

Healthcare Benchmarks and Quality Improvement

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AUGUST 2004

VOL. 11, NO. 8 • (pages 85-96)

What pay for performance can mean for quality managers

CEOs are paying more attention to public data

Make no mistake about it. Hospital CEOs are paying greater attention these days to the growing number of report cards and other publicly available comparable data that show where their facilities stand vis-à-vis the competition.

While quality managers no doubt welcome the higher profile this gives their area of expertise, it also requires them to learn all they can about the various organizations offering such comparisons, how they gather their data, what they do with them, and what such data *really* say about their performances.

"CEOs are nervous about this," asserts **Patrice L. Spath**, a consultant with Brown-Spath & Associates in Forest Grove, OR. "In the past, they have not paid much attention to publicly available data; but now, especially with pay-for-performance arrangements, [that information] can hurt them in the pocketbook."

Because of this concern, she continues, CEOs are anxious to see what the data look like before they hit the paper. "This puts more pressure on quality managers to have the information available in real time and also have a strategy for dealing with the data when they show you're not as good as everybody else," Spath notes.

"In general, I think CEOs realize there's a great deal of pressure from a number of entities to produce more information about

Key Points

- Top management wants to see the numbers before the public does.
- Learn to determine whose data are the most valid and accurate.
- Consumers evaluate hospitals far differently than the Joint Commission on Accreditation of Health Care or The Centers for Medicare & Medicaid.

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what's going on in hospitals," stresses **Carey Vinson**, MD, medical director for quality management at Pittsburgh-based insurer Highmark Inc., which was created in 1996 through the consolidation of Blue Cross of Western Pennsylvania and PA Blue Shield.

Vinson recommends that quality professionals be proactive when it comes to pay-for-performance arrangements. **(For his recommendations, see related article, p. 88.)**

However, he explains, their enthusiasm is restrained. "What I've discovered is that CEOs are not certain the data sources are accurate; they're not certain the measures currently being looked at are the right way to determine the quality of service provided by the hospital," Vinson says.

"The concern is that by tying most of the measures to claims or various codings, you get a very limited viewpoint of what happens in a hospital. But there is a recognition that there's more and more emphasis on reporting and/or pay for performance," he adds.

That, of course, is where the quality manager comes in, and this is all to the good, explains **Judy Homa-Lowry**, RN, MS, CPHQ, president of Homa-Lowry Healthcare Consulting in Metamora, MI.

"I think actually in terms of looking more at quality that it's a good thing for quality professionals; it helps support more QI initiatives in the organization," she asserts.

"Now that JCAHO [The Joint Commission on Accreditation of Healthcare Organizations] and Medicare have joined forces and are looking at things more from a disease management perspective, it will give quality managers information that will allow them to identify clinical issues that may need intervention," Homa-Lowry adds.

Cutting through the clutter

With organizations such as the Centers for Medicare & Medicaid Services (CMS), JCAHO, The Leapfrog Group, HealthGrades (**see related article, p. 89**), and the American Hospital Association (AHA) — not to mention numerous statewide organizations and insurance carriers — using comparative data for anything ranging from report cards for consumers to pay-for-performance arrangements, how is a quality manager supposed to cut through the clutter and make sense of it all?

"As far as good, valid, reliable comparative data, probably the ones run by the state associations and health departments are the best," Spath adds. (She has several links on her web site at www.brownspace.com.) "If your state has one, that's probably where I'd go first."

Then there are those sponsored by organizations with sufficient "oomph" that hospitals may feel pressured to participate. For example, there is JCAHO's ORYX initiative, or the AHA's Quality Initiative. The latter, Spath notes, is voluntary, "but Medicare has said that if you don't participate, you will get a cut in reimbursement."

She points out, however, that those are not clinical measures but patient satisfaction measures, important nonetheless. "Everybody seems to mention HealthGrades, too."

And of course, CMS has gotten into comparative

Healthcare Benchmarks and Quality Improvement (ISSN# 1541-1052) is published monthly by Thomson American Health Consultants, 3525 Piedmont Road N.E., Building Six, Suite 400, Atlanta, GA 30305. Telephone: (404) 262-7436. Periodical postage paid in Atlanta, GA 30304. 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@ahcpub.com. Hours of operation: 8:30-6 Monday-Thursday, 8:30-4:30 Friday, EST.

Subscription rates: U.S.A., one year (12 issues), \$519. Outside U.S., add \$30 per year, total prepaid in U.S. funds. Discounts are available for multiple subscriptions. For pricing information, call Steve Vance at (404) 262-5511. 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 \$87 each. (GST registration number R128870672.)

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data in a big way with its Premier pay-for-performance program, which focuses on 34 clinical quality measures.

Homa-Lowry says that, in general, the data are getting better, “and now that we have studies that have done comparisons, they will be more uniform across the country.”

She contends the core measure data will be the most widely used, adding that, “Certain organizations may be participating in national databases around various specialties.”

It also would be very helpful for quality professionals to know all the databases their organization is subscribing to, Homa-Lowry adds.

“Sometimes, they may not be aware of all the databases the hospitals subscribes to, yet they are the ones who will understand the data coming out of them. Then for each one in which they participate, make sure it truly examines best practices and not just a norm. Is the database small or large? Is each region appropriately represented? Also, you have to be aware of the severity of risk adjustment being used. See if, in fact, the methodology has been reviewed — and what the experts say about it. You should also be comfortable with the results themselves,” she points out.

Don't forget the public

The report cards directed at the public are no less important than those promulgated by health care associations. In fact, as one study shows, paying attention to them may not only help secure greater market share, but they actually can lead to improved quality.

That's one of the major findings in a paper that appeared in the March/April 2003 issue of *Health Affairs*.¹

“People are becoming more aware that there are real differences [between hospitals] and that their choices can make a real difference in their outcomes,” says **Judith H. Hibbard**, MPH, DrPH, a professor in the department of planning, public policy & management, at the University of Oregon in Eugene, and lead author of the article.

Homa-Lowry agrees this makes the consumer a very important target. “Quality professionals really do need to be aware of what the consumer is receiving. So many report cards seem to be driven by other agencies that they need to be aware of what they measure and how — and how they obtained the data. These methodology and sampling comparisons should be shared with the CEO,” she says.

In some ways, CEOs are more concerned with what the consumer sees than issues such as pay for performance, Vinson notes.

“[Pay for performance is] something they negotiate, and they decide if they are going to take what the payer wants to give them or not. But once the information becomes public knowledge, it's outside of their control. Once it's published, they're concerned about how they are perceived by patients or other interested parties, and then there's a worry about if the information is being interpreted correctly, and what's being done with it,” he explains.

So what do consumers look for in these report cards? *Not* core measures, according to Hibbard. “Consumers are not sure what [core measures] mean,” she explains. “In our study, a lot of people made choices based on things like maternity — that's an issue they were concerned about and understood, and had the opportunity to think about their choices.”

Other consumer concerns include patient experience, and other cross-cutting issues such as infection rates, Hibbard says.

“What a person wants to know is, which are the better and which are the worst hospitals, and any cross-cutting issue will help them come to that conclusion because they can impact anyone who comes in the hospital,” she explains.

“A large category might be preventable complications, mortality rates, medication errors — or any errors,” Hibbard adds

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Core measures “were not chosen with this end-user in mind,” she insists. And length of stay is completely meaningless to average people. “This is an example of the meaningless measures that are out there,” Hibbard says. “It’s the opposite message the report designer wants to give.”

How the information is presented, disseminated, and framed affects the degree to which consumers pay attention, she continues. And what about hospital rankings, such as a top 100?

“Again, it depends on how the report is done,” Hibbard observes. “But if a hospital is an overall high performer or low performer, it will pay attention, because all the work has been done for it. The consumer can’t say ‘These are good data’ or ‘These are bad data,’ but they *can* say, ‘This hospital is the best in my community.’”

Whatever comparative data you use or pay attention to, you must avoid the temptation to rest on your laurels if you come out with a high ranking, Spath warns.

“The bigger concern is, are we satisfied if we are within two standard deviations of the mean, which is where JCAHO sets its standards?” she poses.

“For example, let’s say comparative data for infections indicate the average is 3% to 5%; some hospitals can and have gotten down to 0%. These data can be based on peoples’ flawed systems. What we have is a rate that doesn’t necessarily reflect the best system; we can fall into the trap of being good enough and of not trying to get *better*. If you were a patient, would you be happy if you knew your hospital could get to 0% infections in central lines and didn’t try?” Spath asks.

Reference

1. Hibbard JH, Stockard J, Tusler M. Does publicizing hospital performance stimulate quality improvement efforts? *Health Affairs* 2003; 22(2):84-94. ■

Take proactive steps with pay for performance

With a growing number of private insurers and agencies such as the Centers for Medicare & Medicaid Services (CMS) heavily involved in pay-for-performance arrangements, quality managers should become proactive about exploring and understanding this growing trend, says one pay-for-performance expert.

“If I was in the hospitals’ shoes, I’d tell them: First, explore pay for performance *now* with their largest payers, and see how it differs from what CMS is proposing,” advises **Carey Vinson, MD**, medical director for quality management at Pittsburgh,-based insurer Highmark Inc.

“Are they developing something they are going to mandate in the next year or two? Perhaps if it is not yet well-defined, the hospital can get involved in its development,” he explains.

Whatever else you do, be sure to look carefully at how your own facility measures value, Vinson adds, because this will stand you in good stead with payers.

“Be more aggressive at subdividing the data. So, for example, instead of just collecting data on complication rates, maybe you could look at types of complications, time of day, type of surgery, surgeon — in other words, have more analysis built into your data collection system,” he advises.

“This way, you will be able to plan your interventions more carefully, and if a payer comes in and asks how you would like to structure the agreement, you can say, ‘We measured these 20 points. Here’s how we broke them down and benchmarked, and here’s what we’re ready to work on.’ It gives you a good place to start,” Vinson notes.

In addition, he emphasizes, recognize that there are unavoidable complications. “You have to open up your reporting and create a no-fault reporting system; allow staff to report without any worries about losing privileges or getting fired. Do that *now*,” Vinson insists.

Highmark’s own pay-for-performance approach is very creative and involves significant input from the hospitals.

“We currently have a volunteer model in place with 14 hospitals, whereby we try to meet some of the hospitals’ concerns,” he says. “We choose voluntary negotiated parameters with each hospital, which cover the topic areas.”

Highmark strives to include at least one measure on safety, one on medication error reduction, and then two regarding clinical or service problems that the hospital has identified as being less than optimal or benchmark.

“Then, we outline a number of steps we expect the hospital to take in order to meet these measures,” Vinson says.

Hospitals are given credit for internal measurement; for determining areas that need improvement; for conducting a benchmarking study that

shows how they rank in the country; for putting together a QI initiative; for undertaking interventions; for remeasuring; and ultimately, for showing improvement. "You don't have to be perfect right away; we don't want that to be mandated," he notes. "The more they do, the more [credit] they get."

In addition, Highmark expects continuous improvement. "If you get to 100% on a specific measure, you have to drop that indicator and add a new one," he explains. "We want the hospitals to show improvement."

Finally, Highmark addresses one very real concern of hospitals. "They feel like if they are supposed to reduce errors, such as medication errors, they've got to buy new technology, but often they don't have the money," Vinson says.

"So, we tie pay to the steps taken by the hospital to achieve reduction in medical errors, and we pay them so can they get the money quickly to buy more technology." But it's not a blank check, Vinson notes.

"We only give you the money if you take specified actions," he explains.

Such pay-for-performance arrangements "can be worth millions" to a hospital, Vinson says. "For some of the hospitals, it is their margin; we shoot for anywhere between 15% to 25% of total reimbursement," he concludes. ■

HealthGrades opening up methodology to review

Company will explain numbers behind ratings

Lakewood, CO-based HealthGrades, whose web site (www.healthgrades.com) is a leading consumer destination for nationwide quality ratings of hospitals, physicians, and nursing homes, has opened for review its methodology for comparing the nation's hospitals in terms of quality. HealthGrades claims 1 million consumers log on to its site each month.

The company ran one methodology workshop at its Colorado headquarters on June 18, with another planned for Sept. 17. Workshop topics include:

- HealthGrades' hospital risk-adjustment methodology;
- review of specific statistical models as a group and individually;

Key Points

- Workshop topics include risk-adjustment methodology and statistical models.
- The science behind this type of health care data still is in the nascent stage.
- Use by employers and consumers should drive quality improvement.

- HealthGrades' new Patient Safety Awards, scheduled for release on July 27, 2004.

"Over time, we've gotten a lot of questions from the industry as to how we risk adjust, how our models look, and so on," says **Sarah Loughran**, HealthGrades senior vice president.

"The workshops provide an opportunity to not only hear this information in-depth, but to sit down and ask questions and go into our models." Attendees include industry, hospital executives, and business groups on health, she points out.

"Attendees will glean a much better understanding of the methodology, including how we put together specific risk-adjustment models by procedure and diagnoses," Loughran explains.

Each year, HealthGrades rates nearly every hospital in the country with "star ratings" for each of 26 procedures and diagnoses.

Five stars indicates superior care, meaning that the hospital's mortality or complication rates for that procedure are among the lowest in the nation. Three stars indicates average performance, and one star indicates poor performance.

The company assigns star ratings to each procedure and diagnosis, providing consumers with the specific information they need for selecting the best provider of care for their situation. The ratings are based on three years of data provided by Medicare, the only data source to which virtually every hospital in the country contributes information.

Apples-to-apples comparison

As part of its analysis of that information, HealthGrades risk-adjusts the data, so hospitals that receive sicker patients — such as regional trauma centers — are compared on equal footing with community hospitals and academic medical centers. Risk-adjusting the data, allows for apples-to-apples comparisons of all hospitals, HealthGrades contends.

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As another part of this initiative, HealthGrades is seeking to expand its work with hospitals, academics, and research organizations to provide its models for studies of hospital quality as well as studies on the advancement of hospital risk-adjustment methodologies.

“As you know, we rate every hospital in the country on our web site,” Loughran says. “We have 180 to 190 hospital clients; they either work with us to take the ratings and use them to promote themselves, or they have QI initiatives in place, and we offer consulting. The information tools we use in this consulting are based on the HealthGrades methodology.”

HealthGrades welcomes having researchers and hospitals work with them to find ways to evaluate its methods and improve them wherever possible.

“We are open to and are looking for people who are academically inclined — whether based in hospitals or universities — to work with us to evaluate our risk-adjustment methodologies and advance the science behind risk-adjusted health care data,” she notes.

That science is still in its nascent stage, according to Loughran. “The whole science of risk-adjusting health care information is an evolving science,” she asserts.

Leading to higher quality

All of these efforts will lead to higher quality in the nation’s hospitals, Loughran says. “The use of our ratings has expanded dramatically,” she notes.

“We have relationships with 80 of the Fortune 500 companies, who distribute our information to their employees. Plus, there has been a rapid expansion of consumerism. So, to the extent the information reported is accurate and usable by employees and consumers, it ultimately will drive quality improvement as consumers choose more quality providers and more pressure is put

on providers to provide more quality.”

Loughran says a number of hospital CEOs have become much more attuned to how their quality is being used. “What’s driving that is consumers,” she says. “We have lots of stories of consumers walking into a hospital office and saying, ‘Why are you not five-star rated?’” ■

Researchers unveil tool to predict cardiac death risk

Identifying high-risk patients can guide treatment

An international group of researchers has created a risk-predicting tool that enables clinicians to calculate the chances that a particular patient will die within six months of going home from the hospital after a heart attack or unstable angina episode. Their work was detailed in an article in the June 9, 2004, issue of the *Journal of the American Medical Association*.¹

The calculating tool, which can fit on a pocket card or be programmed into an ordinary handheld data device, is based on data from 22,645 patients treated at 94 hospitals in 14 countries.

The tool is more current and more broadly applicable than other tools developed in the past, asserts **Kim A. Eagle**, MD, cardiovascular center clinical director at the University of Michigan in Ann Arbor and leader of the research team.

“The tool was developed on patients accrued within the past five years, and tests included patients up to Dec. 31, 2003,” he notes. “In terms of evaluating risk, it is fairly reflective of modern coronary care.”

The tool also is greater in breadth, Eagle continues. “Other predictive models that have been used have sometimes focused on a specific group of patients with acute coronary syndrome (ACS)

Key Points

- Calculating tool can fit on a pocket card or be downloaded onto a PDA.
- The data are current, having been collected through December 2003.
- The GRACE model is based on data from 15,007 patients who were followed for six months.

— such as unstable angina,” he notes. “We wanted to create a model applicable to *all* ACS patients. Physicians might be more likely to use a broad model than one that is more narrowly focused; you can use this model with any patient you admit with MI or unstable angina.”

The tool creates a score for each patient based on nine variables. The higher their score, the higher their chance of dying within six months of leaving the hospital.

Older age, a history of previous heart attack or heart failure, or a lack of angioplasty or stenting during hospitalization boost patients’ scores the most, but so do results from exams and blood tests conducted when they first arrive at the hospital: Patients with faster pulse rates, lower systolic blood pressures, certain electrocardiogram readings, and high levels of blood creatinine and cardiac enzymes score higher.

Amazing GRACE

The new tool is based on data from GRACE, the Global Registry of Acute Coronary Events, which pools information on people who have had heart attacks and unstable angina episodes, and allows researchers to analyze their in-hospital symptoms and care, medical history, demographics, and survival rates.

Eagle and his co-authors developed the GRACE model based on data from 15,007 patients who were discharged alive from the participating hospitals between April 1999 and March 2002, and followed for at least six months after leaving the hospital.

They used sophisticated statistical methods to determine which factors were common to those in this development group who lived through or died during that period, and how often those various factors occurred in each group.

The researchers then validated the tool by using it on 7,638 patients treated between April 2002 and December 2003. They found that the tool offered an excellent gauge of which patients were most at risk. The nine variables stood out as consistently different between those who died soon after leaving the hospital and those who didn’t. This allowed them to assign a hazard ratio or relative point value for each characteristic, and create the risk-prediction tool to allocate points to patients.

“The GRACE registry studies consecutive admissions and offers the potential of reflecting a real-world experience,” Eagle observes.

“Plus, there are 94 hospitals enrolling patients all around the world. You can hear the physician asking, ‘Does this really apply to *my* patients?’ We hope it can be used anywhere in the U.S. and be relevant,” he adds.

Available on-line

The GRACE prediction model, as the new tool is called, is available on-line for free use by any clinician, at www.outcomes-umassmed.org/grace. It can be downloaded to a PDA.

What exactly can the tool tell a clinician?

“Actually, the risk tool gives an *exact* percentage estimate of six-month mortality risk,” says Eagle, adding that there is no official cut-off point for low, medium, or high risk. “

What you might see as a low risk, others might not,” he points out. “We leave it to the doc and the patient to decide if, say, a score of four feels like high-risk or low-risk.”

The mean risk obtained in the study was 4.8%, he adds. “Obviously, if my doc told me mine was 1%, I’d feel like that was good, while 10% or 15% seems high to me, but the truth is, each patient is an individual.”

For higher-risk patients — in the 10%, 15%, or 20% range, for example — “We’d have to say cardiac rehab is a good idea,” Eagle says. “I’d be very careful to follow up to make sure everything is done just right.”

In general, Eagle says he hopes the tool can help physicians evaluate patients while they are still in the hospital and determine how much of a post-hospitalization risk they face.

This, in turn, can guide treatment. For example, since patients who had angioplasty or stenting to open a clogged artery did better than those who didn’t, a physician may want to consider ordering this kind of revascularization procedure for patients who haven’t had it — if the patient is a good candidate. And physicians may want to pursue more aggressive drug treatment, post-hospital monitoring, and rehabilitation programs

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for patients who score high on the model.

Alternately, they may be able to reassure a patient who scores low that he or she has a low risk of dying in the next few months — and help that patient understand how diet, exercise, and medication can help keep that risk low.

The tool has practical applications for quality managers as well, Eagle says.

“I think one area where it would be potentially very usable is if, as part of discharge planning for patients with ACS, we not only go over plans for meds, lifestyle and so on, but also their estimated risk,” he suggests.

“This can incent both the patient and the care team to lower a risk number that seems too high,” Eagle adds.

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1. Eagle KA, Lim MJ, Dabbous OH, et al. A validated prediction model for all forms of acute coronary syndrome: estimating the risk of 6-month post-discharge death in an international registry. *JAMA* 2004; 291:2,727-2,733. ■

Evidence-based design could help quality of care

Literature review shows impact on outcomes

You may not be an architect, but it might be time for you to start paying a little more attention to the way your hospital is designed — especially if you’re about to have a new facility built or you’re embarking on a substantial renovation.

That’s the message coming from the Concord, CA-based Center for Health Design (www.healthdesign.org), which recently commissioned an analysis of more than 600 research studies. The analysis shows a direct link between patient health and quality of care and the way a hospital is designed.

Key Points

- Design can help reduce infection, risk, injuries from falls, and medical errors.
- Stress levels can be lessened for patients, families, and staff.
- Hospital building boom under way provides significant opportunities.

The review, conducted by **Craig Zimring**, PhD, professor of architecture and an environmental psychologist at the Georgia Institute of Technology in Atlanta, and **Roger Ulrich**, PhD, director of the Center for Health System and Design at Texas A&M University in College Station, outlines the benefits of an evidence-based approach to hospital design.

“Just as evidence-based medicine is revolutionizing health care treatment, evidence-based design is transforming the health care environment,” says Zimring. “We now have at our disposal proven architectural methods for improving patient outcomes, safety, and satisfaction, as well as staff retention and service efficiency.”

According to his report, evidence-based design can:

- enhance patient safety by reducing infection, risk, injuries from falls, and medical errors;
- eliminate environmental stressors, such as noise, that negatively affect outcomes and staff performance;
- reduce stress and promote healing by making hospitals more pleasant, comfortable, and supportive for patients and staff alike.

Reducing stress

It’s important to note that evidence-based design can reduce stress, not only for patients and families, but for staff as well, Zimring explains.

“I think hospitals are very risky and stressful places for the people who work in them, but also for patients and families,” he says.

“We know that according to the Institute of Medicine (IOM), between 44,000 and 88,000 people die each year due to preventable errors, which is more than the number of people who die of breast cancer, automobile accidents, or AIDS.

Likewise, an estimated 88,000 die due to nosocomial infections. We also know that the IOM and the IHI [the Boston-based Institute for Healthcare Improvement] argue that one of strongest measures we can take to boost safety is to hire more nurses,” Zimring notes.

At the same time, he points out, the United States is starting one of the largest hospital building booms in history.

“It’s a perfect storm — aging baby boomers, people moving to the Sunbelt, and replacing all the hospitals built in the ‘60s and ‘70s,” Zimring explains.

An evidence-based design reaps benefits for users

Here are a few examples of benefits derived by hospitals that pursued an evidence-based approach to design, according to a report from the Concord, CA-based Center for Health Design (www.healthdesign.org):

1. Patient falls declined by 75% in the cardiac critical care unit at Methodist Hospital in Indianapolis, which made better use of nursing staff by spreading out their stations and placing them near patients' rooms.
2. Nurse turnover rates dropped from 5.9% to 0.6% in six months — compared to 20% nationally — at a new family birth center that Memorial Hermann Healthcare System built at The Woodlands (TX) Hospital. Bed units were designed as pods with six private rooms for patients, a control station, physician's dictation room, and a workroom for nursing staff.
3. Medical errors fell 30% on two new inpatient units at the Barbara Ann Karmanos Cancer Institute in Detroit that allocated more space for their medication rooms, reorganized medical supplies, and installed acoustical panels to decrease noise levels. ■

"The prediction is that in this year there will be between \$16 billion and \$27 billion worth of hospitals built," he adds.

The good news, Zimring says, is that "there is a body of scientifically defensible evidence that says the physical environment can affect patient safety, stress, the ability of staff to do a good job, staff stress, and nursing turnover."

For example, the national average for nursing turnover is 20% a year, he explains. "But some facilities, like the Mayo Clinic, have 3% to 4% a year. "What's clear is that the environment impacts outcomes — it reduces medical errors, nosocomial infection, and makes it a better place to work," Zimring observes.

These findings contain a big lesson for quality managers, he notes. "The physical environment matters for quality outcomes, and the quality manager will either be working with or against that physical environment," Zimring asserts. "Many hospitals, even new ones, are simply places that breed errors and infection."

On the other side of the coin, however, facilities that have invested in evidence-based design have reaped real benefits. Bronson Methodist Hospital, for example, used such an approach in the \$181 million redevelopment of its hospital campus in downtown Kalamazoo, MI.

The redesign included private rooms with rooming-in accommodations for all patients; creative use of artwork, music, light, and nature to create a more pleasant and less stressful environment; shorter walking distances for patients and families with seating along the way; and touch-screen information kiosks at every main entrance.

Among the results cited in the report:

- 11% reduction in nosocomial infections;
- nursing turnover rates of 6.5%;
- 95.7% overall patient satisfaction;
- improved staff satisfaction;
- 6% increase in market share.

Texas A&M research indicated that such changes increase overall costs by about 5%, "but if you look at it very conservatively, you'd get it back in one year," Zimring adds. **(For other examples, see box, at left.)**

You need QI, too

Zimring concedes that none of these improvements occur in a vacuum.

"You need quality improvement initiatives as well," he observes. "But do you want to work *against* the building or use it as a tool to make these things easier and more permanent?"

Remember, he says, that what is built today will be in place for decades. "If we do it wrong now, it will haunt us for the rest of our careers or it will help us for the rest of our careers," he notes.

That is precisely why the quality manager should be heavily involved in the design process, he says. "Common sense and research suggest that where you get the biggest bang for your quality buck is if the system and the process design are in concert," Zimring says.

Zimring and Ulrich offer the following recommendations for designing your facility in a way that will support your QI efforts:

- Get rid of double-occupancy rooms and provide patients with single rooms that can be adjusted to meet their medical needs as they change during their stays.
- Improve indoor air quality with well-designed ventilation systems and air filters to prevent nosocomial infection.

Need More Information?

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- Use sound-absorbing ceiling tiles and carpeting to reduce noise, which will lower stress for patients and staff alike.
- Provide better lighting and access to natural light to reduce stress and improve patient safety.
- Create pleasant, comfortable, and informative environments to relieve stress and promote satisfaction among patients, their families, and staff.
- Make hospitals easier and less stressful for patients and their families to navigate.
- Design hospitals that help staff do their jobs.

"We now have 600-plus studies that show the physical environment can be a tool in improving quality, so QI managers should be brought in very early in the design process and throughout the process," Zimring says.

"Quality managers need to know the potential of the physical environment and what the key decisions are," he adds. ■

Children in hospitals often have adverse events

Those younger than 1 year are at highest risk

According to new research from the Rockville, MD-based Agency for Healthcare Research and Quality (AHRQ), children in hospitals often experience adverse patient safety events (i.e., medical injuries or errors) in the course of their care, with those in vulnerable populations, including children younger than 1 year, at highest risk. The AHRQ report, *Pediatric Patient Safety in Hospitals: A National Picture in 2000*, is published in the June 2004 issue of *Pediatrics*.

The study of 5.7 million hospital discharge records for children younger than 19 from 27 states was drawn from the 2000 Healthcare Cost and Utilization Project State Inpatient Database.

It is one of the first studies to quantify the impact of patient safety events on children in terms of excess hospital stays and charges, as well as the increased risk of death among children due to medical errors.

Here are some of the key findings:

- The study identified a total of 51,615 patient safety events involving children in hospitals during 2000.
- Children up to 1 year old were consistently and significantly more likely to experience many of the events than older children, and children whose primary insurance was Medicaid also were more likely to experience such events.
- The leading patient safety events were obstetric — trauma among adolescent mothers, with and without forceps, vacuums, or other instruments, with rates of 2,152 and 1,072 per 10,000 discharges, respectively.
- Infections resulting from medical care caused a 30-day increase in the average length of stay and resulted in increased charges an average of more than \$121,000 per discharge.
- In total, the combined excess charges for all events are estimated to have exceeded \$1 billion.
- Postoperative respiratory failure increased the rate of deaths in hospitals by as much as 76%.
The researchers estimate that if all deaths among pediatric patients who experience a medical injury are attributed to those injuries, then the records in their analysis alone account for 4,483 deaths among hospitalized children in the year 2000.

The researchers used the recently developed patient safety indicators (PSIs) in identifying the reported trends.

"These are the first indicators that are applicable to both children and adults," says **Marlene Miller**, MD, director of quality and safety initiatives at Johns Hopkins Children's Center in

Key Points

- A new study found a total of 51,615 patient safety events involving children in hospitals during 2000.
- The study quantifies impact of patient safety events in terms of excess hospital stays and charges.
- Postoperative respiratory failure increased death rate as much as 76%.

Need More Information?

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Baltimore, who led the research and who began developing the PSIs when she was at AHRQ.

"The earlier indicators we used in the 1990s, called the Complication Screening Program, could only be used for patients over 18," she explains. "We excluded this to make sure our definitions could be broadly applicable to children and adults — and in fact, there is one, birth trauma, that is specific only to kids."

Miller began developing the PSIs in the wake of the 1999 IOM report, *To Err is Human*, which pointed out the high cost of medical errors in terms of human lives.

"We realized that while we had many good measures of quality of care, we didn't have very good measures on safety," she explains.

The work began as a research project, and as it evolved, AHRQ contracted with the University of California at San Francisco's (UCSF) evidence-based practice center to take what Miller's team had developed internally, to add some final touches and to run it by expert panels.

These administrative database tools "run on what [data] all hospitals churn," Miller explains. "Our goal was to create a set of algorithms that, when applied to the administrative data, identified issues everyone agrees should not have happened — like a foreign body left in a patient after a procedure."

She further explains the thought process: "Take post-op sepsis. If you are a trauma victim, thrown from a car, cut and bruised, and impaled on a tree, you've had a lot of unsterile things enter

your body, so it's not uncommon if you undergo surgery and develop an infection. In our cases, we limit post-op sepsis to elective surgery — the well patient who enters your doors for a pre-planned. You are also eliminated if you are immunosuppressed."

In other words, Miller summarizes, "We tailored the PSIs to solely identify cases everyone around the table agreed shouldn't happen. (The PSIs are free from the AHRQ web site: www.ahrq.gov.)

Miller asserts that hospital quality managers are the right audience for this and other studies derived from the PSIs.

"Our whole goal is for [them to be used by] hospitals," she notes. "What we ran for this study was anonymized data, but an individual hospital can download these algorithms, run it on their own data, and they could actually find out the names of the patients."

For example, she says, if you found 10 cases of "foreign body left after procedure," you could pull the charts to determine commonalities there were among those procedures.

Using the PSIs can help you get to the root of safety problems much more quickly, she continues. "Say you had 30,000 charts last year. Most people have event rates in a given year between one to 10 or 10 to 20, so you have a small number of charts to pull." ■

New surgery standards could save 8,000 lives

If all hospitals met the quality standards for five high-risk surgeries set by the Washington, DC-based Leapfrog Group (www.leapfroggroup.org), it would save nearly 8,000 lives each year, according to a new study from the University of Michigan (UM) Health System in Ann Arbor.

Leapfrog has set standards for five procedures:

- pancreatic surgery;

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- esophageal surgery;
- open-heart surgery;
- percutaneous coronary interventions (such as angioplasty);
- abdominal aortic aneurysm repair.

Open-heart surgery alone would result in about 4,000 fewer deaths, and procedures such as angioplasty would see another 3,000 fewer deaths if all patients were treated at hospitals meeting these standards, according to the study, which was published in the June issue of the journal *Surgery* [135(6):569-575].

“Patients deciding where to undergo elective but high-risk surgery can substantially improve their odds of survival by selecting a hospital that meets Leapfrog safety standards,” says **John Birkmeyer**, MD, George D. Zuidema professor of surgery at the UM Medical School and chair of the Michigan Surgical Collaborative for Outcomes Research and Evaluation.

Using data from the National Inpatient Sample, a random sample of 20% of all hospital discharges in the United States, researchers estimated the number of patients undergoing each procedure and the average mortality rates. They then estimated how many deaths would be avoided if patients were treated only at hospitals that met the new criteria.

Open-heart surgery patients benefit the most

For all five surgeries, an estimated 7,818 lives would be saved if all hospitals met the standards.

The biggest benefit would be for patients undergoing open-heart surgery. Standards require hospitals to perform at least 450 surgeries a year and have risk-adjusted mortality rates below the national average.

If all patients were treated at the hospitals with the highest volumes and the lowest risk-adjusted mortality rates, 4,089 lives would be saved. Fully implementing similar Leapfrog standards for percutaneous coronary interventions would save 3,016 lives.

Full implementation of Leapfrog’s standards may not be feasible for all five procedures, the researchers caution.

Moving all open-heart surgeries and angioplasties to the top hospitals would not be practical because the surgeries are so common. But since pancreatic resection and esophagectomies are rare, it would be possible for patients to be referred to hospitals that meet the standards. Also, any hospital could ensure appropriate

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patients receive beta-blockers before abdominal aortic aneurysm repair.

“Efforts should be focused on getting patients to the best hospitals as well as improving quality at all hospitals. It is not clear how many hospitals are making efforts to meet the Leapfrog standards for surgery, but there seem to be trends toward fewer patients undergoing high-risk operations in low-volume hospitals. This may reflect early success of Leapfrog and other efforts,” Birkmeyer says. ■