Healthcare Benchmarks and Quality Improvement

The Newsletter of Best Practices

January 2011: Vol. 18, No. 1
Pages 1-12

IN THIS ISSUE

Accountable care organizations in 'very early stages' of growth

Health reform component has potential to improve quality, safety

Of all the recommendations of the new health care reform law, perhaps the one with the greatest potential for widespread improvement in quality and safety is the accountable care organization, or ACO, according to some experts. Although outlined in the new law, experts are still seeking universal agreement on exactly what is envisioned and how they will operate, but ACOs already are being formed, and as they mature, agree observers, the model will become clearer. Right now, physician organizations and hospital organizations seem to be jockeying for position, each asserting that their constituents should be the key players in ACOs.

In short, an ACO is "a provider organization that takes on responsibility for meeting the health needs of a defined population, including the total cost of care and the quality and effectiveness of services," according to a report recently published by the Commonwealth Fund and written by the leaders of the health reform movement in Vermont.

A number of organizations pursuing ACOs, including the Vermont Health Care Reform Commission have adopted the Institute for Healthcare Improvement's (IHI) "Triple Aim" outline as they go forward. "Basically it says that true transformative health reform can come only when you optimize three aims concurrently: the health of the population, the patient's experience of care (both the subjective response and the quality of the experience), and the per capita cost of

KEY POINTS

- 'Triple Aim' is at the heart of several ACO initiatives.
- All aims must be valued equally and concurrently.
- ACOs will look different in various locations, populations.

AHC Media LLC

care," explains **Amy Boutwell**, MD, MPP, director of health policy strategy for IHI. "The observation is that usually an initiative will try to optimize one or two of the components — and that will not get us where we want to be. We have to get out of the tendency to achieve one of these at the expense of one or another."

Also supportive of the "Triple Aim" is the Premier Healthcare Alliance, which has established an ACO Implementation Collaborative, according to Boutwell. "There is widespread agreement that quality and cost measurement is central to determining the success of the ACO and monitoring for unintended consequences," says **Wes Champion**, senior vice president of Consulting Solutions. "Agreeing to the definition of 'value' is the difficult first step in the measurement process."

He agrees with Boutwell on the need to balance all three components. "All three of these aims need to be balanced and act as counterweights to ensure the ACO delivers true value," he says. "For instance, when cost is the sole focus, you end up with HMO-like care. When satisfaction is the sole focus, you end up delivering care that may or may not be necessary to improve outcomes. The triple aims are what makes the ACO approach different than models tested in the past and will help ensure success."

Boutwell adds that the entity that is able to optimize the "Triple Aim" is an "integrator." "There needs to be a super-ordinate structure that looks at cost, quality, and health across settings and over time," she says. "The word 'integrator' might very well be synonymous with an ACO, and an ACO might optimize the 'Triple Aim.'"

"We use the term 'community health systems' as our version or label for the ACO," says **Jim Hester**, PhD, director of the Vermont Healthcare Reform Commission. "But there's no real prescription or formula for what it looks like." In other words, he explains, there are a number of organizations that have certain desirable features.

"You have the PHO's — the physician hospitals organizations," Lester says. "They could contract with commercial payers for risk-sharing agreements. There is also a second model, the Federally Qualified Health Center [FQHC], which has a critical access hospital as a wholly owned subsidiary. A third model involves some physician organizations, networks, or IPAs that have been formed and are interested in being ACOs; there is tremendous flexibility."

The ACO, adds Boutwell, can do much for the local population. "It can coordinate care, do preventive care, avoid costly tests and hospitalizations, and that will improve the overall health of the population and quality of care. As the overall payer, an integrator of that care will do well financially by controlling capital costs."

She stresses that while IHI supports the ACO concept in the sense that it recognizes that the role of an integrator across settings over time is a powerful asset, "we are not actively coaching organizations on how to become ACOs."

Establishing goals

While the definition of an ACO is still being fleshed out, that doesn't stop organizations from establishing well-defined goals. For example, says Champion, "We believe there are six core components that need to be

Healthcare Benchmarks and Quality Improvement (ISSN# 1541-1052) is published monthly by AHC Media LLC, 3525 Piedmont Road N.E., Building Six, Suite 400, Atlanta, GA 30305. Telephone: (404) 262-7436. Periodicals Postage Paid at Atlanta, GA 30304 and at additional mailing offices. USPS# 0012-967.

POSTMASTER: Send address changes to Healthcare Benchmarks and Quality Improvement, P.O. Box 740059, Atlanta, GA 30374.

SUBSCRIBER INFORMATION

Customer Service: (800) 688-2421. Fax: (800) 284-3291. E-mail: customerservice@ahcmedia.com. Hours of operation: 8:30-6 Monday-Thursday, 8:30-4:30 Friday, EST.

Subscription rates: U.S.A., one year (12 issues), $549. Add $17.95 for shipping & handling. Outside U.S., add $30 per year, total prepaid in U.S. funds. Discounts are available for group subscriptions, multiple copies, site-licenses or electronic distribution. For pricing information, call Tria Kreutzer at 404-262-5482. Missing issues will be fulfilled by customer service free of charge when contacted within one month of the missing issue date. Back issues, when available, are $92 each. (GST registration number R128870672.)

Editor: Steve Lewis, (678) 740-8630, (steve@wordmaninc.com).
Senior Vice President/Group Publisher: Don Johnston, (404) 262-5439, (don.johnston@ahcmedia.com).
Executive Editor: Russ Underwood, (404) 262-5521, (russ.underwood@ahcmedia.com).
Managing Editor: Jill Robbins, (404) 262-5557, (jill.robbins@ahcmedia.com).

EDITORIAL QUESTIONS

For questions or comments, call Steve Lewis at (678) 740-8630.

included as part of any successful ACO implementation:

1. People-centered foundation. All components should be designed from a people-centric perspective to ensure better engagement, activation, satisfaction, and increased self-accountability for health.

2. **Health home.** ACOs will depend on a Primary Care Practice (PCP) approach that offers 24/7, 360-degree care management in order to improve outcomes.

3. High-value network. ACOs require a network of non-PCP providers with integration and care coordination functions to optimize patients' experiences as they move across the continuum. It is intended to be a continuous learning system that constantly improves outcomes.

4. Population health data management. ACOs must be wired to enhance the clinical and administrative aspects of care. They must have the ability to use information from many sources to optimize outcomes and achieve business success.

5. ACO leadership. ACOs require a sophisticated leadership function that overcomes fragmentation in health care, including reimbursement arrangements that reward providers for achieving positive outcomes. Leadership models should include joint physician/hospital planning and communications, as well as legal, financial, and medical management.

6. Payer partnership. ACOs need payer partnerships based on deep operational interactions across a wide spectrum of services, including predictive modeling, case management, network and medical management, and financial reporting. This is a deeper and broader relationship than traditional arrangements."

Boutwell says there are a few examples in the United States that offer some clues as to what ACOs will look like. "You have the relatively successful HMOs of the '80s — for example, Kaiser and Intermountain Health Care. You can add Mayo and Geisinger," she says. "They are examples of what are currently called integrated delivery systems." For example, she notes, Geisinger owns and operates a health plan, hospitals, office practices, skilled nursing facilities, and home health care agencies, and employs doctors and nurses.

"If they can improve quality of care delivered in the hospital, they improve the patient's experience," Boutwell notes. "If they can avoid errors and inefficiencies of delivery of care, they save money. The whole can do better and experience better outcomes — financial, clinical, and so on — and no one gets hurt. In today's fee-for-service setup, if you reduce your readmission rate, you lose volume and money for reduced services. What we want to do is make improving health and care delivery rewarding."

Where we stand

While awaiting further clarification from the government on what an organization must do to be recognized as an ACO, health quality leaders are moving forward. In Vermont, for example, the last couple of years have been spent conducting a feasibility study with an eye toward some pilot projects. "We've identified a number of sites interested in becoming ACOs," says Hester. He adds that a learning collaborative at Dartmouth that involved the Brookings Institution provided year-long education for three sites. "We've been doing financial modeling on the impact of ACOs on hospitals, and it all came together in the last legislative session; we passed authorization for the first ACO pilot in the state, starting in 2012 and then adding two more," says Hester.

The potential benefits for hospitals, he continues, include being able to share in the savings that are achieved. "In addition, the emphasis on improving the patient care experience also plays into improving the health of the population, and the ACO will offer a wider range of interventions to help them to do that. And we will see changes like reducing unnecessary admissions, ED visits, and better managing chronic illness."

Premier's ACO Implementation Collaborative includes 23 health systems representing more than 80 hospitals and 1.5 million patients nationwide. The participants will interface both with Premier and amongst themselves as the collaborative moves forward. "Premier continually analyzes member health system performance data as a cohort and individually to identify areas, trends, and opportunities that drive performance and achieve goals," notes Champion. "We also provide educational meetings, resources, materials, and knowledge transfer tools to facilitate communications across participants."

In addition, he continues, "the ACO Implementation Collaborative meets face to face three times a year to share best practices, assess their strengths and weaknesses, discuss the most innovative components of their individual ACO implementation efforts, and prioritize efforts for improvement. Members in specific work groups also meet monthly to build on the six core components."

Collaborative members commit to sharing performance data across the collaborative, notes Champion. "In doing so, participants can easily

identify top performers and learn from them to create similar quality gains in their own organization," he explains. "They use a common set of metrics for success, collect hospital performance data, identify opportunities for improvement, and track results over time to prove the value of the ACO model."

Champion says that the collaborative is accepting new participants. "Premier has also launched an ACO Readiness Collaborative for health systems to develop the organization, skills, team, and operational capabilities necessary to become effective ACOs capable of lowering costs," he notes. "Building these capabilities will help them improve care coordination, efficiency, and quality and patient satisfaction so they can deliver accountable care in their communities." He says that more than 55 health systems representing more than 200 hospitals have joined the Readiness Collaborative.

More information coming

Ultimately, notes Boutwell, the government will determine if your organization qualifies as an ACO. "We are still early — really, really new," she says. "During the health reform season, the ACO really came on to the radar screen, and there is language in the actual bill. For example, it says there can be demonstrations, and CMS [the Centers for Medicare & Medicaid Services] will pay them differently if they manage efficiently over time."

There will be specific guidelines on what ACOs will generally look like, she continues, "but the important thing is that the bill recognizes an ACO in downtown Boston will look different from one in rural Kansas." While the federal government will need to define specifics for Medicare, she continues, "at the same time, hospital leaders will hear talk in their own areas — for example, their own organization may be forming an ACO — especially where hospitals are affiliated with each other and with physicians."

[For more information, contact:

Amy Boutwell, MD, MPP, Director of Health Policy Strategy, Institute for Healthcare Improvement, Boston, MA. Phone: (617) 710-5785.

Wes Champion, Senior Vice President of Consulting Solutions, Premier Healthcare Alliance. Phone: (877) 777-1552.

Jim Hester, PhD, Director of the Healthcare Reform Commission for the Vermont State Legislature, Montpelier, VT. Phone: (802) 734-1649.] ■

Wrong-site, wrong-patient surgeries persist

Without cultural change, timeouts, checklists less effective

Despite significant attention to wrong-site and wrong-patient procedures, including The Joint Commission's "Universal Protocol" and checklists developed at prestigious institutions, a new study reports "a persisting high frequency of surgical 'never events.'"[1]

The study looked at 27,370 physician self-reported adverse occurrences between Jan. 1, 2002, and June 1, 2008, derived from the database of the Colorado Physician Insurance Company. During that time, a total of 25 wrong-patient and 107 wrong-site surgeries were identified. Significant harm was noted in five of the wrong-patient procedures and in 38 of the wrong-site procedures.

The root causes were identified as follows:

- errors in communication: 100%;
- errors in judgment: 85%;
- failure to perform a "timeout": 72%;
- errors in diagnosis: 56%.

"The rationale for this study was that we wanted to see how many of these events were occurring five years after the introduction of the Universal Protocol," says **Philip F. Stahel**, MD, FACS, a visiting associate professor at the University of Colorado School of Medicine in Denver and lead author. "We assumed it should go down to near zero, and unfortunately that was not the case at all."

Stahel is not willing to say that these data mean the Universal Protocol does not work. "One issue is that we are looking at reporting and not true occurrence; there may be increased awareness and reporting," he notes.

Martin A. Makary, MD, MPH, an associate professor of surgery at Johns Hopkins University and author of an accompanying editorial, agreed. "... We should ... avoid the trap that these are rates of events, when in fact they are rates of reporting," he wrote. "These data actually describe an increase in reports not events."[2]

However, he also wrote the following: "The authors would likely agree with me that the real rate of wrong-site surgery is higher than their article reports. The reason is that non-anonymous, self-reported data understate the true incidence of any event."

That seems to be borne out by a recent experience Stahel recalls. During a recent lecture on avoiding wrong-site surgery, he asked attendees if any of them had witnessed or seen a wrong-site surgery. He did not get many responses, but afterward a surgeon came up to him and said that he did have one, but that he was ashamed to admit it.

"The thing that struck him most at the time of the timeout was there were nine providers and none raised concerns when he was about to operate on the wrong leg," notes Stahel.

The timeout, Stahel, continues, is safe "as long as we truly adhere to it." He notes, for example, that in some cases, the timeout had been applied but the surgeon amputated that wrong limb because he or she assumed the marking had been rubbed out. "Incorrect marking is still one of the pitfalls," he observes.

What about checklists such as those developed by Peter Pronovost while at Johns Hopkins or the World Health Organization? "I do believe in the role of checklists, but I do not believe they can completely solve the communication breakdown; we have to be accountable for our actions," Strahel says. "It sounds so simple, but it's not. If you replace clinical judgment and responsibility, it can stop providers from being critical of their thinking."

The system, he continues, "cannot keep us safe if we look at these tools as procedures that ensure we will no longer have wrong-site surgery. They do not fully replace the culture of patient safety we're trying to inculcate."

Addressing the causes

Since communication errors were present in 100% of the events, ensuring appropriate communication is clearly a critical goal. "You have to differentiate between verbal and written communication," notes Stahel. "I'm a strong believer in read-backs; pilots, for example, never take off without a read-back to the tower. I witness communication breakdowns almost every day, but 90% of them don't not lead to harm. I may be talking to another doctor about a patient, for example, and then realize we're talking about two different patients." (Stahel says he's currently involved in a study on the implementation of read-backs.)

What about the "critical thinking" he referred to earlier, and his assertion in the paper that providers who do use timeouts and checklists are sometimes not "mentally involved?"

"People hate additional administrative work; they hate new forms, they hate additional procedures implemented by administration, so I know there's huge resistance and reluctance among surgeons to use the Universal Protocol — they think it's useless," Stahel notes. Even if you do believe in these procedures, he adds, you can fail to be fully mentally involved.

How does he address this problem? "What I do is every 10 times or so, I abort the timeout and start from zero," he shares. "I say, 'Wait guys, you're not paying attention; let's re-do it.' Interestingly enough, after the second time everybody's listening to you."

As for completely moving to a culture of patient safety and accountability, "That's the hardest — if I could answer it I should be nominated for the Nobel," says Stahel.

He has, however, given it a lot of thought. "You can't change behaviors without a carrot-and-stick approach, so you need incentives to do a good job," says Stahel. One way to do that is to turn the tables on the standard approach and identify "always events" — i.e., always operate on the correct side and correct patient, always give antibiotics within 60 minutes of surgery, always wash your hands before and after seeing patients. "If you do these in 100% of your cases in a year, the incentive could be a 20% bonus," Stahel suggests. "The stick could be your bonus vanishes or your privileges are suspended for a couple of days. That's probably the only way we can make it effective."

"I think one lesson that's been learned in attempts to change culture is that certain things work well and others fail every time," wrote Makary. "For example, central mandates in isolation fail every time. Peer-to-peer behavior change or education from respected peers has a big impact. Part of that may be because surgery is a unique culture where surgeons, by and large, learn from other surgeons."

When doctors speak through training, he wrote, they speak the language of data. "When they see the data on the subject, it connects with them," he wrote. "Now there is good data to support a checklist and other similar tools." In addition, he said, effec-

KEY POINTS

- Communication errors cited in 100% of cases.
- Carrots and sticks' needed to engender cultural change.
- Staff members must be mentally engaged and accept accountability.

tive cultural change includes having nurses and techs feel comfortable speaking up when they see a safety concern. Culture change won't work, he concludes, "where the environment remains intimidating."

[For more information, contact:
Philip F. Stahel, MD, PhD, Visiting Associate Professor, University of Colorado School of Medicine, Denver. Phone: (303) 653-6463. E-mail: philip.stahel@dhha.org.]

REFERENCES
1. Stahel PF, Sabel AL, Victoroff MS, Varnell J., et al. Wrong-Site and Wrong-Patient Procedures in the Universal Protocol Era. *Arch Surg* 2010;145(10):978-984.
2. Makary, MA. The Hazard of More Reporting in Quality Measurement (Invited Critique.) *Arch Surg* 2010;145(10):984. ■

Motivate patients to stop smoking

Reimbursement for cessation counseling

A just-released study showing that smokers have significantly more complications post-surgery than non-smokers, including a higher death rate, coupled with new Medicare reimbursement for physicians who provide counseling to prevent tobacco use for outpatients and hospitalized patients have outpatient surgery managers taking a new look at smoking cessation programs.

The results from the study conducted by The Cleveland Clinic, released at the recent 2010 meeting of the American Society of Anesthesiologists, show increased incidents of adverse outcomes among smokers, including surgical-site infections, respiratory complications, pneumonia risk, unplanned intubation, artificial mechanical ventilation, cardiac arrest, heart attack, stroke, and death. The more patients smoke, the more complications they were likely to experience, the study found. *(See details of study's findings, page 7.)*

"Hopefully, surgeons can utilize the upcoming operation as a 'teachable moment' to educate their patients about their risks of postoperative wound infection, failure of the intended procedure — i.e. recurrence of an incisional hernia — hospital readmission, prolonged intubation, and postoperative pneumonia, which are clearly documented in the medical literature," says **John Maa**, MD, FACS, assistant professor in the department of surgery and assistant chair, surgery quality improvement program, at the University of California — San Francisco.

And now physicians have another incentive. Since Aug. 25, 2010, the Centers for Medicare & Medicaid Services (CMS) has covered counseling services to prevent tobacco use for outpatients and hospitalized patients. CMS will cover tobacco cessation counseling for outpatient and hospitalized Medicare beneficiaries:

- who use tobacco, regardless of whether they have signs or symptoms of tobacco-related disease;
- who are competent and alert at the time that counseling is provided; and
- whose counseling is furnished by a qualified physician or other Medicare-recognized practitioner. Some private payers have followed Medicare and also are reimbursing physicians for tobacco cessation counseling. There is no reimbursement from Medicare that covers the facility fee.

Some studies have indicated that people are more likely to quit smoking when they have a surgical procedure scheduled. During informed consent, surgeons can discuss active smoking and its risks "and many patients, once they are made aware of the potential adverse outcomes resulting from their active smoking, will choose to delay surgery and try to stop smoking in their own interest of safety," Maa says.

Smoking cessation is not without its challenges, he acknowledges. "Smoking cessation is indeed a lengthy and challenging process, which often requires multiple efforts to achieve success," Maa says. "It is indeed difficult for surgeons to counsel patients in this time-intensive process, and recruiting the assistance of additional staff and resources is essential, as attempting to achieve this task alone is unlikely to be fruitful."

KEY POINTS

- The Cleveland (OH) Clinic study results show that smokers have significantly more complications post-surgery than non-smokers, including a higher death rate.
- Since Aug. 25, 2010, Medicare has reimbursed physicians who provide counseling for outpatients and hospitalized patients to prevent tobacco use.
- The ASA encourages anesthesiologists to ask all patients about their tobacco use, advise those who do use to stop, and refer patients to other resources that can get them the assistance, such as the toll-free number (800) QUIT NOW.

Consider involving the patient's referring provider, as well as family and children, anesthesiologists, administrators, and respiratory therapy staff, Maa advises.

Anesthetists play a role

The American Society of Anesthesiologists (ASA) encourages anesthesiologists to use a three-step method of "ask, advice, and refer," says **David O. Warner**, MD, professor of anesthesiologist, Mayo Clinic, Rochester, MN, and leader of the smoking cessation initiative of the ASA. According to Warner, anesthesiologists should:

- Ask all patients about their tobacco use.
- Advise those who do use to stop.
- Refer patients to other resources that can get them the assistance they need to quit successfully. The primary resources are free telephone quitlines, which provide extended counseling services, Warner says. Those services can be accessed through the toll-free number (800) QUIT NOW, which directs callers to quitline services in their area. The quitline counselors tailor a quit plan and advice for each individual caller, Maa says.

Maa says, "Having adequate brochures and cards to refer patients to quitlines and outpatient counseling services ... can help save time."

Physicians can prescribe low dose nicotine replacement, Maa says, "and it may be worthwhile to familiarize oneself with the types of medications and services that Medicare, Medicaid, and standard insurance companies will reimburse for patient out-of pocket expenses."

Also, it might be appropriate to cancel the operation, even on the morning of surgery, if there is evidence that a patient has not been compliant with required preop smoking cessation, or if the anesthetic and cardiopulmonary risks to the patient are significant, he says. "For some patients at risk of noncompliance, it is useful to encourage compliance by alerting the patient that a serum cotinine concentration or a urinary test strip for nicotine content can be performed the morning of surgery to monitor their tobacco use," Maa adds.

Physicians have a "special and unique opportunity" when it comes to smoking cessation, he says. Discussing smoking cessation not only will provide benefits for the surgical procedures, "but also for their patient's overall health looking beyond the procedure," Maa says. He advises physicians to "not allow this excellent opportunity to improve the overall health of Americans to be lost." ■

Details on complications smokers have after surgery

A recent study from The Cleveland (OH) Clinic found increased incidence of adverse outcomes among smokers. The study was presented at the Anesthesia 2010 meeting of the American Society of Anesthesiologists.

The researchers evaluated 635,265 patients from the American College of Surgeons National Surgical Quality Improvement Program database. There were more than 200 participating centers prospectively collecting data with standardized methods. The study compared 82,304 smokers with 82,304 non-smoking patients who had similar surgical procedures and similar preoperative risk factors using sophisticated statistical techniques.

Some of the increased incidence of adverse outcomes among smokers included:

- Smokers were 40% more likely to develop major complications and die within 30 days of surgery.
- Smokers had an increased risk for respiratory complications.
- Pneumonia risk was doubled among smokers.
- Smokers were 87% more likely to experience unplanned intubation.
- Smokers were 53% more likely to require artificial mechanical ventilation that lasted more than 48 hours after surgery.
- Smokers saw a significant increase in cardiovascular complications and were:
  - — 57% more likely to experience cardiac arrest;
  - — 80% more likely to have a heart attack;
  - — 73% more likely to have a stroke.
- Surgical site complications also were higher among smokers. Smokers were:
  - — 30-42% more likely to have a surgical-site infection;
  - — have a 30% increase in the risk for serious systemic infections such as sepsis. ■

How one facility helps patients stop smoking

Interventions offered before elective surgery

The University of California — San Francisco (UCSF) Medical Center uses a variety of interventions to help patients stop or reduce smoking

before elective surgery.

In the outpatient setting, patients are referred to an in-hospital smoking cessation leadership program, tobacco education center, and a habit abatement center. "The goal is to facilitate the referral of active smokers to these resources, which offer inexpensive smoking cessation counseling, social support, and guide the use of cessation medication," says **John Maa**, MD, FACS, assistant professor in the Department of Surgery and assistant chair, Surgery Quality Improvement Program, UCSF.

As a first step, surgery patients are directed to smoking cessation quitlines through a national toll-free number (800-QUIT-NOW), Maa says. "They are also evaluated for immediate intervention with nicotine replacement therapy prescribed by the surgeon, which can be further coordinated with their referring primary care provider," he says.

Before most surgeries, patients are seen in the Prepare (pre-anesthesia) clinic. "The anesthesiologists or nurse practitioners will remind the patient of the benefits of preoperative smoking cessation, and again offer the resources of quitlines, the habit abatement clinic, or other measures to assist in smoking reduction," Maa says. ■

TJC looks at caregiver communications

Quality patient hand-offs crucial

The Joint Commission's Center for Transforming Healthcare has teamed with 10 hospitals and health care systems to try to discover new solutions to the quality care problems associated with miscommunication between caregivers during hand-offs.

"It's a fairly new arm of The Joint Commission, but it was formed a few years ago under the leadership of Dr. Mark Chassin, their new director, to try to have an entity that isn't perceived by hospitals and clinicians as being the policeman, but instead is an arm that's dedicated to trying to improve patient safety through developing best practices," says **Douglas L. Smith**, MD, associate chief medical officer of Intermountain Healthcare, which has one of the 10 participating facilities.

Hand-offs are a matter of medical ethics related to patient safety, he says.

"Ethics is not just end-of-life orders and ventilator support decisions; it's . . . a much broader question. It's more of an issue of trying to do the right thing for people," Smith notes. "Clearly, if we do a good job of transferring care from one setting to another setting, that increases the odds that [a] patient is going to get the right care, the appropriate care, and reduces the risk of harm to that patient."

The center sent out surveys to hospitals and health care systems requesting information as to the major concerns those facilities had regarding major safety issues, he says.

Intermountain Healthcare's participating hospital, LDS Hospital in Salt Lake City, then identified hand-offs as a major area of concern that presents the greatest potential for miscommunication.

"Hand-offs are really complicated . . . and part of the complexity has to do with day-to-day operations of the hospital, but there's also complexity around all the different kinds of hand-offs," Smith says.

For example, there are hand-offs from the outpatient setting to the inpatient setting, from one unit to another unit within the hospital, or from one provider or team of providers to a separate individual or team of providers, including physician-to-physician and nurse-to-nurse hand-offs.

The requirements of different transfers to complete a successful hand-off also are all different, although there are consistent elements, such as name, diagnosis, and allergies. But beyond that basic information, the differences "makes it a challenge in terms of designing a tool or a process that can be universally applied," Smith says.

The 10 hospitals or systems spent a great deal of time in defining terms, i.e., answering questions, such as, "What is a hand-off?; How do we measure what a good hand-off is?; and How do we judge whether it's being done right or not? And those are tougher questions than you might think," Smith explains.

Each hospital then selected one or two types of hand-offs for further study. Intermountain's LDS Hospital, which was selected to be that system's pilot site, chose two different hand-off types to study: emergency department to the inpatient floor; and from the operating room to the post-anesthesia care unit (PACU).

"We thought these were two higher-risk sorts of hand-offs," Smith says.

To investigate these hand-offs, LDS Hospital looked at Sentinel Event data and tried to identify patterns in errors. Each hospital also developed "survey tools to try to measure hand-offs and the quality of the hand-offs. So, that was one methodology, and then, each of the institutions worked on developing a hand-off tool — it's like a checklist."

Such checklists are helpful in determining — and following — the process that needs to be followed

and the list of things that need to be confirmed in that process before going forward, much like pre-surgical procedures to determine such things as whether it is the correct patient, etc.

These checklists for hand-offs were developed "as opposed to the kind of the way it's always been done, which is, one person picks up the phone and calls another person and says, 'Mrs. Smith is here in the emergency room with pneumonia; we're going to send her up right away. She's a diabetic and she's on these medicines. We started on this antibiotic and . . .'"

Currently, LDS is using the hand-off checklist developed as a result of the project. Smith says the checklist for the two types of hand-offs identified as problematic by LDS Hospital is "being used around 95% of the time in those two particular scenarios, the ED to the floor and the PACU to the floor. The nurses involved in those hand-offs are using this checklist 95% of the time."

The key to adoption of the checklist by nurses at LDS is due to the fact that the nurses were the ones who participated in its development, Smith says.

"We identified nursing leaders — front-line people who wanted to participate in this project — and these folks got together for two hours every other week," Smith explains. "It included people from the various departments and floors that were involved. We did a very detailed analysis of all of the different steps that are involved in moving a patient from one setting to another setting. It's more than just a phone call, of course. . . It turns out there [are] dozens of different steps involved, and some of them are crucial steps in terms of information transfer. So, we started with a real breakdown workflow analysis," Smith says.

Working in concert with nurses, the hospital spent weeks and months developing a checklist from suggestions they received — and categorizing and ranking those suggestions.

"We came up with an initial checklist, and we tried it for a week and people said, 'Oh, you know, that sounded good on paper, but when we started to use it, it really had some problems.' So, we tweaked it a lot for a period of several months until people felt pretty comfortable with it. And then, for six months or so, we said, "OK. This is the one we're going to use during our pilot project,' and that was the checklist that we've used, really, for the last eight months or so," he says.

LDS Hospitals is using metrics to evaluate the success of its checklist. One of those is a box that asks receivers, on a 10-point scale, "How satisfied were you with the hand-off in terms of its safety?"

Smith says that this box is completed by the receiver — as opposed to the person conveying the information in the hand-off. A hand-off ranked 7 or below is considered "defective," he says. If the hand-off was ranked 8, 9, or 10, it was thought that receivers were "pretty happy with the hand-off."

"The percentage of defective hand-offs dropped over time as people got used to it and became familiar with it," Smith notes. "We were using this 900 times a month toward the end of the study, once it was widely adopted. . . Our rating of the hand-off as measured by that scale went from fairly low to fairly high. It wasn't perfect, but it was very much a statistically significant trend in the right direction."

[For more information, contact:
Douglas L. Smith, MD, Associate Chief Medical Officer, Intermountain Healthcare, Salt Lake City.] ■

Alert fatigue leads to OR fatalities

Alert fatigue can lead to behaviors in health care that might seem fine until the day they cause a tragedy, says **John Banja**, PhD, assistant director for health sciences and clinical ethics at Emory University in Atlanta.

Banja was involved in the investigation of a sentinel event involving a patient who died in surgery. The patient was undergoing an abdominal surgery, and the operating room team had turned off all the alarms on the equipment, because they found them annoying, mostly because they went off too often, at too low a threshold. They had turned them off before many times before with no negative consequences, Banja says.

The procedure was proceeding well, and at one point the physician needed to obtain an X-ray of the patient's abdomen.

Because the patient's breathing would blur the X-ray, the surgeon asked the anesthesiologist to turn off the respirator while the X-ray was taken — not an uncommon request. The anesthesiologist turned off the respirator and the X-ray was made.

The procedure continued, but the anesthesiologist never turned the respirator back on. Because the alarms on the respirator, and everything else, were turned off, no one realized the patient was suffocating until it was too late.

"The patient was left in a vegetative state and died 11 days later," Banja says. "Here was a

catastrophe that happened because of the way that a defense mechanism had been disabled in this hospital. The anesthesiologist made a slam-dunk error, but if the alarms had been functioning, they would have caught that error immediately, and you wouldn't have this horror occurring."

Clinical alert fatigue remains a vexing problem for health care providers, and the risk to patient safety is high. When clinicians become so annoyed by alarms that they disable them or so accustomed to hearing them that they do not respond appropriately, patient's lives can be at stake.

Part of the problem is that modern medicine just has too many beeps, buzzers, bells, and warning signs flashing on the screen, says **Linda Peitzman**, MD, chief medical officer of Wolters Kluwer Health in Indianapolis. If too many alerts are triggered when medications or tests are being ordered, for example, the likelihood is high that physicians eventually will tune out or actively override even high-severity alerts, she says.

A Wolters Kluwer Health white paper on clinical alert fatigue noted that alert fatigue also can cause physicians to bypass or remain skeptical of computerized physician order entry (CPOE), resulting in low adoption rates that impact outcomes and the hospital's return on its technology investment. "This is typically the end result when, as one hospital [chief medical information officer] noted, alert fatigue drives clinicians to view CPOE as a challenge to their autonomy or the flavor of the month," the report says.

Alert fatigue is particularly prevalent with medication orders. Medication alerts are so common that they have created a situation in which "systems and the computers that are supposed to make physicians' lives better are actually torturing them," the white paper says. A 2009 study of nearly 3,000 prescribers in three states found that physicians ignored alerts more than 90% of the time, a rate that varied little based on severity.[1] That figure is consistent with earlier studies, such as one in 2003 that showed prescribers overrode 80% of the medication alerts triggered in a hospital practice and another in 2003 that found prescribers overrode 91.2% of drug allergy alerts and 89.4% of the high severity drug interaction alerts.[2,3]

The research suggests that some alerts are unnecessary and only serve as a nuisance to clinicians, but the white paper notes that nuisance alerts also might lead a facility to turn off entire alert groups, including some that might be relevant. Alert fatigue ultimately can generate dissatisfaction with the CPOE system as a whole, the report warns.

ECRI, the non-profit medical technology research group in Plymouth Meeting, MA, reports that alarm issues are among the most frequent problems reported by clinicians. ECRI advises that staff members must understand the purpose and significance of alarms and they should know how to set alarm limits to appropriate, physiologically meaningful values.[4] "We continue to learn of incidents in which staff unintentionally disable critical alarms by setting them far outside reasonable bounds," ECRI writes. "Low-saturation alarms on pulse oximetry monitors and low-minute-volume or high-peak-pressure alarms on ventilators are regular subjects of this sort of error.

Peitzman says, "In my experience, alert fatigue is directly related to the level of sophistication and thought in how they were designed and implemented. This is not just a matter of people getting tired of hearing them or seeing the alerts pop up and overriding them just to make their lives easier. A lot of times the alerts are unnecessary, and in some cases inaccurate, and that can be a big contributor to alert fatigue."

The more often alerts activate, and especially the more often they activate inappropriately, the more likely a physician or other caregiver will override them, Peitzman says. Ideally, the alerts should be tailored to the particular patient, which would cut down on the number of inappropriate alerts, she says.

Alert fatigue should be considered when purchasing systems, especially CPOE and other systems that can include many alerts, Peitzman says. Look for systems that not only have good content in terms of what triggers an alert, but also offer the ability to customize the system to different situations, she suggests. *(See page 11 for more advice on reducing alert fatigue.)*

"Interruptive alerts" are particularly annoying when they are unnecessary, Peitzman says. This type stops the act of, for example, ordering medication until the physician orders the blood test required by the medication. In most cases, the physician must order the test or document why it is not being ordered before the medication order can continue. Peitzman says such alerts can be necessary, but they should be kept to a minimum. When the interruptive alert is not based on sound reasoning or does not apply to this particular patient or this type of care, the alerts can be frustrating and create time delays.

Alert fatigue also can be a problem with telemetry monitoring, says **Kim Bonzheim**, MD, director of the Heart and Vascular Center and Beaumont Hospital in Royal Oak, MI. Either with decentralized monitoring at nurses' stations or a centralized monitoring system for an entire hospital, the same problems arise, she says. Those monitoring the system hear the same alarms and see the same alerts so often that they can become

inured to them, Bonzheim says.

Beaumont has a central monitoring system that works well, Bonzheim says. However, when a monitor sees a clinical alarm that needs to be passed on to the nurse, the alarm used to be sent by alpha-numeric pager. "Our problem was that it was a one-way communication device," Bonzheim says. "If the nurse didn't call to say she got the page, our system was set to keep sending that page every three minutes. As you can imagine, we drove the nurses crazy, and pagers were left on desks."

That system led to a near-miss and a sentinel event, Bonzheim says, so the hospital had to address the problem. The hospital switched to a two-way communication system that allows them to talk directly to the telemetry monitor. The time for completing a communication loop between the telemetry monitor and the nurse was cut from an average of about eight minutes to 39 seconds.

Alert fatigue is another example of the normalization of deviance, says Banja. When clinicians become accustomed to hearing alarms and seeing alerts, and when it becomes common and acceptable to override them, a wrong behavior has been normalized in the culture, he says.

"You start doing the short cuts and deviating from the protocols and the rules and regulations, and pretty soon you start exposing the patient to growing levels of risk," he says. "You don't even realize you're doing it and, in fact, you think you're doing it for the good of the patient, or for your own good and whatever enhances your own good is, in turn, good for the patient."

Managers should encourage a culture in which deviation is not accepted and alert fatigue is openly acknowledged as a potential problem, Banja says. The issue should be addressed in grand rounds, incident reports, weekly meetings with staff, and any other situations in which the problem can be discussed, he says.

Banja notes that such deviations are common in all industries. The recent BP oil spill in the Gulf of Mexico was traced, in part, to a series of deviations from standard procedure, including managers overriding alarms because they didn't want to wake up the crew who were sleeping, Banja notes. The deviations can seem innocuous or even a wise decision, until something goes wrong.

"Maybe you make all these risky deviations, but nothing bad happens and that convinces you more and more that it's OK," Banja says. "When you look at these disasters, what you [find] is that the deviations went on for months and years and nothing bad ever happened until the rig blows up, or you do a wrong-side surgery, or you give the patient an overdose of medicine. Then people get very bent out of shape and we start blaming and punishing, when we should have been holding them more accountable all along the way."

REFERENCES

1. Health Data Management. Avoiding 'Alert Fatigue.' *Health Data Manag*. Oct. 1, 2009. Available at http://www.healthdatamanagement.com/issues/2009_71/-39039-1.html.
2. O'Reilly KB. Doctors override most e-Rx safety alerts. Amednews.com. March 9, 2009. Available at http://www.ama-assn.org/amednews/2009/03/09/prsa0309.htm.
3. Isaac T, Weissman JS, Davis RB, et al. Overrides of medication alerts in ambulatory care. *Arch Intern Med* 2009;169:305-311.
4. ECRI. "2010 Top 10 Technology Hazards." *Health Devices* 2009;38:11-16. ■

Take these steps to reduce alert fatigue

Involve physicians in the development and implementation of alert systems, rather than simply training them in the systems when you're ready to go live, says **Linda Peitzman**, MD, chief medical officer of Wolters Kluwer Health in Indianapolis.

"Get their input into how and when they want these things to fire, so that when they do fire, they won't be surprised," Peitzman says. "They will understand why they were included, and they will be much more apt to pay attention to them."

With technology growing so rapidly and health care providers wanting to improve safety by standardizing processes, there is a temptation to keep adding more alerts, she says. "There are many

COMING IN FUTURE MONTHS

- How much do adverse events really cost?
- A new look at fall prevention strategies
- Can infection surveillance methods affect hospital comparisons?

other tools you have for clinical decision support [that can be added] into the work flow," Peitzman says. "So, ask whether another alert is the right thing. Maybe we could do an order set that automatically has this in it instead of reminding them. Or when they document it, this action automatically happens instead of reminding them to do it."

When implementing computerized physician order entry (CPOE) or any system with built-in alerts, the threshold for alerts should be turned down, at least initially, to ensure there is buy-in and not a perception that there's interference with the clinical workflow, says **Dan O'Keefe**, MD, executive vice president for the Society for Maternal-Fetal Medicine, chief medical officer for PeriGen, and an OB/GYN and maternal-fetal medicine expert. O'Keefe offers this further advice:

- Introduction of clinical alarms as a part of any system should be a deliberate and gradual process. Otherwise, a hospital risks alienation of staff, who already are busy and trying to get up to speed on new technology and new behavior.
- Alerts absolutely must be clinically relevant or the doctors and other staff will certainly ignore them.
- The frequency of alerts and the use of hard stops, which prevent doctors from taking any further action, are important. Overuse will only cause frustration and disillusionment with the system. Choose carefully when deciding which interruptive alerts are necessary.
- Alerts should be evaluated by hospital staff on a quarterly basis to make sure they are clinically relevant. If they are not relevant, but simply a nuisance, they may be removed. Conversely, if the alerts are relevant and support the practice of evidence-based medicine, then the hospital must instruct the doctors to comply.

Peitzman agrees that health care providers should monitor the use of alerts within their systems, looking for chances to improve. "You should not only measure how many of them are being acted upon, but you also should talk to your physicians and find out about the effectiveness, the value, the appropriateness, and you can continue to modify them over time," she says.

Also, don't be afraid to disable alerts that came as part of a system package, she says. Ask yourself if this alert is something truly important to your patients or if it will just add to the cacophony of alerts. A warning about dietary restrictions or food interaction might be valid, for instance, but is it important enough to justify an alert screen for the physician? Pare down the alerts to the ones that really matter, and clinicians will pay more attention to them, Peitzman says. ■