based Ardent Health Services.

Hillcrest pays the surgeons

100% of their usual Medicare fee. The surgeons are also in a gain-sharing arrangement with the hospital. Gain sharing is a structured arrangement in which the hospital and physicians share savings on specific procedures if quality thresholds are met.

What’s in it for the hospital?

Why participate in bundled payment?

“One thing we wanted to do was to improve our quality of care while reducing our costs and working more closely with provid-

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ers, which is one of the goals CMS has for the project," says Harrison.

"We wanted to be on the cutting edge of global pricing because we felt that some type of global pricing was going to be in our future."

Indeed, CMS rolled out 4 new bundled payment models in August 2011 and has invited providers to participate. The new models do not include an incentive for patients.

Tracking quality

As part of the project, Hillcrest is required to track 11 quality measures for hip and knee surgery, which are reported to CMS and to the participating surgeons in quarterly meetings.

The metrics are primarily those CMS expects all hospitals to report, including many of the Surgical Care Improvement Project (SCIP) measures as well as length of stay, 30-day postsurgical mortality, and readmission rates, among others.

Beverly G. Morris, BSN, RN, Hillcrest's administrative director of surgical services, says the hospital has either maintained or improved on the metrics since joining the project.

Changing dynamics

Morris says she's noticed a change in the dynamics of working with the surgeons since the project began.

"It's almost like comanagement with the physicians. We are both invested in being successful for the patient. It's made these physicians want to align with us in looking at products, equipment, and processes so we can identify any inefficiencies and correct them."

Early on, the lead orthopedic surgeon, Yogesh Mittal, MD, was involved in streamlining instrument sets and orthopedic supplies.

“
**This experience
has made me
a believer.**
”

Regarding total joint implants, an expensive part of the procedure, Hillcrest has not said that surgeons must use a particular vendor. "It is very collaborative," says Harrison.

Notes Morris, "It's no longer a matter of surgeons saying, 'This is what I want to use,' but also looking at the cost and comparing the desired implant with how well the other implants work before making a decision."

The director of materials management coordinates a quarterly business review with the orthopedic surgeons in which they discuss implants, supplies, and other costs. The director of materials management then works with vendors on implants and pricing.

Morris says there is also more collaboration with the postop nursing unit to coordinate care processes and product decisions.

The project has entailed some additional costs in marketing the project to patients and developing educational materials, Harrison says.

Focused orthopedic unit

Hillcrest already had a dedicated orthopedic unit, which focuses care for these patients. With 4 ORs, the unit has its own admission area, postanesthesia care unit, and postop nursing unit. Two additional orthopedic ORs are in the main surgical suite.

Most of the staff, from housekeepers and orderlies to surgical technologists and preop, intraop,

and postop nurses, is dedicated to the unit, with other staff supplementing as needed.

To aid case turnover, surgeons can move from one OR directly to another. All surgical site verification steps, including the time-out in the OR, are performed appropriately, Morris notes.

Total joint replacement patients attend a seminar before surgery where they learn what to expect before and during surgery as well as after they go home.

Morris acknowledges there could be anxiety about having physicians so involved in decision making. But she has found the experience to be positive.

"What I have found is that they truly are aligned. It has made dealing with all of the issues, whether they are personnel issues, processes, or the cost of supplies and implants, easier to work on with the physicians.

"Having this good experience has made me a believer," she says. ♦

—Pat Patterson

Watch a video interview with Dr Mittal by Kaiser Health News at <http://www.kaiserhealthnews.org/Multimedia/2009/October/102609Tulsa.aspx>

Honor a periop colleague

November 7-13, 2011, is Perioperative Nurse Week. The AORN Foundation is pleased to provide the opportunity to honor colleagues by making a donation to the Foundation in their name. An acknowledgment note will be sent to each colleague honored through a donation.

The AORN Foundation is the philanthropic arm of AORN.

Make gifts online at AORN.org/Foundation or contact 800/755-2676 ext 395. ♦

Over half of larger ORs have business managers

Over half of teaching hospitals (52%) and larger surgical departments with 10 or more ORs (56%) now have OR business managers, according to the 2011 *OR Manager Salary/Career* survey.

The position has become increasingly common over the past decade to meet the need for financial reporting, data analysis, and closer management of product acquisition.

Overall, about a third (34%) of respondents have a business manager, similar to the 37% 2 years ago. The position has made gains since 2004, when only 24% had a business manager.

The position is more prevalent in the West and South, with 40% in both regions reporting that they have a business manager, compared to 34% in the Northeast and only 26% in the Midwest.

This is the fourth year the survey has asked specific questions about the business manager.

Top responsibilities

Business managers' top 4 duties reflect the focus on financial analysis and product selection. Leading the list is financial analysis and reporting, followed by value analysis/product selection,

Continued on page 12

Who is the OR business manager?



By facility type

Community	Teaching
(n = 47)	(n = 25)
28%	52%

By number of ORs

1-4	5-9	10+
(n = 4)	(n = 12)	(n = 58)
10%	16%	56%

Business manager salaries

(n = 77)

Mean = \$81,100; Median = \$78,000

\$100K+	12%
\$90K-\$99,999K	19%
\$80K-\$89,999K	6%
\$70K-\$79,999K	13%
\$60K-\$69,999K	19%
<\$60K	6%
Don't know	21%
No answer	3%

To whom does the business manager report?

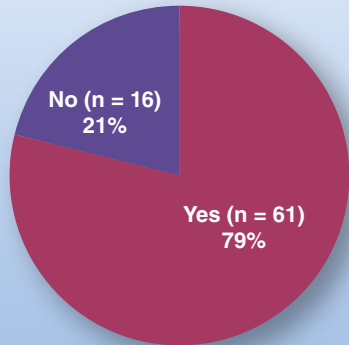
(n = 77)

OR director	72%
Vice president	9%
Chief financial officer	5%
Nurse executive	3%
Chief operating officer	0%
Other	11%

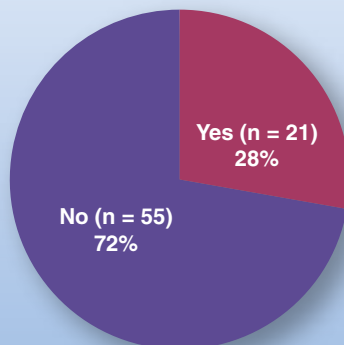
Examples of others: Medical director, senior director of product line, dual report to OR director and supply chain director, perioperative services support director, and materials manager.

Who is the OR business manager?

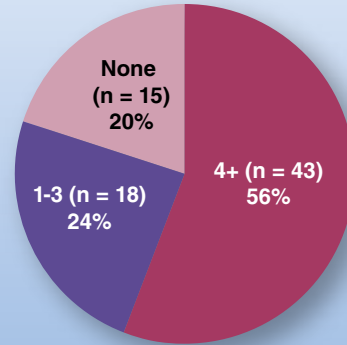
Is a specific degree required for business manager?



Is a clinical background required for business manager position?



How many direct reports does the business manager supervise?



Degree required

Bachelor's	67%
MBA	23%
Other master's	8%
Other	2%

What are the OR business manager's responsibilities?

(n = 76)

Financial analysis/reporting	83%
Value analysis/product selection process	68%
Annual budget	68%
Billing/reimbursement	64%
Purchasing	61%
Materials management	59%
Surgical information system	43%
OR scheduling	42%
Strategic planning	41%
Quality improvement	10%
Other	4%

Continued from page 11

annual budget, and billing/reimbursement.

To assist with these duties, the largest group of business managers (56%) has a staff of 4 or more direct reports.

Salaries

The average business manager annual salary for the 59 respondents who provided this information is \$81,100. That compares with \$78,700 in 2010. For community hospitals, the average annual salary in 2011 is \$78,900, and for teaching facilities, it is \$85,700. Overall, salaries ranged from less than \$60,000 (6%) to over \$100,000 (12%)

Reporting structure

Most often (72%), the position reports to the OR director. For the

remaining 28%, reporting is spread among a variety of positions, such as vice president, chief financial officer, or nurse executive.

Qualifications

More than three-fourths (79%) of respondents require a specific degree for the OR business manager position. For most (67%), the required degree is a bachelor's. Most

of the 31% that require a master's degree stipulate an MBA.

A clinical background typically is not required for the business manager, with only 28% having that as a qualification. Community hospitals (34%) are much more likely than teaching facilities (12%) to call for a clinical background.

Continued on page 14

High-throughput OR pod expedites patient flow

A new high-throughput OR pod at Massachusetts General Hospital (MGH) in Boston is designed to expedite patient flow and make the most of the OR's resources during regular weekday hours. The 4-OR pod with 13 perianesthesia bays is part of a 28-OR department opened in Fall 2011 in a new inpatient building. The pod is configured to support parallel processing, with certain tasks such as anesthesia induction and room setup performed in tandem.

"We felt that if we could maximize the use of parallel processing, we could reduce the time it takes to turn over cases safely," says Lisa Morrissey, MBA, RN, CNOR, nursing director for the main OR.

The pod's initial case-load will be elective general surgery, with procedures such as laparoscopic cholecystectomy and thyroidectomy.

OR of the Future experiment

The new pod is based on the MGH OR of the Future experiment, reported in 2005 and 2006, which tested ways to improve patient throughput. In the experiment, the researchers constructed an OR suite that included an induction room, an OR, and an early recovery area. They then compared throughput for the experimental OR and a conventional OR.

Results showed that surgeons performing the same mix of cases in the experimental OR processed more cases in a day and used less time per case. Nonoperative time was reduced from 67 minutes to 38



The second floor of the new OR department at Massachusetts General features a 4-OR high-throughput pod. The pod is configured to support parallel processing.

minutes in the experimental OR, and operative time was reduced by about 5%. Though hospital and anesthesia costs per case increased, the improved throughput offset the costs, and the global net margin was unchanged.

High-throughput features

Among features of the new pod that expedite patient flow:

- The perianesthesia bays are set up to be used for preoperative assessment and postanesthesia recovery and are staffed by nurses cross-trained for both functions. The bays provide for privacy but have a central nurses' station for the monitoring of patients.

"We can be preparing our preop patients and recovering patients at the same time," Morrissey notes.

- Two bays are outfitted with anesthesia gases, enabling them to be used for anesthesia induction. These bays are located directly across from the OR suite, so patients can be moved directly to the OR while asleep.
- The pod's 4 ORs are arranged around a central core. Between each pair of ORs is a setup room where the staff can set up instrument tables for the next procedure. "That allows us to make sure we have all of the equipment and instruments laid out," says Morrissey. "We can do the counts before the patient comes into the OR."
- A clinician workstation between each pair of ORs, with windows

Continued on page 14

OR design & construction

Continued from page 13

facing into the OR, is a place for clinicians to work as cases are finishing and the room is cleaned.

- Preference cards were revised, reviewed by surgeons, and updated in the information system. That helps to ensure accurate case setup and reduces delays.
- General surgery instrument trays and supplies are being standardized to the extent possible given the number of subspecialties at this large teaching hospital.
- A preprocedure huddle will be held immediately before each case so the surgical team can discuss any additional information and supplies needed.

The pod's staffing model

Additional resources and different role groups are needed for the new format, Morrissey notes.

In addition to cross-trained preop and perianesthesia nurses, OR assistants have been trained in the opening of sterile supplies. One assistant will be assigned to each pair of ORs. After the surgical technologist (ST) checks the prefer-



One of the new operating rooms at Massachusetts General. The new 28-OR department opened in Fall 2011.

ence card for the next case, the assistant can open supplies while the ST scrubs.

Setting up in advance

The pod's design allows instrument tables to be set up in advance of the next case, Morrissey notes. The tables are set up in an area with windows adjacent to the ORs.

AORN recommends setting up sterile fields as close as possible to the time of use and observing them continuously. AORN also advises preparing the sterile field in the location where it will be used and not covering it.

The MGH cardiac service historically has set up its tables prior to the next case, Morrissey notes.

"We have not changed that practice, and we have not had negative results related to infection," she says. "In fact, we find that being able to set up in advance allows us to make sure we have all of the items we need available for the procedure."

Based on the favorable experience in the cardiac service, she adds, "We felt this would be an important part of parallel processing. Having the space allows us to do [the setup] away from the patients and surgery." ♦

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Business managers

Continued from page 15

About the survey

The *OR Manager Salary/Career Survey* was mailed in 2 waves from April to July 2011 to 800 *OR Manager* subscribers classified as directors of hospital ORs. There were 247 usable responses for a 31% response rate. To ensure representation of the target audience, results were filtered to

include only the 230 respondents who work full time in an OR. The margin of error is ± 5.4 percentage points at the 95% confidence level.

Salary and career results were reported in the October 2011 issue, and results on staffing were reported in September 2011. ♦

A sampling of OR business manager job description responsibilities is in the OR Manager Toolbox at www.ormanager.com

Thank you

OR Manager thanks the respondents who took time to complete this year's survey. We appreciate your part in gathering this information, which will be useful to your colleagues around the country.

Full-rotation three-dimensional intraoperative imaging during spinal procedures

► NOVEMBER 2011

Editor's Note

OR leaders are striving to make evidence-based decisions about new technology. OR Manager, Inc, and ECRI Institute have joined in a collaboration to bring quarterly supplements with summaries of the Institute's Emerging Technology Evidence Reports to OR Manager readers. ECRI Institute is an independent nonprofit organization that researches best approaches to improving patient care. It does its work by analyzing the research literature and data on clinical procedures, medical devices, and drug therapies.

This summary provides a review of the literature through March 14, 2011.

Technology description

The O-arm Imaging System is a mobile cone-beam imaging system that combines a traditional C-arm fluoroscope in 2-D scan acquisition mode and a CT scanner in 3-D scan acquisition mode.

The system consists of a mobile view station and an x-ray stand and has the following features:

- ▷ A breakaway, ring-shaped gantry that opens
- ▷ Standard 2-D fluoroscopy
- ▷ 3-D volumetric imaging in standard and high-definition modes
- ▷ Single and multiplane 2-D imaging
- ▷ 360-degree rotation for CT-like multiplanar imaging
- ▷ Mobility over the length of the operating room table
- ▷ Automatic registry and recall of images
- ▷ Robotic control
- ▷ Acquisition and reconstruction of about 400 images in 30 seconds in standard 3-D mode
- ▷ Acquisition and reconstruction of about 750 images in 50 seconds in high definition 3-D mode

The O-arm system is typically used with a computer-assisted navigation system. However, surgeons can also use the system in a stand-alone mode at the end of spinal fusion surgery before final closure as an



intraoperative CT scanner to confirm screw placement, spine decompression, and alignment.

Full-rotation 3-D intraoperative imaging using the system may offer the following benefits over intraoperative imaging using conventional C-arm fluoroscopy in 3-D mode:

- ▷ Faster rotation time, resulting in shorter image acquisition time
- ▷ Improved resolution and higher-quality images
- ▷ Larger field of view, allowing the generation of multiplanar images

These features potentially offer enhanced visualization, improved precision, shorter operative times, and reduced radiation exposure for the surgeon and patient.

Manufacturers/suppliers

Medtronic Navigation (Louisville, Colorado, USA) manufactures and distributes the O-arm Imaging System and compatible navigation systems.

Regulatory status

In May 2005, the U.S. Food and Drug Administration (FDA) granted 510(k) marketing clearance for the O-arm Imaging System.

Indications/contraindications

The O-arm Imaging System is intended to be used where a physician benefits from 2-D and 3-D information of anatomic structures and objects with high x-ray attenuation such as bony anatomy and metallic objects.

The system may be used during the following spinal procedures:

- ▷ Posterior cervical fusion with C2 pedicle screw
- ▷ Posterior fusion with pedicle screws of the lower cervical and upper thoracic vertebrae
- ▷ Posterior thoracic fusion after spinal trauma
- ▷ Posterior thoracic fusion requiring pedicle screw/rod constructs to correct a scoliosis deformity
- ▷ Posterior lumbar fusion requiring interbody fusion devices and pedicle screw/rod constructs

- ▷ Minimally invasive lumbar fusion
- ▷ Posterior lumbar fusion revision surgery

Impact on hospital operations/safety considerations

Hospitals should consider the following potential impacts:

- ▷ Multidisciplinary use may confound operative scheduling.
- ▷ Procedure times may increase because of device setup, increased image acquisition, and image confirmation.
- ▷ Operating rooms <600 sq. ft. may not be able to accommodate the system.
- ▷ Operating room tables must be x-ray compatible.
- ▷ Mobile imaging systems can be challenging to maneuver because of weight and size.
- ▷ Imaging systems with an exposed x-ray tube and detector can collide with other equipment or staff.
- ▷ Surgeons performing multiple procedures are at risk from cumulative radiation exposure.

Credentialing/Training

Surgeons inexperienced with the technology may face a learning curve regarding the system's setup, imaging protocol, and navigation capabilities. Also, proper training in computer-assisted surgery system use is essential. To assist clinicians, Medtronic offers technical support and training for health care professionals.

Effect on other technologies

The O-arm Imaging System competes with other mobile intraoperative imaging systems that can provide 3-D imaging. Competing systems have imaging speeds that are slower than the O-arm Imaging System.

Cost considerations

The average quoted price for the O-arm Imaging System without the navigation interface is \$603,710. The average quoted price for the O-arm Imaging System navigation interface is \$35,000. System enhancements are available for additional cost. These costs are significantly higher than for mobile C-arm systems.

Reimbursement/coding/payment

The U.S. Centers for Medicare & Medicaid Services has no national coverage determination for this technology. Thus, coverage decisions are left to the discretion of local Medicare carriers.

ECRI Institute searches of 11 representative commercial third-party payers that provide their coverage policies online did not identify any policies that mentioned full-rotation 3-D intraoperative imaging. Six of the payers have policies that deny coverage for computer-assisted surgical navigation, and the other five have no specific policy.

The American Medical Association has not assigned a specific Current Procedural Terminology (CPT) code to describe full-rotation 3-D intraoperative imaging. However, the following CPT codes may be listed in addition to the primary procedure:

- ▷ Fluoroscopy up to one hour
- ▷ Computer-assisted surgical navigational procedure for musculoskeletal procedures, imageless
- ▷ Stereotactic computer-assisted spinal procedure
- ▷ Radiologic supervision and interpretation of percutaneous vertebroplasty, vertebral augmentation, or sacral augmentation under fluoroscopic guidance.

In the inpatient setting, payment for the O-arm Imaging System is linked to one of more than 500 Medicare Severity Diagnosis-Related Groups. In the outpatient setting, payment for imaging guidance during procedures that involve the spine is bundled into the Ambulatory Payment Classification rates for outpatient procedures. The professional component of the procedure may be paid under Medicare's physician fee schedule.

Evidence base

Our searches identified one nonrandomized controlled study (Silbermann et al., 2011) that compared the accuracy of pedicle screw placement in two groups of patients, and five single-group studies (Nottmeier et al., July 2010; Nottmeier et al., December 2010; Oertel et al., 2011; Park et al., 2010; Schils et al., 2011).

Key clinical questions/findings

Does using full-rotation 3-D intraoperative imaging improve the accuracy of pedicle screw placement

during spinal fusion compared to standard 2-D or 3-D C-arm fluoroscopy?

Only one comparative study assessed this outcome. Silbermann et al. (2011) reported a higher accuracy rate for pedicle screw placement in an O-arm navigation group than in a 2-D fluoroscopy/CT group (99% versus 94.1%; $p = 0.012$). Applicability of these findings to clinical practice is unclear.

Does using full-rotation 3-D intraoperative imaging during spinal surgery reduce total radiation exposure time, operative time, and number of revision surgeries compared to standard 2-D or 3-D C-arm fluoroscopy?

Only one comparative study reported on differences in operative time and adverse event rates, and no comparative study reported on radiation exposure times or revision surgery rates. Silbermann et al. (2011) reported that the mean patient positioning time was significantly longer in an O-arm navigation group than in a 2-D fluoroscopy/CT group ($p < 0.05$). However, the between-group difference in the mean operative time did not reach statistical significance in this study.

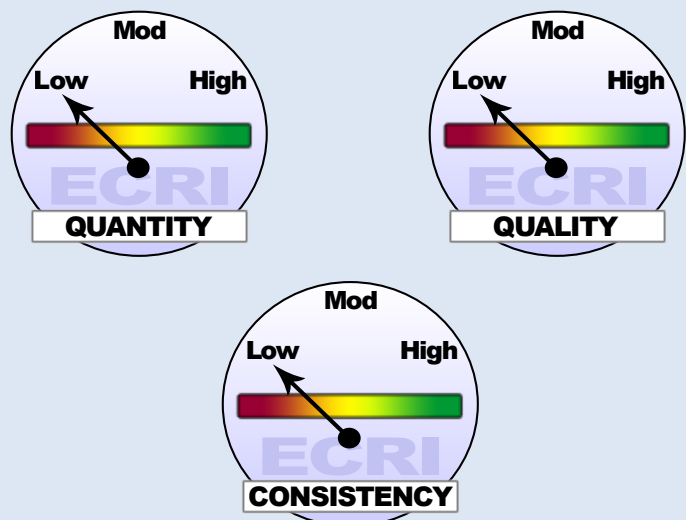
What adverse events are associated with using this technology?

The studies we assessed reported no adverse events directly associated with full-rotation 3-D intraoperative imaging during spinal procedures.

Excerpted with permission from ECRI Institute's database of Emerging Technology Evidence Reports. The complete report can be purchased from ECRI Institute's Health Technology Assessment Information Service at htais@ecri.org.

ECRI Institute is an independent nonprofit health services research agency designated as an Evidence-based Practice Center by the U.S. Agency for Healthcare Research and Quality. The Institute maintains the strictest conflict-of-interest standards in the healthcare industry to protect against biases and ensure the integrity of its information.

State of Evidence Base



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Quantity of Evidence Base (Low)

The evidence base consists of a single controlled study of spinal fusion that compared the accuracy of pedicle screw placement in a patient group that had two-dimensional (2-D) and three-dimensional (3-D) intraoperative imaging using the O-arm System (187 screws in 37 patients) and a patient group that had 2-D intraoperative fluoroscopy with postoperative computed tomography (152 screws in 30 patients).

Quality of Evidence Base (Low)

The included studies have several limitations. Protocols for evaluating pedicle screw placement vary. Studies assessed use of O-arm in conjunction with image guidance. Determining how integration with a surgical navigation system affects imaging and procedure time was not possible. No comparative study reported on important outcomes of interest (i.e., total radiation exposure times, revision surgery rates). Researchers based comparative accuracy outcomes on radiographic metrics. Since the significance of cortical breaches in the absence of clinical symptoms remains uncertain, applicability of the findings to clinical practice is unclear.

Consistency of Evidence Base (Low)

Assessment of consistency for most outcomes was not possible because only one study met our inclusion criteria for efficacy. All case series we assessed reported no adverse events directly associated with full-rotation three-dimensional intraoperative imaging during spinal procedures. Pedicle misplacement rates in studies varied ranging from 0% to 15.6%.

SELECTED RESOURCES

- ▷ Nottmeier E W, Pirris S M, Balseiro S, et al. Three-dimensional image-guided placement of S2 alar screws to adjunct or salvage lumbosacral fixation. *Spine J* 2010 Jul;10(7):595-601.
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- ▷ Schils F. O-arm guided balloon kyphoplasty: Prospective monocenter case series of 54 consecutive patients. *Neurosurgery* 2011 Feb 26;Epub ahead of print.
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SUPPLEMENT TO OR MANAGER

VOL 27, NO 11, NOVEMBER 2011

www.ormanager.com

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How surgery departments charge for OR time

There is no standard method for charging for OR time. In this article, 5 OR business managers describe their OR charging structures, which primarily are based on the OR minute and assign a level of service based on resource utilization. The departments range from 11 to 21 ORs in nonprofit community hospitals with 240 to 500 beds.

In general, "I've seen everything from per-minute charges to facilities that don't have a base time charge," says Keith Siddel, MBA, of HRM Consulting, Creede, Colorado, who consults on hospital chagemasters.

"The key is to make sure that you cover your costs without making the charges overly burdensome to assess, manage, or audit."

It's common to charge by levels of service that are intended to reflect that surgical procedures vary in complexity and use of resources.

OR time charges

For 4 of the 5 hospitals interviewed, the most common charging unit is the OR minute. One facility uses 15-minute increments. For 2 hospitals, an initial setup charge is applied to reflect the cost of opening an OR for a case. Four facilities also charge by level of service, or in one case, by specialty groupings (chart, p 20).

Charging by levels

For the 3 hospitals that charge by levels (Hospitals A, C, and D), the levels are based on resource consumption, including staff, equipment, and instruments. They use from 6 to 12 charging levels.

Levels have certain pitfalls, Siddel notes (sidebar, p 22).

Hospital A, with 21 ORs, charges not only by level but also

“
**There are
a lot of
gray areas.**
”

for certain supplies and for implants (chart, p 21). (Charts for Hospitals C and D are in the *OR Manager* Toolbox at www.ormanager.com)

Deciding what is chargeable

In general, routine supplies are not separately billable, Siddel notes. Hospitals are no longer paid for about 80% of supplies (sidebar, p 23).

At Hospital A, the chagemaster team determines which items are chargeable. "That's the biggest challenge," says the OR business manager. "There are a lot of gray areas."

For instance, a monitor, as capital equipment, is not charged to individual patients, but can the disposable sensors be charged? "We err on the side of being conservative," she says, "but this may result in leaving things unbilled."

Documenting supply use

Charging separately for supplies and implants requires nurses to document what is used when their priority is patient care. But separate charges are useful in determining exactly which supplies are needed for those cases, resulting in more accurate cost accounting, she notes.

Charge audits and education are keys to making this charge system work well. "We have a

wonderful staff and do lots of education," says Hospital A's OR business manager.

Every month she runs a report comparing the chargeable supplies issued with the supplies billed.

"We take the top 10 to 15 discrepant items and dive into the variances," she says. For example, how many vials of Dermabond (a surgical adhesive) were issued and used, and how many were billed? The match is never 100% because some vials might have expired or been dropped.

Focused education keeps the staff up to date on charge capture. With casting material, for instance, the staff is reminded that the material is chargeable both when used for casting and when used under a tourniquet.

Pick your battles

Pick your battles to keep the system manageable, advises Hospital A's OR business manager. "Know where the money is, rather than getting sucked into too many details."

With implants in particular there is no tolerance for missed charges because implants drive a lot of costs and revenue.

"It takes constant reinforcement," she adds. "You have to find a carrot for the staff" to encourage compliance. She points out to them, "If you document accurately, we can get these items on the preference card. Then you will have more accurate supplies in the room."

Base rate with 12 levels of service

Hospital C, with 14 ORs, uses a base rate, or a setup charge, and then a per-minute rate based on 14 levels of service.

Continued on page 20

OR business management

OR charging methods of 5 not-for-profit community hospitals

	Hospital A Midwest 21 ORs, 500 beds	Hospital B West 19 ORs, 500 beds	Hospital C Midwest 14 ORs, 350 beds	Hospital D Midwest 13 ORs, 300+ beds	Hospital E West 11 ORs, 240 beds
How does your surgical department charge for OR time?	Combination of time and level of service/acuity	By actual minutes patient is in room	Base rate (setup charge) + time	By actual minutes patient is in room	By actual minutes patient is in room
If you use time increments, what is the base time increment you use to charge for a surgical case?	15 minutes	Actual minutes	1 minute	Actual minutes	Actual minutes
Do you have a setup charge that always applies?	First 15 minutes is loaded to allow for setup costs	No	Yes	First minute is loaded to allow for setup costs	No
Do you have a minimum time charge you apply for an OR case?	Yes, 15 minutes	Yes, 1 minute	Yes, 1 minute	No	Yes, 1 minute
Does your surgical department use levels of service such as acuity in charging for OR time?	Yes	No, charge by specialty groupings	Yes, 12 levels	Acuity level is captured in minute charge	No
If you charge by levels of service (eg, acuity), what criteria do you use to determine the levels?	Number of staff in room Type of equipment Number of instrument trays	NA	Compilation of averages for staff, equipment, instrument trays	8 levels categorized by type of procedure, acuity, staffing, and equipment	NA
Do you use bundled charges (ie, flat amount for time, personnel, and supplies) for any of your procedures?	Yes. Lithotripsy cases and endovascular cases performed in hybrid suite	No	Yes. Cosmetic procedures. Also shockwave lithotripsy and prostate laser vaporization, which use an outside company	No	Not for the OR

Continued from page 19

The 14 levels reflect resource utilization, using a formula developed by the hospital's charging expert, that factors in the average number of pieces of equipment, instrument sets, and staff. The resources required were determined by reviewing preference cards.

When assigning levels to new procedures, the systems administrator runs a report that displays the equipment, instruments, and inventory items on the preference card. She then averages the number of pieces of equipment for the procedure and determines which 2 levels the procedure matches.

Next, she averages the number

of instrument sets for the procedure and uses that number to select the primary level assignment. (Two peel packs count as one instrument set for the averages.)

Before making the final level assignment, she considers the quantity of inventory items and whether the staff requires special

OR business management

Hospital A: Procedure billing levels

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Staff	2	2	2-3	2-3	2-3	2-4
Equipment	None	Minimal	Moderate	Moderate	Moderate	High
Instruments	1-2 sets	1-2 sets	3-5 sets	3-5 sets	5+ sets	5+ sets
Case Level	Minor	Minor	Minor	Major	Major	Major
Example	D&C	Laparoscopy surgery	Lap Band	Roux-en-y gastric bypass	Total joints Spinal surgery	Craniotomies Heart surgery
Equipment						
Minimal	1-2 pieces: Electrocautery, insufflator, microscope, phacoemulsifier.					
Moderate	>2 pieces: Electrocautery, insufflator, microscope, phacoemulsifier, etc.					
High	DaVinci robot, surgical navigation system.					

training. If either is elevated, the charge level is increased by 1.

The charging system, in use for about 10 years, was recently adopted for the entire health system of about a dozen hospitals.

"It works well because it is flexible and easy to maintain," explains the hospital's revenue cycle director, who was previously the surgical services business manager.

"When you do the year-end adjustments, you have just 14 categories to manage" rather than hundreds of procedures.

There are also some drawbacks.

It is not as easy to produce reports by procedure or to compare costs across facilities, she notes. For example, podiatry, eye surgery, and some general surgery procedures fall into the same category, making it hard to produce a report on procedure-specific charges and costs.

Minutes and levels

Hospital D, with 300 beds, 12 major ORs, 1 cystoscopy room, and 6 outpatient ORs, charges by actual minutes the patient is in the OR and by 8 levels. The first min-

Be able to justify your charges.

ute is loaded to cover the setup costs for a room and overhead.

The 8 levels of service are based on the variable costs associated with procedures of differing complexity.

- out-of-OR procedures
- mini-diagnostic
- minor
- major
- major extensive
- open heart
- trauma
- multisystem trauma.

Major extensive cases, for example, are those that involve multiple organ systems or vessels and complex spine cases. Criteria for this level include:

- 3 to 4 FTEs
- setup and cleanup time
- use of complex equipment such

as a cavitron ultrasonic surgical aspirator (CUSA) or navigation system.

The level is automatically assigned by the scheduling system when the case is scheduled. For new procedures, the clinical coordinator and OR business manager work with the informatics analyst to assign a level.

In this OR business manager's view, advantages of using the charging levels outweigh the disadvantages. "Charging by level allows us to have a streamlined, standardized approach."

Previously, the hospital used a procedure-based charging system, which was more subjective and did not consider revenue implications.

The level-based charges have been easier to maintain and have shortened the charging process.

"Charges are processed the same day or following day, which has positive revenue implications," she says.

Her caveat about setting up or converting a charging system: Understand your OR information system and its capabilities for

Continued on page 22

Caveats on charging levels

There is no standard method for assigning levels for OR charging.

"The basic principle is that you need a way to make sure the patient is fairly assessed for an amount that reflects the actual cost of the case, including personnel and capital equipment," says Keith Siddel, MBA, of HRM Consulting.

"This is often driven by current Medicare reimbursement methods, which do not allow separate charges for capital equipment and routine supplies."

Level-based charging enables hospitals to build in costs of supplies and equipment that are not separately billable.

Pitfalls of charging levels

A disadvantage of using charging levels based on average resource utilization is that it doesn't capture data on vari-

ances in utilization among surgeons performing the same procedure, Siddel cautions. Another drawback is that patients having the same procedure will be charged the same, even though their surgeons use differing resources.

For example, Surgeon A and Surgeon B both perform total hip replacements. Surgeon A routinely uses 2 staff members, a moderate amount of supplies, and moderately priced implants. Surgeon B uses 3 staff members, many more supplies, and high-priced implants.

If all total hip cases are assigned to the same level, one patient will be charged too much and another too little, he notes. Plus, the hospital isn't capturing data on individual surgeons' resource consumption through its charging system. That data could be used in working with surgeons to manage costs.

Continued from page 21

capturing the necessary data. Assessment of the system was built to capture the data needed for supply/charge management, such as lot and serial numbers, vendor-delivered nonstock item details, and product costs.

Specialty-based charges

Hospital B, with 19 ORs, moved away from using acuity levels about 5 years ago and now charges by specialty groupings, using the actual minutes the patient is in the room.

The change was made because of concern the levels weren't being assigned uniformly, notes the OR's business director. There were also questions about how secondary procedures would be charged and

reimbursed. In addition, some surgeons were concerned about how their self-pay patients would be charged.

Specialty-based charging made sense, he explains, because, "We staff by specialty, do our budget by specialty, and do our volume projections by specialty."

The specialty groupings include: orthopedics, gynecology, general surgery, ENT, maxillofacial surgery, plastic surgery, and neurosurgery.

Advantages of specialty charges

Among the advantages he sees are:

- Supplies that are no longer charged for can be taken off the chargemaster, simplifying maintenance.
- Specialty-specific costs of equipment such as neuromonitoring

devices, spinal components, and laser technicians can be included in the specialty charges.

A major advantage is the ability to justify the charges, increasingly important in an age of transparency.

"The business office loves it," he says, "because when anyone questions the charges, it's easy to show what the charges are based off of. Being able to justify your charges is what you want to do."

Limitations of specialty-based charging

Setting up the charges was tedious, he acknowledges.

"We took a year's worth of data and attributed the costs per case. It was in depth," he says.

The process took place about 3 to 4 months before the ORs went live with a new information system, so the new charging structure could be built in.

How's the system working?

"Excellent," he says. "Some of the costs went down on smaller cases, which benefits the cash patients."

"On some, we found we were undercharging, which results in more revenue," though that was not the intent of the project.

Standard minute charges

Hospital E, which has 11 ORs and 240 beds, uses a standard per-minute OR charge rate. The rate is based on the hospital's revenue and margin targets. The hospital benchmarks its charges with others in the region and tries to be at 10% less than its peers.

Insurance companies rarely challenge minute charges, the OR business associate finds, noting that "if you charge by item, that seems to be more of an issue."

Per-minute charges also are less burdensome for the nursing staff than recording supplies used, he says.

The minute charges are not differentiated by level. "A simple D&C [dilatation and curettage] here is very expensive," he notes.

Implants are charged separately. Hip and knee prostheses have a tiered charging schedule based on whether a low-, medium-, or high-demand construct is used. The surgeon determines the construct to be used. Total joint prostheses also are purchased using a capitated pricing structure based on the demand levels.

"It's nice because the vendors charge us a flat fee, and they are responsible for stocking themselves," he says. "We don't have to worry about the product number. On the patient's bill, it's one charge."

Bundled charges little used

With a few exceptions, these 5 hospitals make little use of bundled charges; that is, flat-rate, per-procedure charges that cover OR time and related expenses.

Flat-rate charges apply primarily to specific procedures for which an outside contractor is used, such as shockwave lithotripsy and prostate laser vaporization.

Hospital E, which performs a high volume of bariatric surgery, charges a flat rate for those procedures performed by one group of physicians.

Bundled payment for spine

Reflecting what is likely to be a trend, Hospital E has one insurance contract for lumbar spinal fusion that pays a bundled rate to the hospital and physicians.

"You have to watch [these contracts] as new implants and materials come along," the OR business associate observes, because the hospital's costs can consume more of the payment.

The surgeon's office likes the bundled arrangement, he notes, because it doesn't have to file a

What is chargeable, billable?

The Centers for Medicare and Medicaid Services (CMS) has not provided a list of what is chargeable or billable.

"Unfortunately, there is no hard-and-fast list. Therefore, you need to go by broad categories," says Keith Siddel of HRM Consulting, Creede, Colorado.

These are general guidelines for what is *not* separately chargeable:

Routine supplies used for the staff

Any supplies used by the staff in providing services may not be separately charged or billed. Examples: gowns, gloves, and hats.

Routine supplies used by patients

In general, any item used 70% of the time for most patients is not separately chargeable or billable.

"A lot of commercial payers say that if you don't document

an item, you can't charge for it," Siddel says.

You also can't charge for personal items given to patients.

"This includes anything a hotel wouldn't charge you for, like shampoo or toothpaste," he says.

In the OR, this can get tricky. For example, you would not charge for a light handle cover because that is routine. But what about items used only when you perform a particular procedure? Most providers and CMS have never defined routine as an item "routinely" used only for a certain type of procedure. When considering whether something is routine, look at the general patient population in a particular care area.

Capital equipment

Most capital equipment is not separately chargeable because these are items that are depreciated on the cost report.

claim, but there is an administrative burden on the hospital.

Bundled payments could become more common. Medicare has a demo underway and is scheduled to begin a voluntary bundled payment pilot in 2013 under the health care reform law. ❖

—Pat Patterson

Examples of the level matrices for Hospitals C and D are in the OR Manager Toolbox at www.ormanager.com

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New system for reporting anesthesia events

The first nationwide system for collecting adverse events from anesthesia, pain management, and perioperative care has been set up by the Anesthesia Quality Institute.

The intent of the Anesthesia Incident Reporting System (AIRS) is to collect information to help improve patient safety. Reports can be submitted anonymously or confidentially over a secure connection at www.aqiairs.org. ❖

Joint Commission lists top hospital performers

For the first time, the Joint Commission has named the top performing hospitals on its key quality measures. On the list are 405 hospitals (about 14% of those accredited) that met 2 criteria for 2010:

- 95% or higher performance on a composite of all accountability measures the hospital reports
- 95% or higher performance on each accountability measure the hospital reports (assuming 30 or more cases are reported).

The 22 evidence-based measures cover surgical care as well as care for heart attacks, pneumonia, and children's asthma.

Performance on the surgical measures for all accredited hospitals has risen dramatically to 96%, up from 82% in 2005.

Joint Commission President Mark Chassin, MD, said that the new recognition program has set a "high bar," and only the most rigorously tested measures were selected for the program.

"We have focused on a group of measures that are uniformly excellent in meeting all of those criteria," he said in a press call.

The hospital-specific data itself is not new, having been available for some time on the Joint Commission's Quality Check website and Medicare's Hospital Compare website.

Naming the top performers is consistent with the public's demand for transparency and the pay-for-performance programs of the federal and state governments as well as many private payers, he said.

Asked why some nationally renowned medical centers are not on the list, Dr Chassin said larger hospitals "have a lot more work to do" than smaller ones, especially if they are reporting on multiple measures. On the other

Surgical care measure results

Overall 2010 compliance for Joint Commission surgical care measures.

- Surgical care composite: 96.4%
- Antibiotics given within 1 hour before first surgical cut: 97.4%
- Appropriate prophylactic antibiotics: 97.8%
- Stopping antibiotics within 24 hours: 95.7%
- Cardiac patients with 6 am blood glucose measurement: 94.1%
- Patient with appropriate hair removal: 99.7%
- Beta-blocker patients who received a beta-blocker perioperatively: 94.4%
- Prescribing venous thromboembolism (VTE) medicine/treatment: 95.2%
- Receiving VTE medicine/treatment: 93.7%
- Urinary catheter removal: 91.3%

Source: Joint Commission. *Improving America's Hospitals*, 2011.

“
Performance
has risen
dramatically.
”

hand, "they have more resources to do the work." He said the measures might not be a priority, "or they might be happy with 85% performance."

He said he hoped the recognition program would motivate hospitals "to do even better."

Small and rural hospitals are over-represented among top performers, and academic medical centers are under-represented, he acknowledged.

That indicates "you don't have to be a big hospital to do well.

And if you're a big hospital, that doesn't mean you do well without paying attention to processes of care that can be done extremely well and consistently over long periods.

"You have to work at it to get the systems to support excellent performance."

Performance counts in accreditation

How well hospitals perform on the accountability measures is being woven into the accreditation process. Beginning January 1, 2012, accredited hospitals will have to meet a target composite score of 85% on the accountability measures. The requirement does not apply to critical access hospitals. ❖

The top performer list and report are at www.jointcommission.org/accreditation/top_performers.aspx

OR leaders gather in Chicago

A record-breaking number of OR directors, managers, and business managers converged at the Hyatt Regency Chicago for the 24th Annual Managing Today's OR Suite conference September 28 to 30, 2011.

The 1,029 attendees heard information-packed programs, viewed innovative posters, networked with colleagues, and visited the 95 exhibitors. Attendees took time to gather ideas to help them in their roles and to reflect on the work they do every day.

In her keynote, Eileen McDargh, CSP, CPAE, president of McDargh Communications, explained how participants can use "radical resiliency" to transform their future in the face of turbulent times. The keynote was sponsored by Kimberly-Clark Health Care.

Taking her cue from a Tina Turner song, McDargh, an award-winning author and a consultant, told the audience, "You are simply the best."

Radical resiliency

"We cannot go back," said McDargh, who said resiliency is about "growing through" challenge, not about bouncing back. Resilient people have developed 4 skills: adaptability, agility, laughability, and alignment.

Adaptability includes challenging common knowledge and being open to inquiry. McDargh advised asking questions such as, "What is it I'm thinking, and does it serve me? Am I looking for viewing points, not just a point of view? How can I constantly turn around so I see more and more options?"



Jon Lloyd, MD, FACS, spoke about harnessing the power of ideas from front-line staff to make lasting change.



"Laughter is the shortest distance between two people," keynoter Eileen McDargh told the audience in her talk titled *Radical Resilience*.



The audience greets keynoter Eileen McDargh, who opened the conference.

McDargh said *agility* is "speed coupled with wisdom." It's important to act quickly when there is a problem because "action is the antidote for anxiety." Agility also includes facing what you fear and moving forward, and not becoming "too comfortable."

"Laughter is the shortest distance between two people," McDargh said in explaining *laughability* as a skill for resilience. It's important to find the humor in situations.

"*Alignment* is the secret to sustainability," McDargh said. Keep-

ing focused on the big picture and the purpose of what you do helps maintain alignment.

Positive deviance yields positive results

Jon Lloyd, MD, FACS, senior associate for the Positive Deviance Initiative at Tufts University, spoke on positive deviance (PD), which is based on the observation that in every community are individuals or groups whose uncommon behaviors or strategies have en-

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Managing Today's OR Suite



OR Manager of the Year Christine Halowell, MS, RN, CNOR, accepts the award from OR Manager editor Pat Patterson.



Attendees Peggy Harewood and Parrish Mills enjoy the Thursday luncheon.

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abled them to find better solutions than their peers using existing resources. PD focuses on *practice* rather than *knowledge*. "Knowledge alone does not change behavior," Dr Lloyd said. For example, providers know hand hygiene and barrier precautions reduce infection, but they continue not to practice them consistently.

PD, he said, is a "strengths-based, problem-solving approach" that relies on actively listening to people. He became interested in PD when he read how it had been used to improve childhood malnutrition in Vietnam and has found it be applicable to health care.

"Solutions to seemingly intractable problems already exist in your OR and hospital," he said. "Your front-line staff are your gurus; no one knows what they know about their work." PD is an approach for staff to discover and spread their hidden solutions. In the PD process, the "community" moves through the following steps: define, determine, discover, design, discern, disseminate. "It is the community that defines its problems," said Dr Lloyd. Dr

Lloyd was involved in bringing PD to the VA Pittsburgh Healthcare System in a project to prevent MRSA transmissions. "Front-line staff turned out to be the world experts on preventing MRSA," he said. His specific examples illustrated how staff developed ownership in the solutions. The efforts paid off in reduced MRSA rates.

A light-hearted break

It wasn't all education for attendees, who enjoyed the sounds of The Laryngospasms, an "almost famous" group of certified registered nurse anesthetists. The crowd laughed along with OR-related songs like "Wakin' Up Is Hard to Do," "Rollin', Scopin,'" and "Mister Gas Man," as group members sang and danced with audience members.

Live your life, dream your dreams

Wrapping up the conference was "Live your life...dream your dreams," presented by Sharon Weinstein, MS, RN, CRNI, FACW, FAAN, president, Core Consulting Group, and author of *B is for Balance*. Weinstein encouraged participants to believe in their dreams

and to "always think, what if." She shared her moving personal story of suffering from childhood abuse, becoming a nurse, and asking her husband of 40 years to marry her after a handful of dates. She said the last event made her realize that "In life, if you don't ask, you don't get."

Weinstein shared helpful life strategies, including "being present" in the moment, which opens you up to benefits such as reduced stress, innovation, and higher performance. Another strategy is to create balance: "You will be happiest, healthiest, and most productive when you learn how to manage your energy and your time—that is, your *work* time, and your *own* time." ♦

—Cynthia Saver, MS, RN

Cynthia Saver, a freelance writer, is president of CLS Development, Inc, in Columbia, Maryland.

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Ambulatory Surgery Centers

Seeking a cure for ASCs' block schedule gridlock

The Christiana SurgiCenter, a 7-OR ambulatory surgery center (ASC) was losing volume. Although its ORs were staffed 8 hours a day, surgeons were saying they couldn't get their cases scheduled.

The problem turned out to be the block schedule. It was like a patchwork quilt.

"Our blocks were small and impossible to manage in an efficient way," says Kenneth Silverstein, MD, medical director, perioperative services and chairman of the Department of Anesthesiology for the center's parent, the Christiana Care Health System, Wilmington, Delaware.

Surgeons had blocks for as little as a half-day a month.

"Nobody used 100% of their block," he says, "leaving gaps that were hard to fill." On average, only 32 of the 48 staffed hours, including turnover time, were used on a given day. Some surgeons who wanted to perform more cases couldn't because they would run into the following block.

The surgery center had seen its

The solution was radical.

volume slip to about 6,500 procedures a year from 10,000.

The solution was radical—wipe the slate clean and start over.

Five months into the new scheduling model, volume is up 7.5%, and productivity per OR has risen by 23%. Surgeons are bringing more cases to the center, and the staff is happier.

Trying to fix block schedule

The center's leaders had tried previously to optimize the block schedule in various ways, including adjusting the release times for blocks. Though the policy was for the surgeons to maintain 75% block utilization, it was difficult to en-

force. Surgeons often had a reason why their utilization had dropped.

"Some cases were clear-cut. Others hovered in the 60% to 70% range," Dr Silverstein says.

With competition from nearby ASCs, there was concern about enforcing the policy too aggressively.

Building the 'ideal OR'

After much deliberation, the decision was made to start over. The goal: Build the "ideal OR schedule."

Under the new plan, OR time is allocated to specialties based on their historical utilization of the ASC for the past 2 years. For example, 45% of the center's case-load is gynecologic surgery, so 45% of the schedule is committed to the GYN surgeons.

"It's an open-access system," Dr Silverstein notes. "It takes away all of the individual blocks and allocates time to the specialties based on how they use the center."

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The new schedule, introduced in March 2011, started with 5 rooms allocated and staffed for 8 hours a day, equaling 40 hours per week. Of this, 45% was allocated to the GYN service.

"It doesn't come out to be a round number, but if you do the modeling, you can work it out," he says. On Fridays, for instance, 60% of cases are GYN, so 3 of the 5 rooms on that day are allocated to the GYN surgeons.

A 6th room is staffed for 8 hours but left for open access. Originally, the plan was to cut back on staffing this room after 3 to 6 months.

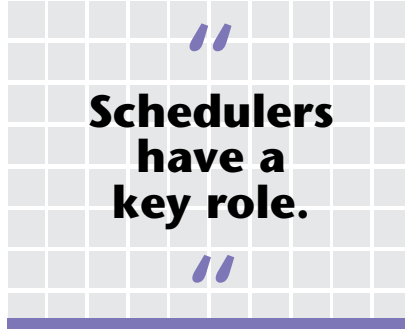
"We thought the 6th room would wither. But that was wrong," he says. "We have filled the 6th room and are getting ready to open a 7th to accommodate the volume."

Key role for schedulers

Schedulers have a key role in the new system. They are able to adjust OR time on the fly. For example, if the ENT surgeons aren't using their time, and the schedulers get a call from a GYN surgeon asking for time, then GYN time is booked. The schedulers know they can schedule the case into the ENT time.

"Basically, we accommodated the business coming through the door," Dr Silverstein says. "That says to the surgeons, 'If you have a case tomorrow, call us, and we'll put it on.'"

That has proved to be a major benefit of the new scheduling model. It also gives the center's management more control over how cases are booked.



Schedulers have a key role.

Managing the transition

Moving away from block scheduling caused the predictable turmoil. Close and frequent communication with surgeons and their offices was needed to manage the change.

The main message was, "We're not taking away your block time; we're improving access." Still, for some it was a tough sell.

Dr Silverstein and Judy Townsley, MSN, RN, CPAN, the vice president for perioperative services, met with individual surgeons and their staffs at their offices to inform them about the new arrangement and how their cases could be grouped to use the new schedule most effectively.

For the offices, one of the big changes was to encourage surgeons to schedule their cases further ahead and to group them so they could be performed in sequence on the same day. Using that approach, a GYN surgeon can often perform 4 or 5 cases on the same day.

Cases can be scheduled so surgeons can follow themselves and "are not scattered all over the OR schedule like they were before," Dr Silverstein notes.

"A key was to work with the scheduling team and give them room to maneuver and negotiate with the offices," he says.

Managing the data

The historical data used in managing the schedule is captured by the perioperative nursing documentation system and stored in a data warehouse, where it is updated every night.

Dr Silverstein manages the schedule personally. He accesses the data using a program he describes as "like a pivot table on steroids."

"I can put the data in Excel, and do the modeling myself. I don't have to wait for a data analyst and 3-month-old data. I can tell you what we did yesterday."

He watches actual utilization and adjusts the schedule accordingly. For example, if the GYN caseload grows to 55% of the volume, the center will allocate more time to that specialty.

Results

The new plan has been in effect since mid-March 2011.

"We are witnessing essentially a 23% increase in cases," compared to the same period in 2010, he says. The average caseload has gone from about 25 cases to 30 cases a day. Financially, some trends have been reversed from unfavorable to favorable, including revenue and contribution margin. Labor expenses are on budget. Productivity is up from 3.8 cases per room in 2010 to 5 cases per room in 2011.

Staffing has not changed. The 6th room is staffed even if the room isn't filled.

"That allows some operational efficiency on the day of surgery," says Townsley. For example, the room can be used for certain surgeons to flip cases; that is, move

Continued on page 30

A new role for RNs: Assisting in regional blocks

A new model for performing regional peripheral nerve blocks in the preoperative holding area with RN assistance has been a big win for Stony Brook University Medical Center Ambulatory Surgery Center (ASC) in Stony Brook, New York. The model has allowed orthopedic surgeons to perform major reconstructive procedures in the ASC and has advanced the clinical practice for RNs, enhanced patient safety, and shortened OR times.

Regional blocks historically had been performed in the hospital OR by anesthesiologists with anesthesiology resident assistance.

"No clinical practice guideline or policy for RN assistance with nerve blocks was available at the medical center or ASC or any other organization, so we wrote our own policy and developed a procedural model for safe clinical practice," Thomas Halton, BSN, RN, CNOR, told *OR Manager*.

Developing and implementing the model was a 2-year project, ending in May 2011, says Halton, who is assistant director of nursing at Stony Brook University Medical Center and nurse manager of its freestanding ASC.

RN role defined

"Our main objective was to clearly define the role of the RN under the scope of practice allowable under the New York State Board of Nursing," says Halton.

Halton and his team drew up a set of critical elements for RNs for peripheral nerve blocks.

Among the elements, the RN:

- ensures an informed consent to perform the block is completed
- participates in a time-out to verify the correct block site

The orthopedic program expanded.

- confirms that all medications drawn up by the anesthesiologist for the block are labeled
- may aspirate the syringe to check for intravascular placement and inject block medications under the direction of a qualified anesthesiologist
- provides continuous monitoring of the patient during the procedure
- is certified in moderate sedation and may sedate the patient at the direction of the anesthesiologist
- participates in in-services on regional blocks and completes an annual competency.

The preoperative holding area nurses were trained to assist with the nerve blocks. "This was a challenge for us in the beginning because preop nurses are not used to assisting physicians during procedures. They had never done this type of procedure before," says Halton. The preop nurses were excited to learn the new procedure, and the program has advanced their clinical practice. Two of the preoperative holding rooms were designated for the blocks.

Program benefits

The regional anesthesia program has benefits for the patient and the ASC.

- Postoperative pain is decreased because the peripheral nerve block effect can last up to 24 hours. "Some patients don't have any pain at all," says Halton.

With blocks, opioids given with general anesthesia are not needed, or lesser amounts are given. Nausea and vomiting from opioids are eliminated, which enables an earlier discharge. Patients are awake and able to eat and drink before discharge.

- The potential for a wrong-site error has been greatly reduced with the new policy and process changes. Wrong-site procedures involving regional blocks are among the top 3 sentinel events in outpatient surgery, as documented in the literature, notes Halton. So far, with the new model, no such errors have occurred because communication is more standardized and informed consent is obtained.
- Performing the block in the preop holding area saves 20 to 30 minutes in OR time and expedites patient turnover. "The ambulatory surgery setting moves at a rapid pace. We want these patients to be pain-free and able to go home as soon as possible," Halton says.
- Cost savings are realized because of the reduced OR time, which is more expensive than preoperative holding area time. Also, the program reduces the cost to patients because the patient is not charged extra for the regional block, which is provided as a service.
- The regional block program has allowed the ASC to advance its

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Block schedule gridlock

Continued from page 28

from one OR directly to the next.

"All of the block holders are managing to get their cases done," notes Dr Silverstein.

A surgeon who previously could do only 3 cases in her block is able to get a 4th one on. "We have surgeons who are doing 5 to 6 cases in a row," he says. "We no longer have blocks that are keeping us from scheduling cases. Our schedule is filling up 6 weeks down the line."

With the new scheduling model in place, attention is turning to improving patient flow for the larger volume. That includes rethinking logistics for the preoperative process, on-time starts, and turnover time.

Says Townsley, "The block schedule truly is for the convenience of the surgeons, but it was destroying us fiscally as a hospital operation."

Though the center's leaders had tried working with the physicians' offices to better manage the block schedule, "none of it made any difference," she says. "This has made a difference." ♦

—Pat Patterson

New role for RNs

Continued from page 29

reconstructive orthopedic surgery program to include procedures such as rotator cuff and labral repairs of the shoulder and anterior cruciate ligament reconstructions of the knee.

- Patient satisfaction has improved, as evidenced recently by a #1 ranking in patient satisfaction as reported by Press-Ganey's University HealthSystem Consortium group, notes Halton.

Preoperative education contributes to high patient satisfac-

tion. Halton and his team created a patient-teaching video explaining regional blocks (<http://www.sbdaysurgery.com/> click on Educational Videos, then Adult, All About Nerve Blocks). The educational video is provided to help patients make informed decisions before consenting to the nerve-block procedure.

The improvement in preoperative teaching has boosted the ASC's Press-Ganey patient satisfaction score to its highest earned, placing it in the 99% range, says Halton. ♦

—Judith M. Mathias, MA, RN

Proposals invited for 2012 conference

Share your success at the landmark 25th Annual OR Manager Conference to be held October 24 to 26, 2012, at Caesars Palace in Las Vegas.

Submit your proposal for a 75-minute breakout or a full-day pre-conference seminar at:

www.ormanagerconference.com/call_for_presentations.php

The conference focuses on practical topics related to surgical services management, such as OR throughput, staffing, and cost management.

The conference will include a track related to business management of the OR.

Deadline is November 1.

Questions? E-mail Judy Dahle, MS, MSG, RN, education coordinator, at jdahle@accessintel.com or call 877/877-4031.



Statement of Ownership, Management, and Circulation (Requester Publications Only)

1. Publication Title: OR Manager 2. Publication Number: 8756-8047 3. Filing Date: 10/14/11 4. Issue Frequency: Monthly 5. Number of Issues Published Annually: 12 6. Annual Subscription Price \$99. Complete Mailing Address of Known Office of Publication: Access Intelligence, 4 Choke Cherry Road, 2nd Floor, Rockville, MD 20850-4024 Contact: George Severine Telephone: 301-354-1706 8. Complete Mailing Address of Headquarters or General Business Office of Publisher: Access Intelligence, LLC, 4 Choke Cherry Road, 2nd Floor, Rockville, MD 20850-4024 9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor: Publisher: Elinor S. Schrader, 4 Choke Cherry Road, 2nd Floor, Rockville, MD 20850-4024 Editor: Pat Patterson, 4 Choke Cherry Road, 2nd Floor, Rockville, MD 20850-4024 10. Owner if the publication is owned by a corporation, give the name and address of the corporation immediately followed by the names and addresses of all stockholders owning or holding 1 percent or more of the total amount of stock: Veronis Suhler Stevenson, 55 East 52nd Street, 33rd Floor, New York, NY 10055 11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages, or other Securities: None 12. Non-profit organization: not applicable. 13. Publication: OR Manager 14. Issue Date for Circulation Data: September 2011 15. Extent and Nature of Circulation: Average No. of No. Copies of During Preceding 12 Months/ No. Copies of Single Issue Published Nearest to Filing Date: a. Total Number of Copies (Net press run) 2,714/ 2,900 b. Legitimate Paid and/or Requested Distribution (1) Outside County Paid/ Requested Mail Subscriptions 2,278/ 2,492 (2) Inside County Paid/Requested Mail Subscriptions 0/0 (3) Sales Through Dealers and Carriers, Street Vendors 0/0 (4) Requested Copies Distributed by Other Mail Classes 23/ 23 9c. Total Paid and/or Requested Circulation 2,301/ 2,515 d. Nonrequested Distribution (By Mail and Outside the Mail) (1) Outside County Nonrequested Copies 0/0 (2) Inside-County Nonrequested Copies 0/0 (3) Nonrequested Copies Distributed Through the USPS by Other Classes of Mail 0/0 (4) Nonrequested Copies Distributed Outside the Mail (Include Pickup Stands, Trade Shows, Showrooms, and Other Sources) 0/0 e. Total Nonrequested Distribution 0/0 f. Total Distribution (Sum of 15c and 15e) 2,301/ 2,515 g. Copies not Distributed (Office, Returns, Spoilage, Unused) 413/ 385 h. Total (Sum of 15f and g) 2,714/ 2,900 i. Percent Paid and/or Requested Circulation 100%/ 100% 16. Publication of Statement of Ownership for a Requester Publication is required and will be printed in the November 2011 issue of this publication. 17. Signature of Owner: Don Pazour Date: 10/14/2011 PS Form 3526-R, September 2007

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At a Glance

FDA collaborates to prevent surgical fires

The Food and Drug Administration and 16 partner organizations have launched an initiative to:

- increase awareness of factors contributing to surgical fires
- disseminate tools for preventing surgical fires
- promote surgical fire risk reduction practices.

Tools include a free fire safety video developed by the Anesthesia Patient Safety Foundation and AORN's Fire Safety Toolkit, which can be downloaded for free through Nov 13.

—www.fda.gov/Drugs/DrugSafety/SafeUseInitiative/PreventingSurgicalFires/default.htm

New tool helps identify green products

Practice Greenhealth has released 13 standard questions to help purchasers identify, select, and procure "green" medical products. The free tool excludes electronic products, to be addressed later.

The questions were selected with input from hospitals, health systems, suppliers, and group purchasing organizations.

The tool is part of the organization's Greening the Supply Chain

initiative launched earlier this year. Practice Greenhealth is a networking organization for institutions committed to eco-friendly practices.

—<http://practicegreenhealth.org/sites/default/files/upload-files/standardizedenvironmentalquestionsformedicalproductsversion1final100711.pdf>

New VTE guideline for hip, knee replacement

The American Academy of Orthopaedic Surgeons has released an updated guideline on preventing venous thromboembolism in patients having elective hip and knee arthroplasty. Postoperative recommendations include:

- encouraging patients to walk as soon as possible
- administering anticoagulants
- using mechanical compression devices.

The authors recommend against postop ultrasound screenings because they were found not to reduce the risks of deep venous thrombosis or pulmonary embolism.

Preop recommendations include discussing with patients any history of blood clots and stopping medications such as an-

tiplatelet medications or aspirin.

—www.aaos.org/research/guidelines/VTE/VTE_guideline.asp

Spine surgeons benefit by implanting own devices

Some spine surgeons have started companies to design and make their own implant devices, enabling them to benefit financially from the devices, the October 8, 2011, *Wall Street Journal* reports. Because of the less stringent approval process for devices nearly identical to ones on the market, the devices are approved in 90 days.

Surgeon-owned device makers say they reduce costs because their companies don't have marketing and sales expenses, and they charge hospitals less.

Critics say device ownership gives surgeons an incentive to perform unnecessary procedures.

The federal antikickback law doesn't specifically address surgeons using devices made by companies they own, but the Office of the Inspector General has advised that no more than 40% of a company can be owned by those who generate business for it, the *Journal* says.

—<http://online.wsj.com>