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Study shows Keystone program achieved significant savings

Authors say results make a "business case" for quality initiatives

One of the common challenges faced by healthcare quality professionals is being able to make a business case to administrators — that is, to demonstrate their QI programs will save the hospital money.

"Although many people talk about the business case for quality, there has actually been little evidence that shows this to be true," says Peter J. Pronovost, MD, PhD, FCCM, professor, departments of anesthesiology/critical care medicine and surgery at The Johns Hopkins University School of Medicine; professor, department of health policy & management, The Bloomberg School of Public Health; professor, school of nursing; and medical director, Center for Innovation in Quality Patient Care, and director, Quality and Safety Research Group.

Now, however, that may all be starting to change with the release of a study in the American Journal of Medical Quality. The study, which set out to evaluate the financial achievements of the well-known Michigan Keystone ICU Patient Safety Program, focused on several ICUs in facilities that had participated in the program; the facilities were selected to represent a broad variety, including large, medium, small, academic, urban, and rural hospitals. The researchers found that on average the initiative averted 29.9 catheter-related bloodstream infections and 18 cases of ventilator-associated pneumonia each year. "The average cost of the intervention is $3,375

KEY POINTS

- Study helps relieve dearth of evidence that QI programs save money.
- Savings range from four times the cost of initiative to more than ten times the cost.
- Human capital represents the single largest component of hospital costs.

per infection averted, measured in 2007 dollars," wrote the authors. "The cost of the intervention is substantially less than estimates of the additional health care costs associated with these infections, which range from $12,208 to $56,167 per infection episode."[1] These savings, they added, did not take into account any additional benefits that might have been achieved through the reduction in cases of sepsis, the prevention of mortality, improving teamwork, or reducing nurse turnover.

"We knew that the project we did in Michigan reduced infections and saved lives, but we did not know if it saved money; we weren't sure if there was a business case on it," says Pronovost, whose "checklist" served as the foundation of the Keystone project and who was a co-author of the paper. "If this kind of program was going to spread, we had to show that."

Pronovost says that when he spoke to hospital CEOs in Michigan, they were generally split on whether they thought they were saving money. "They all supported reducing infections, but some said they lost money for doing it, while others said they saved money," he says. "We wanted to gain a deeper understanding of that issue."

When the results of the study were extrapolated, he continues, it was found that the average hospital saved a million dollars. "Another way of looking at it is this: There was some cost in preventing each infection, but the return was basically 10 times that cost," Pronovost says. "What other investment today can give you that kind of a return?"

Quality, safety "not enough"

Part of the authors' rationale for the study clearly was that the safety and quality improvements of the program were not enough in and of themselves to convince all hospital CEOs to duplicate the program, and lead author Hugh Waters, deputy director of the healthcare outcomes and quality program at RTI International in Research Triangle Park, NC, bears that out.

"This was a scientific approach to intervention — with 10 different pieces," he notes in describing Keystone. "Some just call it a checklist, but the underlying philosophy is to make sure everything is done correctly every single time — for example, nurses check that tubes are properly inserted in the mouth and nose, check for bruising, and a whole series of steps — each common sense, but when done all together you get a dramatic effect."

That's all well and good, he continues, "but because of the way the U.S. healthcare system is organized, it has to be obvious to the people that implement such programs that they will benefit financially." This, he notes, could be the hospital, or it could be the insurance company — or both. "As a result you get people saying, 'Sure, this helps, but show me where the money is,'" Waters says.

Pronovost couldn't agree more. "We were able to reduce these infections dramatically in Michigan, but often to do so you have to spend money creating infrastructure," he explains. "And people will not make those investments if they do not believe there is a return. And if you just do the

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EDITORIAL QUESTIONS

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program and expect people to take on more work and try harder, it will not work."

"You're removing any economic arguments," Waters adds. "We set out to measure the costs and benefits." The study, he says, involved "very intensive data collection on the financial side," including initial education and training; capital purchases; ongoing time spent on the intervention; the average annual salary for each type of position involved in the project; and product purchases. "Training is a big cost, but the biggest is adding some staff," says Hughes. "Some of these activities require additional nurse time and some additional physician time."

The biggest cost in any hospital, Waters continues, is human capital. "For me, it was most difficult to calculate cost because time makes up most of cost, so we had to know how much time was involved by doctors and nurses," he says. "In this study we recognized the most accurate way was 'activity-based accounting.' In a nutshell, we measure what people spend time on and use it to allocate industry-recognized costs of overhead, hiring staff, and so on. And we got into the nitty-gritty of how procedures are done." Calculations also included supervision follow-up, staff meetings, and so on, as well as physical purchases such as line insertion carts.

Using the results

Waters asserts there are a number of ways quality professionals can use the findings of the study to make their own case with administration. "One, literally show them the results of this study and how it demonstrates that attempts to control infection can be financially rewarding," he says. "But maybe a bigger point is they can use this kind of approach to figure out what can make sense for their hospital. There are a lot of QI approaches, and you can use this to show that they make sense for hospitals to implement. And third, that maybe we need more of this kind of research to show these types of interventions make sense to do."

"This is really a huge 'little' study, and hopefully this one shows them that there really is a business case for quality," adds Pronovost, who has reason to be encouraged. The Agency for Healthcare Research and Quality (AHRQ) has backed the expansion of the Keystone concept into 22 states, and so far that initiative has cut infections in half. "This is really dramatic — it's one of the first, if not the only, nationally scalable QI program where we have measurable results," Pronovost says, adding that he would "love" to do a business case for this larger initiative, but AHRQ has not yet funded it. "To their credit, however, they believe the results Hugh and I just published," he says.

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Teach-back program reduces readmissions

IHI collaborative helps quality staff

The Lehigh Valley Health Network in Allentown, PA, was one of 18 recipients of The Hospital & Healthsystem Association of Pennsylvania (HAP) 2011 Achievement Awards, given in recognition of innovative programs. The Lehigh Valley program involved the use of teach back to reduce readmission rates in heart failure patients who had been hospitalized.

According to the system's award entry, heart failure patients who received teach back had a readmission rate of 26.9%. "This rate is 12% lower than the readmission rate for those heart failure patients who did not receive teach back (30.6%)," said the system. In addition, they noted,

the heart failure readmission rate on the pilot unit decreased by more than 50%. "Furthermore, an early cohort of patients demonstrated a shorter length-of-stay during the second hospitalization if the patient received teach back during the index stay," the entry said.

"Back in the fall of 2009 we had a work group in progress to look at reducing readmissions and enhancing care," says Debra Peter, MSN, RN, BC, CMSRN, patient care specialist at Lehigh Valley Hospital. "At that point we were also in an IHI collaborative with 26 other hospitals on the same topic."

The work group, she continues, divided into four subgroups to examine different aspects of enhancing the process and reducing readmissions, one of which was patient education. "The idea for teach back came from the collaborative itself; IHI had offered it as one of the alternatives," Peter adds.

The assistance from IHI was welcome, she explains, because "we were not that familiar with what teach back was, and I believe we had missed opportunities we now have to rephrase and state back, which provides a better understanding of outcomes."

Getting started

Peter says that IHI indicated the strategy works best when you place accountability for learning on the provider side, not on the key learner. "They gave us sample scripting," she says. In addition, she says, the group conducted an evidence review to "see what was out there." They were surprised to find that most of the information on teach back dealt with physician offices, not acute care settings.

However, they did find one article — "Closing the loop — physician communication with diabetic patients that have low health literacy" (Schillinger D, Piette J, Grumbach K, Arch. Intern. Med. 2003 Jan. 13;163(1):83-90.) — that they found to be most helpful. "The paper heightened our awareness that this is not happening consistently — that many times in acute care there is minimal education provided in teaching patients how to better manage their disease process," Peter says. "We often give out written materials, but we do not have patient teach back."

KEY POINTS

- Work group reviews the literature for evidence-based models to emulate.
- EMR reminder includes a description of program for nurses logging on.
- Extensive staff education helps set up the initiative for success.

The strategy recommended by the IHI collaborative included performing small tests of change and seeing how to develop a process for the network. A group that included a physical therapist, a heart failure nurse practitioner, a pharmacist, staff nurses, and a representative from a local skilled nursing facility addressed those issues.

Even before implementation could begin, an e-learning program was made accessible to the entire staff; the program was mandatory. A video featuring Peter described the process. In addition, a two-hour interdisciplinary workshop was presented. "During that workshop we highlighted the importance of education and of bringing it to the forefront," Peter explains. "We then had an opportunity for each of them to be validated on the process; we developed a performance checklist to standardize how we validated everyone." On the unit level, she adds, each unit educator was to validate his or her RNs; leaders in other disciplines had to do the same.

Motivation was also handled from a unit perspective, although it was given a strong foundation by the inclusion of teach back among the goals set by the administration. "And we would do unit-based strategies, even things to heighten awareness like contests with raffles," Peter says. "But the education was motivating in itself; I've been an educator for 15 years and have often gotten push-back, but with this they basically said this was what we should have been doing."

As for her unit staff, Peter says the nurses did complain that they did not have time to work this program into their daily schedule, but "I said we must have this, because patients continue to come back."

So she had the 30-bed medical unit for which she was head nurse conduct small tests of change with suggestions from IHI. "They gave us four questions specific to the heart failure population," she says. "Our action plan was to teach the entire network the general concept related to teach back, but as a subgroup we got direction from our sponsors to really focus on heart failure."

The questions, she says, home in on core measures, and as noted above, this pilot achieved a 50% reduction in readmissions. "The final stan-

dard work process includes three days of sequential questions that probe the patient's knowledge, attitude and likelihood for behavioral changes related to heart failure," noted the Lehigh Valley entry. "Day one focuses on knowledge, day two on why these practices are important, and day three on behavior," adds Peter.

Hardwiring the process into the nurse's daily routine using an electronic prompt on the patient medication screen has been essential to the success of the project, says Peter. "It makes the nurse and provider more accountable," she explains.

Throughout the day, she continues, the nurse focuses primarily on the patient medication screen. "We decided to have a 12:00 noon entry for teach back; we purposely did that because that's when the bulk of the meds will have been given," she says. "We thought if we did it when the meds started to decrease the nurse could decide when it's best to teach — when the family comes in, in the evening, or move it to tomorrow." When the nurse double clicks, the details of the program are all there, she notes, including how to conduct teach back.

Peter says the process is "absolutely" replicable at any facility. "When The Advisory Board heard what we were doing, they came to the hospital to do a site visit," she says. "They called it not only a best practice, but a 'megapractice.' When their reference went out we started getting call after call for site visits. Just this morning I answered an e-mail from a nurse in Massachusetts."

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CM enhances telemedicine program

Embedding prompts considered a key to success

Many healthcare professionals have touted the benefits of telemedicine in improving quality of care, and there is no doubt the technology can enhance care delivery, but as Wenatchee Valley Medical Center in Wenatchee, WA, has demonstrated, the processes implemented by the human component of such programs are at least as important as the telemedicine itself.

Wenatchee Valley was one of the participants in a Medicare demonstration project that employed Bosch Healthcare's Health Buddy System; the center says it not only improved quality of life for chronically ill patients, but it reduced ED visits, hospitalizations, and mortality — as well as producing up to 13% savings in costs.

"The demonstration project involved patients with diabetes, COPD, heart failure, and co-morbidities," says Lori Smet, MN, RN, CCM, the head case manager. "The goal was to decrease costs by decreasing hospitalizations, and we used a telephonic health component of that program to help manage the large numbers of patients we have."

Patients at home would respond to standardized questions, says Peter Rutherford, MD, chief executive officer of Wenatchee Valley Medical Center and medical director of the program. "The patient has a box with a computer chip, with an on-off button basically in the telephone. There is a video screen and they can answer questions on the screen," he says. Those answers, he adds, are stored in a memory chip, and each night the unit makes an automatic phone call to a server for the facility's computer system, where they are stored until they are retrieved in the morning.

"The questions are individualized to the chronic condition each patient has," says Rutherford. "They are basically objective questions for each disease felt to be reasonable metrics to assess if the condition is exacerbating." So, for example, diabetes questions focus on blood sugar, infections, and weight, while congestive heart failure questions would ask about shortness of breath, difficulty sleeping, or swelling in the feet.

The case managers review the answers when they first come in each morning, adds Smet. "The program risk-stratifies the responses based on

KEY POINTS

- Program achieves reduced ED visits, hospitalizations, and mortality, plus 13% in cost savings.
- Medicare demonstration project involved patients with diabetes, COPD, heart failure, and co-morbidities.
- Patients are asked questions specifically related to factors that could exacerbate their disease.

parameters, and they are color-coded either green, yellow, or red," she says. So for example, if the code is red the case manager will call the patient and find out what's going on. "If appropriate, we will escalate up to the physician, but we have some standing orders we can use to start changing meds to get the patient more stabilized before the doctor has to become involved," says Smet. If it is thought the patient needs to be seen that day, she adds, they can usually arrange an appointment with the patient's primary care provider or a mid-level provider.

"A lot of people with chronic diseases can wake up and be OK one day, then the next day they're a little short of breath and think they'll be better, but they get worse again and then they're in such distress they go to the ED," says Rutherford. "Our statistics suggests if they end up in the ED with a chronic problem, they have a 50% chance of being admitted to the hospital. The idea is to get people to answer the questions and catch them a day or two before they really start down this slide — and we were successful in that."

The machine, he adds, also has an educational benefit as there are teaching points embedded for the patient to read each day.

Process, people are critical

No matter how good a telehealth system is, Rutherford insists, success is not guaranteed unless you have effective processes in place and the people to implement them. "I think you create the success," he says. "It's a whole system you build; if you acquire data but do not do anything with it, you've not done anything different."

Telehealth, he points out, leverages the time of the case manager. "They spend time working with people who have trouble today; the device takes care of people who are OK and they just deal with the exceptions."

However, notes Smet, "there have been a lot of studies with telehealth that have not been as successful as we have. [According to Rutherford, admissions to the ED and the hospital were reduced by about 20%, and mortality was reduced by 50%.] The piece we've got that's different is we have a case management program within the clinic that is part of the healthcare team. In other systems, you might not know what the labs are, or the current plan of care, and just call in and say the patient's not feeling well today and that's where it stops."

Rutherford notes that another factor that set Wenatchee Valley apart was the development of specific treatment protocols for this program. "We developed them for the case managers," he explains. "So, for example, if someone with CHF has gained 'X' pounds, this is what you can do — i.e., they either need to be seen, or you can adjust the meds and have them seen tomorrow." These protocols, he adds, make sure the physician and the case manager are on the same page.

Another key difference, adds Smet, is the center's electronic medical record (EMR). "It enables real-time communication with the [patients'] physicians," she says. "There are a variety of ways we can communicate. With the EMR they get real-time notification in their 'In' basket that I have e-mailed them. Or I can call the staff nurse and tell them I need to talk to a physician or the patient needs to get in today. I also have the capability from the responses to the Health Buddy to print up a trend report, make a note on that and fax it off to the physician."

Success continues

Rutherford notes that the program is now more than five years old "and the positive trends are continuing."

However, he adds, there have been struggles. "For one thing, not all patients want to participate; we were at best able to get somewhere in the 40% range," he says. "The second thing is this is new for physicians as well, so we had to develop trust between the physician and the case manager — to trust that the case manager is adding value, and is not just stirring the pot. It took probably a year to start seeing successes and wins — and that improved physician acceptance."

"Developing a relationship with the patients was also a real critical part of this," says Smet. "We want the patients to call us when they have issues, and the Health Buddy is just one of the tools. We make referrals to community resources, arrange for transportation, for how they will pay for their care — so we do more than just chronic care and disease management; we care for the patients holistically."

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Nocturnists help avoid night, weekend danger

Trend grows among hospitals

When you finally pack up on Friday afternoon and go home for the weekend, what is happening at your hospital? Unfortunately, the risk of death and adverse events goes up dramatically.

That's the conclusion from research showing increased risk on nights and weekends, and that risk is prompting some hospitals to hire "nocturnists," experienced physicians who understand the challenges of care during off hours and work during those times to improve patient safety and outcomes. Nocturnists are a subspecialty of hospitalists.

In one study, people admitted to the hospital on the weekend were 10% more likely to die than those who checked in during the week.[1] The study was based on an analysis of nearly 30 million people admitted to hospitals in 35 states over a five-year period. It was not the first study to uncover a "weekend effect," in which patients are likely to fare worse during the weekends, and other work has shown a similar effect for night-time admissions during the week.[2,3]

The risk might have been exacerbated by changes in graduate medical education work rules in recent years that have resulted in a reduction in the number of hours medical trainees can work, says Carol A. Burkhart, RN, MS, ARNP, CPHRM, CHC, senior vice president with Marsh/Clinical Healthcare Consulting in Chicago. In some facilities, those changes resulted in shorter shifts and more frequent handoffs of patients, she says.

Many medical issues are handled as crises at night or on weekends, as opposed to how they might be handled more prospectively at other times, says William Hanson, MD, professor of anesthesia and critical care and the chief medical information officer at the University of Pennsylvania School of Medicine in Philadelphia. He also is author of the new book, "Smart Medicine: How the Changing Role of Doctors Will Revolutionize Health Care" (Palgrave Macmillan, 2011).

"There is a tendency among nursing staff at night to handle things on their own so as not to wake somebody up, and in worst cases, people tend to neglect things," Hanson says. "If the nocturnist is an active player, on their feet, rounding and responding, that's going to change things."

Some research has suggested that organizational and staffing issues could explain the increased risk on weekends, Burkhart says. The research noted factors such as decreased physician-to-patient ratios, unavailability of board-certified intensivists, physician fatigue, and difficulty obtaining complex diagnostic tests, she says. The risk is higher for some patients, such as those experiencing cardiac arrest on nights and weekends, she says.

More hospitals are turning to nocturnists, Burkhart says. "The difference between a nocturnist and a resident or a doctor who is tasked with covering during the night is that these are experienced physicians," Burkhart says. "They also are acclimated to working the night shift, and that is a huge plus for safety. These are physicians who are dedicated to this particular type of medicine and not the unlucky doctor who got assigned to night duty this week."

Nocturnists were rare only a decade ago, numbering perhaps 100 in the country, she says. Now the best estimate is that there are about 1,500 nocturnists working in the United States, Burkhart says.

"That is a significant increase in just 10 years, and it's even more significant when you look at who's hiring them," she says. "It's the heavy hitters: Johns Hopkins, Cleveland Clinic, the providers who are respected and on the leading edge of medicine."

Burkhart notes, however, that improved patient safety and outcomes come not just from having dedicated physicians working off hours but also by improving communications and patient assessments.

"It can be a whole compendium of how work is organized and accomplished at night," she says.

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Simple strategies that can be used in the ED

Improve patient care and communication

Emergency departments (EDs) can improve communication and patient care with simple strategies, says Gregory Cuculino, MD, an emergency physician at Taylor Hospital in Philadelphia.

Taylor Hospital uses physician-patient huddles, during which key elements of the patient's course are reviewed and any potential questions clarified. This communication is particularly important at the time of disposition of the patient, as the decision to admit or discharge often depends on clinical details of which the physician making that decision might not be aware, he says.

"The huddles help us get back to the kind of medicine we practiced years ago, when you actually had a few minutes to talk to each other," Cuculino says. "We do huddles at different points in the patient's care, including discharge huddles where the nurse can be the patient's advocate and tell us the patient still has a fever or doesn't have prescription medicine coverage. They can tell us these things then instead of me sending the patient home and then saying, 'Oops, wish I'd known that before I discharged him.'"

Implementing a trigger alert system at Beth Israel Deaconess Medical Center in Boston cut the time to initial physician contact and the mean time to the first therapeutic intervention by half, Cuculino says.

Dana Siegal, RN, CPHRM, director of patient safety services with CRICO Strategies, which organized the recent collaborative effort to devise ED strategies, says one participant institution is implementing a huddle at the time of the admission, using the mnemonic STOP: Significant issues, Therapies, Oxygen and last vital signs, and Pending issues. This communication is designed to identify any pending issues that could be missed as the patient transitions from the ED to the inpatient wards, she says.

Others have included a structured update between the charge nurse and the attending physician at key points in the shift to review the department as a whole and to identify any potential issues that might have arisen during the shift, Siegal says. "Many leaders from EDs with robust electronic patient tracking and charting systems noted that much of the MD-RN communication occurs electronically and emphasized the need to supplement electronic information with structured times for closed-loop verbal communication," she says.

Triggers can improve patient care

A vital sign trigger program is in use by ED clinicians at Beth Israel Deaconess Medical Center in Boston to more effectively assess the patients coming to the ED and triage them, says Carrie Tibbles, MD, an emergency physician and associate director of graduate medical education at Beth Israel, who co-chaired the ED strategy effort. It was developed by Clinical Operations Director Leon Sanchez, MD.

"The triggers program takes some of the subjective guesswork out and tells us that if a person has these vital signs, they need to be seen by a physician right away," she explains. "We have parameters for heart rate, respiratory rate, blood pressure, low oxygen saturation, marked nursing concern, and altered mental status."

The ED staff try to leave a couple of exam rooms in the more acute care area open for trigger cases, and a care team is summoned with the announcement "Trigger to Room 1," for example. "Instead of waiting to bring the patient back and then going to find a physician, by triggering the patient, the physician, nurse, tech and resident can meet in the room to quickly assess the patient," Tibbles says. "We've found that the time of the physician to bedside, the time to first intervention and the time to the intensive care unit are all faster if you use this system." ■

Response changes as gram neg HAIs rise

IPs should ask lab about new breakpoints

The U.S. public health system is trying to catch up with the explosion of infections with multidrug resistant gram negative rods (MDR-GNR) by standardizing surveillance definitions and changing laboratory breakpoints.

How fast are these pathogens emerging? Consider that the first U.S. case of Klebsiella pneumoniae carbapenemase (KPC) infection was diagnosed a little more than a decade ago.

"In fact, the first [KPC] isolate was identified

in 2001 from a patient in North Carolina," says David Calfee, MD, MS, chief hospital epidemiologist at New York (City)-Presbyterian Hospital. "In 10 years we now have at least 36 states identifying at least one KPC isolate. They have become highly prevalent in some parts of the country, particularly in the Northeast U.S. Certainly, other parts of the country are experiencing similar increases."

Looking at the level of resistance that may be seen in a single infected patient, Calfee cites an antibiogram of an isolate of K. pneumoniae that was fully resistant to 18 antibiotics. "This is a pretty bad organism to be infected with," he said recently in Baltimore at the annual conference of the Association for Professionals in Infection Control and Epidemiology. "With this patient, tigecycline, gentamicin and tetracycline were the only antibiotics that were felt — in the laboratory — to perhaps have good activity against this isolate."

With no new drugs against the rising tide of gram negatives expected any time soon, patients must rely on infection preventionists to stop transmission of these pathogens across the health care continuum.

"We really haven't had a great new addition of new classes of antibiotics with activity against some of these highly resistant gram negative pathogens — leaving some people to talk about us heading back into the pre-antibiotic era when it comes to some of these infections (i.e., KPC)," Calfee says.

Interestingly, in global outbreaks of KPC many countries are tracing the index case to a patient who traveled from the U.S., Calfee noted. Similarly, patients from India and Pakistan are spreading another gram negative of major concern: New Delhi Metallo — Lactamase — 1 (NDM-1), which confers resistance to all beta–lactams.

"What has been particularly concerning about NDM-1 is that it has really quickly spread this [resistance] among different bacteria," he says. "Our KPC problem has mostly been in Klebsiella pneumoniae — there has been clonal spread of a KPC-possessing strain throughout the country and the world. With this NDM-1 there has been a lot of transmission of the gene itself, from one bacteria to another."

Though only a few cases have been detected in the U.S., it's hard to imagine that IPs won't be dealing with NDM-1 at some point. The resistance mechanism has spread to a variety of bacteria, including species of Klebsiella, Escherichia coli, Enterobacter and Acinetobacter.

"That is very concerning, particularly if we get NDM-1 in a lot of E. coli isolates in the community," Calfee says. "Can you imagine if we have people coming in with community acquired UTIs — infections that are almost untreatable with all of our oral antibiotics. That's why I think this has gotten more press than even KPC, which is actually at this point more prevalent, particularly in the United States."

In a situation somewhat analogous to MRSA, an increasing proportion of some of the MDR-GNRs are becoming resistant. In Centers for Disease Control and Prevention surveillance data from 2006-2007, 59% of Acinetobacter isolates causing HAIs were resistant to at least three classes of antibiotics. "When you look at the others, they kind of pale in comparison, but it's still pretty dramatic to think that 14% of Klebsiella isolates were resistant to three classes of antibiotics and 6% were resistant to four or more classes," Calfee says. "Especially if you consider, a couple of decades ago these [infections] were easily treated by almost any antibiotic that you would expect to have activity against gram negatives."

New surveillance definitions

As mentioned, Calfee cited data from 2007, and by all signs the situation has certainly not improved since. However, definitions for MDR-GNR can vary widely by facility, leaving the true national picture obscured. "[It's] far from standardized," Calfee said. To address the problem, the CDC's National Healthcare Safety Network (NHSN) recently added new definitions for multidrug resistance for Klebsiella, E. coli and Acinetobacter.

"They updated the MDRO module and gave us four different gram negative pathogens that we can monitor through NSHN," he said. "Obviously, I think we all recognize that these are the important ones, but they may not be the only ones we care about in our institutions."

While the NHSN change may help standardize national surveillance for these emerging pathogens, a more subtle change in the clinical lab could actually have a more direct effect on day-to-day infection prevention. The Clinical and Laboratory Standards Institute (CLSI) has changed some of the breakpoints that determine susceptibility and resistance. As a result, cultures once labeled susceptible could now meet the definition of resistant,

Calfee explained. IPs should check with lab staff to make sure everybody is on the same page, he advised.

The CLSI changes enacted last year apply to antibiotic susceptibility testing and reporting for the bacteria Enterobacteriaceae, which include E. coli and Klebsiella.

"The CLSI recommended that laboratories lower the minimum inhibitory concentration (MIC) used to determine resistance or susceptibility for several of the cephalosporins, aztreonam and carbapenems," Calfee told APIC attendees. "This means that organisms that were previously called susceptible might now be called intermediate or resistant. It's not a change in the organism, it's a change in the definition of what is considered susceptible and what's considered resistant. These lower breakpoints might result in increased number of isolates that get classified as non-susceptible. [That could] lead to an increased number of patients that might require contact precautions and single rooms. Do you know whether your laboratory has implemented these changes or not? It's something to ask if you don't know."

At the same time, the CLSI said one result of the new breakpoints is that labs no longer have to test for extended-spectrum ß-Lactamases (ESBLs), which can be used as a marker for resistance. "We think these new break points clinically are more useful to the clinician than knowing the mechanism of resistance," Calfee said. "This actually gives you clinical data that you can use."

However, again, if infection prevention and the lab are not communicating, the change in practice could be misread epidemiologically. "First, if your lab is using ESBL production as a definition of MDR gram negative pathogens — and the lab stops testing for ESBL production — how are you going to define your MDRs?" Calfee said. "You might think, 'Wow, my ESBL problem went away — I haven't had one in months.' It may just be because your lab stopped telling you about it."

It's important to know whether you have MDR-GNRs in you facility. A patient with a MDR-GNR infection is roughly at a four-fold greater risk of death than someone infected with a drug susceptible version of the same organism, said Calfee, who has considerable experience with KPC as a hospital epidemiologist in New York City.

"We found that almost 40% of patients with [KPC] died of their infection — as compared to just over 10% of patients who had a carbapenem-susceptible Klebsiella infection," he said. In addition, MDR-GNRs increase the risk of treatment failure, increase length of hospital stay and increase hospital costs, he added. "There are a lot of reasons — very important patient-centered reasons — why we need to worry about these organisms and prevent their transmission," he said.

The increasing severity of outcomes is not necessarily in direct relation to virulence. With the notable exception of community-associated MRSA, resistant bacteria have generally not been more virulent than susceptible strains of the same pathogen, he said.

"These adverse outcomes are more likely due to delays in initiating effective therapy," he said. "Because we are not expecting this isolate to be resistant to our empiric regimen. It also may be that we have less effective or more toxic antimicrobial therapy. Some of these [MDR-GNR] are what we call pan-resistant. Some people are using the term XDR, extremely drug resistant pathogens." ■

TJC readies new performance standard

Standard puts teeth behind reporting requirement

Most accredited hospitals have been reporting ORYX performance data to The Joint Commission (TJC) on a monthly basis since 2002. But beginning on Jan. 1, 2012, TJC is putting teeth behind these measures, requiring an 85% compliance rate on a single composite rate, reflecting all accountability measures, in order to meet accreditation standards.

"This is really the first time The Joint Commission will be implementing a standard directly addressing performance on the reported measures," says Stephen Schmaltz, PhD, TJC's associate director in the Center for Data Management and Analysis, Division for Healthcare Quality Evaluation. The new standard does not apply to critical access hospitals.

Schmaltz emphasizes that how individual hospitals are performing on these measures should not come as any surprise because the JC has been providing regular feedback on their ORYX performance data and how they compare against other hospitals nationally. Further, at the end of this year, TJC will begin providing to hospitals the overall composite measure that they will be judged

by, so they will see it before the standard goes into effect, Schmaltz says.

The composite rate will be calculated using the most recent four quarters of data that are available at the time a hospital is surveyed. "For most organizations we will be looking at the third and fourth quarters of 2010 and the first and second quarters of 2011," says Sharon Sprenger, RHIA, CPHQ, MPA, senior advisor, Measurement Outreach, Division of Quality Measurement and Research. "But keep in mind that it will be a rolling four quarters going forward, so it may vary a little bit from hospital to hospital depending on when they are surveyed."

The composite measure is derived by taking the sum of all numerator counts of a hospital's accountability measures from all measure sets, and dividing that by the sum of all the denominator counts from the same accountability measures.

The current accountability measures pertain to care that is provided to patients that have experienced heart attacks, heart failure, and pneumonia. In addition, there are measures related to surgical care and to the care of children with asthma. "We believe that these are the measures that have the greatest positive impact on patient outcomes when hospitals demonstrate improvement," Sprenger says. "We have come to realize that only certain measures should be used for purposes of public reporting, accreditation, and pay for performance."

Sprenger notes that TJC selected these measures based on four criteria, including:

- strong scientific evidence that compliance results in improved outcomes;
- a close linkage between the process and an outcome;
- ability to accurately assess or measure the process of care;
- the process of care is associated with minimal unintended adverse effects.

In 2010, The Joint Commission began to comb through its data to determine which measures met the threshold for being accountability measures, says Sprenger, noting that the accrediting agency began with four measure sets that it has in common with the Centers for Medicare & Medicaid Services (CMS) and one measure set that TJC collects that CMS posts on its Hospital Compare website. "We identified or reviewed 28 measures, 22 of which we felt met the accountability criteria," she says. "Then we identified six measures we labeled as non-accountability measures, which we believe are more suitable for secondary uses."

The non-accountability measures include providing smoking cessation advice to patients with heart attacks, heart failure, and pneumonia; providing antibiotics to patients with pneumonia within six hours of arrival to the hospital; and providing discharge instructions and LVS function assessments to patients with heart failure.

The Joint Commission fully intends to add more accountability measures to the mix soon, but these data points will be collected for 12 months before they are calculated in the composite measure. The agency also intends to gradually inch up the compliance standard for accreditation. "We anticipate moving that up to a 90% threshold eventually," says Schmaltz. In 2010, TJC reports that 98% of hospitals met an 80% compliance rate and 92% met a 90% compliance rate.

As of Jan. 1, 2012, hospitals that fail to meet the 85% compliance rate for the accountability measures at the time of their survey will receive a requirement for improvement (RFI) in their accreditation report, and they will have an opportunity to address the problem, says Sprenger. To assist these organizations and any accredited hospitals that are striving to improve their performance on these measures, TJC launched a "Core Measures Solutions Exchange," an online tool that enables hospitals to share their success stories and offer up strategies that have proven to be effective.

"We are really trying to facilitate dialogue between hospitals so that they can help each other learn," says Sprenger. "They can search for solutions, post comments, rate the usefulness [of a strategy], and note if they think a particular solution is transferable to another organization."

The solutions can be searched by measure so if a hospital is having difficulty with a particular measure, administrators can pull up that measure to see what organizations have done to improve their performance in this area, adds Schmaltz. The online exchange is only available to accredited organizations to review. ■

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