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IN THIS ISSUE

Toyota situation is no reason to abandon Lean, say experts

System works; Toyota 'took eye off the ball,' QI expert says

For years now the name Toyota has been synonymous with quality — not only to the car-buying public, but to a growing number of health care professionals. Lean methodology has been at the heart of numerous QI success stories, standing as the gold standard for performance improvement and efficiency.

Small wonder, then, that the recent spate of recalls at Toyota has raised questions among some as to whether the problem lies in the company's methodology itself. But at a recent program broadcast on WIHI, the Institute for Healthcare Improvement's new online radio station, called "Success at the Right Speed: Learning from Toyota," a group of quality experts responded to that suggestion with a resounding "no."

"Our leadership came together quickly to understand what we thought about what we were hearing, reading, and what we needed to say," said **Gary Kaplan**, MD, chairman and CEO, Virginia Mason Health System in Seattle. "We separate the Toyota production system from the motor company. The company is the organization that has been at it the longest and has taken it as far as it can come, but many successful companies employ these principles around the world and are still successful; we made that distinction clear."

In addition, he continued, his leadership team pointed out that this was a "wonderful learning opportunity." Lean, he explained,

KEY POINTS

- Having leaders visit the 'front lines' frequently critical for success.
- Local discoveries must be shared across the system.
- Many avenues available to hospitals wishing to adopt Lean.

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entails the concept of "Fail forward fast." It's better to go for it and test whether something works rather than letting the failure of fear take hold and doing nothing or taking a lot of time to make a change; it's from mistakes that we can learn, the concept holds. "Without risk, you can't have success," he noted. "This is a great opportunity to learn from the missteps of someone other than ourselves. We've begun to explore what we could learn about this — about how you can take your eye off the ball, expand too fast, and what in the Toyota culture allowed this to happen." In fact, he emphasized, "They strayed from the core principals of Lean that have so heightened the vigilance here at Virginia Mason."

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EDITORIAL QUESTIONS

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"It's been interesting to go back and look at things," added **John Toussaint**, founder and President of the ThedaCare Center for Healthcare Value, Appleton, WI, and now CEO Emeritus and CEO of the Thedacare Center for Value. "We do Hoisin planning [a Toyota tool that involves taking strategy from the senior management team throughout the organization so that everyone understands the core priorities and strategies]," he notes. "We use that thinking as a way to deploy strategies. There's been a lot of talk around growth, and looking at how Toyota basically outgrew itself." A number of experts who have studied the situation, he pointed out, said that Toyota could not keep up with growth in terms of quality. "There were not enough people who understood the system as they opened up plants all over North America and the world; the speculation is that this growth was too fast," he asserted.

At ThedaCare, he added, the delivery of value to the customer is more important than growth. "We're all rethinking things, and questioning what the core components of how they got off track were," he noted. "But you have to separate the system from Toyota strategy. Many people believe the strategy is what created these defects."

Patrice L. Spath, of Brown-Spath & Associates, Forest Grove, OR, who was not one of the panelists, agrees. "One conclusion that could be drawn from the quality problems at Toyota is that the Lean methodology needs to be significantly modified; but the lesson to be learned, however, is not that Lean techniques don't work," she says. "Consider this: For all of our quality improvement efforts, which has a greater influence on outcomes — the process changes or the culture of the host organization? In my experience any improvement effort — Lean, Six Sigma, rapid system improvement, root-cause analysis — will stumble or eventually fail if organizational factors are inhospitable."

First, and foremost, she notes, health care leaders must differentiate between Lean principles and the techniques used to design more efficient processes. "Much has been written about how to reduce waste by using Lean techniques," she observes. "Thus, the concept of Lean has come to refer to something that improvement teams use when redesigning processes. However, a Lean organization is not just focused on eliminating waste at the front lines of patient care. Leaders in a Lean organization are also personally involved in advancing the principles."

Lean organizations, she asserts, are commit-

ted to continuous improvement. "This is evident in a number of practices and procedures, such as formation of rapid-cycle improvement teams and simulation-based training that exposes physicians and staff to new problems or unusual situations," she says. "Heightened awareness of quality problems and ongoing training are crucial components of Lean principles."

Avoiding Toyota's mistakes

What should hospital quality leaders be doing to ensure their facility does not repeat Toyota's mistakes? "They've got to keep their eye on the fundamentals," said **Steven J. Spear**, senior lecturer, Massachusetts Institute of Technology Sloan School of Management, Cambridge, MA, and a senior fellow at IHI. "I think that's what it was for Toyota. It went from being a crummy car company to being the best in world. They did so because they had mastered a set of skills most other organizations do not have. What they had developed and mastered was how to design systems and operate and improve them when they broke along the way; a science for taking local discoveries and broadly applying them, and having leadership involved in that."

He agreed with Toussaint that while Toyota took advantage of marvelous growth opportunities, "They probably inadvertently overtaxed their internal capacity to develop people. People joined the company, but they were not grounded in these skills."

If you run a health care organization, he continued, it's clearly important that your staff have great clinical skills. "But, in addition, if you really want to achieve breakthrough quality access and affordability, these [Lean] fundamentals are absolutely essential — and they need constant cultivation," he emphasized.

"I think Toyota has set the direction for all of us on the Lean journey; all of us have watched them, and tried to emulate them," added Toussaint. "There's a lot to be learned from this latest snafu; Mr. Toyoda, in a *Wall Street Journal* article, apologized to the world for getting off track and said they needed to go back to basics; that they had lost their way in terms of focusing on continued improvement and respect for people. It proves the Lean journey is a challenge for all of us — even Toyota — to stay focused, and disciplined."

For health care, he continued, one of the major points of focus should be the collapse of time. "What we try to do is take the waste out of our systems, and as we do, wait times go down, times for STEMI go down, and we're able to provide more timely care," said Toussaint. "The other key thing is that every process must be looked at in terms of whether it is adding value to the patient or not. We try to take non-value-added steps out of patient care; as we do, we reduce errors. There are fewer handoffs, and fewer opportunities for error; this drives lower costs to the patient."

Get out on the 'Gemba'

"One of the key principals of Lean management is to be visible on the Gemba — to go and see for yourself," noted Kaplan. (As the original Lean principals were designed for the plant environment, this basically meant walking the plant floor.) "Toyota expanded beyond the ability to train people and keep processes within the line-of-sight Gemba, to be on the Gemba and respond to workers' concerns. This ran against their own philosophy and principals."

Toussaint added that potentially bad situations will not be caught early "if we are not out on the Gemba." He said that at ThedaCare, "The CEOs and senior executives were there once a week or more often than that." The place of work, he explained, "is where value is created for patients and where you can deeply understand that."

If leadership does not focus on the Gemba, he continued, "We can get excited about a 'new shiny object' and lose focus on what's most important — what problems our staff face, how to remove barriers, how to assure defects are identified and processes are continually improved. You need to be at the bedside to try and understand how to improve process."

Just what are those "shiny objects"? "How many things do we report to the government?" Toussaint posed. "How many other things are overburdening the staff? When I was CEO, I decided that we had seen the enemy and the enemy was us — me — because we kept adding more to their plates. When I started to go to the Gemba and understood that the only thing that matters is what happens at the bedside, I understood it comes down to picking out what is really distracting. We need to stop overburdening our staff and managers and focus on what adds value to the patient."

The way you know if there is proper focus, he continued, is to look at the management team and see where they spend their time. "If they are in

their office and at meetings and less on the front line trying to identify defects and solve problems, that's the thing I look at as the first sign of unraveling," he shared.

Spath agrees. To create a hospitable environment that nurtures quality, she says, "It starts with leaders having a better understanding of what is actually happening on the front lines of patient care. Systems and processes must be measured and analyzed with both quantitative and qualitative information. Quantitative data are necessary for policy development, and qualitative data are necessary to know what patients and frontline workers actually experience."

There also must be a climate of open communication among all staff, she continues. "A practice that can promote open communication is reporting of near-misses — situations in which mistakes are caught and corrected before patient harm occurs," Spath explains. "Reports of near-miss events reveal operational trouble spots requiring further investigation. Regular discussion of near-miss events heightens everyone's sensitivity to operations and reinforces the benefit of pointing out quality problems."

Finally, says Spath, "People at all levels in the organization must be encouraged to question the way things are done and question decisions made by others. Frequent interactions between leaders and frontline staff should be encouraged. In some hospitals, senior leaders and middle managers regularly visit different clinical areas to learn about the patient safety concerns of frontline staff and gather their opinions on how risks can be reduced. These interactions reinforce the importance of keeping everyone's eye on the 'safety' ball."

A 'more planful' approach

"Going to the Gemba can be valuable, but we've also created a program here of required executive and leader rounding that is more planful," added Kaplan. "Everyone rounds at least weekly — and many do it more often — with questions that must be asked of both staff and patients. In addition, we use centralized deployment so rounding is not just in their areas of responsibility." This approach, he explained, brings "outside eyes" into the process. "If you're acclimated to an area, you often can't see defects and waste," he explained.

In addition, said Kaplan, data are critically important to look for early trends. "If Toyota had picked up on signals earlier, it may have been able to prevent this from getting as big as it has," he offered.

"People do get distracted by shiny objects," added Spear. "Fundamentally, the way to achieve exceptional performance is to generate and sustain high-speed, broad-based improvement and innovation. You never hit it right on the first try; you have to 'discover' your way to perfection."

That "way," he continued, involves the cultivation of how to design something that captures the best knowledge to date, seeing problems in design when they arise, and if they arise, determining how to solve them. "It's a disciplined process of diagnosis to treatment — getting to the root cause," he noted. "When you have discovered something locally, you share it systemically," he added.

The other key element, he continued, is "the rigor with which leaders are in engaged on the Gemba. Are more people with more rigor doing all of this in a rigorous fashion? If you see that, you can have pretty good confidence you are sustaining."

Kaplan agreed. "You have to remember that in order to really have sustainable change of the magnitude required in health care, you need a deep commitment of senior leaders; I can't emphasize that enough," he said. "The same is true of quality improvement in general — you can have a whole cadre of committed middle management, but all too often but they're up against the inattention of senior leaders."

The bottom line, Spear added, is that health care quality professionals should not lose faith in the Lean methodology. "In the first pass it had tremendous lessons for health care," he asserted. "Toyota took a huge variety of specialties and disciplines and iterated them into a harmonious, well-coordinated system. When people outside of Toyota started to practice Lean, you had tremendous improvement in the late '80s and early '90s." But not all health care facilities, he emphasized, have reaped those benefits yet. "Today, many health care facilities and systems are still in an organizational form like they were in the '80s — stovepipe silos by specialty without good systems to mesh into service lines to deliver great quality," he noted.

Kaplan, for one, is a keen believer in the benefits of Lean, and his system was an early health care adopter. "We decided to take the plunge, and said if you wanted to be a senior leader you had to join us on a two-week trip to Japan," he recalls. A total of 32 people went on the trip, "and came

home totally transformed." Said Kaplan: "We saw the opportunity to bring Lean to our patients and our organization, and came to believe the only way to do it was jump into it with both feet. We said, 'This will be our management system: the Virginia Mason Production System.'" They focused on training all 5,000 of their staff in the language, methods, and tools of Lean, with more than 100 certified leaders, who continue to lead workshops every year.

Fortunately for facilities who are now looking to adapt Lean methodology, a trip to Japan is hardly necessary, added Kaplan. "Most facilities that have had success have not been; for us it represented a 'see-feel' we felt we needed." Today, he said, there are lots of other ways to learn Lean methodology. "Manufacturing companies use Lean in most communities across the country," he noted, indicating that many would be pleased to permit a site visit. "And there are now many consulting companies, the Lean Enterprise Institute, IHI, and the Virginia Mason Institute." ■

QI initiative reduces post-operative pneumonia

Focus on nurses as most active frontline providers

Researchers at the Veterans Affairs Palo Alto Health Care System (PAVAHCS) and Stanford University School of Medicine have employed an eight-step process improvement intervention to significantly reduce the incidence of pneumonia in post-operative patients on the surgical ward.

The study was published in the April issue of the *Journal of the American College of Surgeons*.[1]

The intervention began in April 2007, with baseline incidence of inpatient ward pneumonia calculated from the Veterans Administration National Quality Improvement Program (VA-NSQIP). There was a decrease in pneumonia incidence from 0.78% in the pre-intervention group to 0.18% in the post-intervention group. What's more, the reduced levels of pneumonia have been maintained even after the interventions formally concluded.

"Even though the data collection technically ended in 2008, we actually haven't had a bad month yet," says **Sherry M. Wren**, MD, FACS, professor of surgery and associate dean, academic affairs, at Stanford University School of Medicine; chief of general surgery at PAVAHCS; and lead author of the study.

KEY POINTS

- Both current nursing staff and new employees are versed in process.
- Monthly data provide ongoing motivation for frontline staff.
- Intervention can be replicated in any health care facility.

Wren undertook the initiative as part of a faculty development program, during which she was required to take on a leadership project. "I thought we should do one involving surgical QI," she recalls. "We had already seen progress on VAP [ventilator-associated pneumonia], so I saw this as another opportunity to prevent pneumonia."

The eight steps of the intervention were:

1. education of all surgical and ward nursing staff about their role in pneumonia prevention;
2. cough and deep-breathing exercises with incentive spirometer;
3. twice-daily oral hygiene with chlorhexidine swabs;
4. ambulation with good pain control;
5. head-of-bed elevation to at least 30 degrees and sitting up for all meals ("up to eat");
6. quarterly discussion of the progress of the program and results for nursing staff;
7. pneumonia bundle documentation in the nursing documentation;
8. computerized physician pneumonia prevention order set in the physician order entry system.

Nurse education critical

Wren says that among the keys to the success of the program were nurse education and leadership from the nurse managers. "The success or death of a program like this lies in nursing," she asserts. "They are the people who were doing the bulk of the interventions, with the exception of placing the orders for those interventions."

Initially, she says, she and the nursing leadership met with the ward staff and told them about the program and why it was being undertaken. The project also was covered as part of orienta-

tion — why the program was being implemented, the key steps, and the importance of compliance. "Now, we also talk about how successful it is," adds Wren.

But perhaps the most important element of the program, she continues, was the monthly pneumonia statistics for the ward. "We have a NSQIP nurse who runs the data, so if a pneumonia case comes in and if it's in the sample group, we know about it," says Wren.

The monthly data have value whether they are positive or negative, she notes. "The nurse manager sees them every month, so it's an ongoing process," Wren explains. "If there is a 'zero' month, that can be discussed in meetings as a positive; it continues to motivate the staff, because they are getting the feedback that what they are doing is making a real difference to the patients. That motivation really helps."

Fortunately, Wren continues, she has never seen a big spike in pneumonia cases. "If I did, I would get together with the nurse manager, look at the cases, and figure out the cause — i.e., a lot of new staff, or an influx of patients who are travelers," Wren offers.

Since part of the standard nursing documentation in the pneumonia bundle requires the nurse to say whether they performed the required steps, tracking compliance is not a challenge. "But honestly, when I get a zero rate most months, there's no need to check compliance," Wren asserts.

Keeping the momentum

Wren continues to communicate with nursing leadership on a regular basis. "Basically, the nurse manager, the NSQIP nurse, and myself share the statistics, so if we saw a blip we'd be able get on it right away; our nursing management knows everything that's going on," she notes.

"The nice thing for me is [the elements of the program] continue to go on, and we still see the benefit; the standard number I see is zero," she adds. "I really think it's due to the feedback. When the paper came out, we put it up in a visible place on the ward where you can put up [important information], and the ward has taken real pride in it."

Wren adds that she can see the difference just by walking the floor. "I just finished ward rounds, and you can see the heads of the beds up; people are not lying flat," she says. "You also see more people walking." Wren says she had to hire another nursing assistant to be able to get more people up and walking, and received budget approval from management.

Management buy-in was definitely critical to the success of the program, she continues, as was staff leadership. "You've got to have some sort of champion who owns the process initially until everyone can see the benefits," she explains.

Could her success be replicated in any facility? "Absolutely," Wren concludes.

[For additional information, contact: Sherry M. Wren, MD, FACS. Phone: (650) 849-0107.]

REFERENCE

1.Wren SM, Martin M, Yoon JK, and Bech F. Postoperative Pneumonia-Prevention Program for the Inpatient Surgical Ward. *J Am Coll Surg*; April 2010, Vol. 210, Issue 4: 491-495. ■

Report patient safety lapses in your hospital

CMs can help eliminate careless behavior

Hospital case managers are involved with patients from admission through the entire episode of care and discharge, which puts them in a position to spot patient safety issues and work on ways to prevent them, says **John Banja**, PhD, professor of rehabilitation medicine, medical ethicist at Emory University's Center for Ethics and director of the Section on Ethics in Research at Emory's Atlanta Clinical and Translational Science Institute.

"Since case managers observe patients during the entire hospital stay, patient safety has got to be an integral item on the case manager's radar screen. When lapses of safety occur, case managers are among the most likely people to pick up on it," he says.

As the Centers for Medicare & Medicaid Services (CMS) moves toward denying reimbursement for hospital-acquired conditions that can be prevented, with commercial payers likely to follow suit, it's more important than ever to eliminate careless behavior by the staff who are providing care, Banja points out.

The first rule of health care ethics is to do no

harm, he says.

"If we have elements in our system that expose patients to an unnecessary level of harm and we're not doing anything about it, we are breaching our ethical obligations," he says.

Hospitals are very complex organizations, and if there is just one glitch in an entire process, it could result in a patient safety issue, Banja says.

For instance, dozens of people are involved in the processes that take place between the time a physician orders a medication and the time a patient receives it.

If a patient doesn't get his or her medication on time or gets the wrong medication or dose, it could be that the doctor's handwriting was illegible, that the pharmacy issued the wrong medication or dose, that the nurse failed to administer it on time, or other scenarios.

"When the glitches occur, nothing bad happens the majority of the time, but that can seduce us into thinking the system is safe enough. Then out of the blue, a patient gets the wrong medicine and a catastrophe occurs," he says.

The health care system has a tendency to tolerate a lot of imperfections, as well as tolerating people — especially physicians — who are known to be careless, Banja says.

In addition, clinicians often have to treat patients when information is missing from the medical records. Equipment may not work properly or a clinician routinely fails to wash his or her hands between patients.

"These kinds of things happen, and sometimes we don't take steps to correct them as aggressively as we should," he says.

Most nurses on the unit know which nurses are pulling their weight and which ones tend to take short cuts in patient care, he adds.

"Health professionals, especially nurses, understand that they work within an imperfect system, and they're always putting Band-Aids on those imperfections. The problem is that while nurses are unsung heroes and heroines who can get the job done under extreme circumstances, they are not especially good at coming up with long-term fixes," he says.

Most hospitals are very good at short-term fixes for system problems that occur, but they fall short when it comes to making permanent changes in hospital processes to eliminate errors, Banja says.

For instance, when a case management director reviews data, he or she may notice a spike in urinary tract infections or central line infections. This could be the impetus for a quality improvement project, first to determine the cause of the increased infections and then to take steps to correct the problem, he says.

"Most patient safety issues do not tend to be dramatic things like wrong-site surgery. They generally tend to be the more mundane things that people overlook and omit doing," he says.

Look for patterns, Banja says.

"People make errors. It's when there is a pattern of these errors happening that you know something is systemically wrong," he says.

For instance, one observational study of physicians showed that more than a third miss one of the five basic steps in putting in a central line, Banja says.

"Health care providers need to develop checklists like airline pilots have been using for decades. The checklist should include the basic steps that a provider checks off each time the procedure is performed," he says.

When health care professionals fail to follow hospital policies and procedures or basic standards of care, it's not because they're evil or malicious. It's usually because they're overwhelmed with work, he says.

"We should not be pushing health care providers to their limits of endurance. Sooner or later someone who is so exhausted by overwhelming pressure to do more and more is going to make a big error," he says.

When an error occurs, the immediate response shouldn't be to blame or punish the person responsible but to determine what made it easier to commit the error, to forget to do something, or to overlook something important, he adds.

Hospitals should have a mechanism for addressing patient safety lapses when they do occur, Banja says.

The policy should spell out what a staff member should do if he or she observes a patient safety issue and should include a mechanism that protects the person who reports the lapse or careless-

KEY POINTS

- Case managers can play role integral role in patient safety.
- CMs can find opportunities for QI in reviewing data.
- A pattern of errors could be a systemic problem that should be investigated.

ness, he says.

"Overwhelmingly, people do not like to point the finger at another person. Hospitals must establish patient safety policies that emphasize that staff members should report patient safety lapses," he says.

In addition, hospitals must respond when patient safety problems are reported.

"It really boils down to leadership. Leaders all say they're concerned about patient safety, but they must constantly and relentlessly practice what they preach," he says.

[For more information, contact: John Banja, PhD, medical ethicist, Emory University's Center for Ethics, e-mail: jbanja@emory.edu.] ■

Standard is revised for medical staff bylaws

Joint Commission: It provides more flexibility

The Joint Commission has approved revisions to Medical Staff (MS) 01.01.01, formerly known as MS.1.20. This standard, it says, "is designed to contribute to patient safety and quality of care through the support of a well-functioning, positive relationship between a hospital's medical staff and governing body."

Standard MS.01.01.01 addresses the medical staff's self-governance and its accountability to the governing body for the quality and safety of patient care. It recognizes that while a hospital's governing body is ultimately responsible for the quality and safety of care, the governing body, medical staff, and administration must collaborate to achieve this goal.

The revisions are based on the unanimous recommendations of an 18-member expert task force representing the American College of Physicians, American College of Surgeons, American Dental Association, American Hospital Association, American Medical Association, Federation of American Hospitals, National Association Medical Staff Services, as well as hospital trustees and health care attorneys.

The revised standard goes into effect March 31, 2011, which provides a year for ED managers and other hospital leaders to come into compliance with the revised requirements. The deadline also gives officials with The Joint Commission an opportunity to answer any questions that might arise about the revised standard. They also say it will provide additional education to support hospitals and prepare them for implementation of the standard.

The medical staff bylaws issue has been a subject of interest from physicians and hospitals for several years, notes **Charles A. Mowll**, FACHE, executive vice president of business development, government, and external relations for The Joint Commission. Changes had been proposed in 2007, but hospital officials had thought they were overly proscriptive and they didn't really see a quality and safety impact, he says.

"The standard defines those elements that need to be cited in the bylaws, but when we put the standard out we also said all the attendant detail and descriptions of those items had to be in the bylaws as well, and that was just not reality in many hospitals; many have them in policies and procedures and rules and regulations," Mowll explains. "If we had let it stand in its old form, hospitals would have had to go in and move a lot of material around from rules and regulations to bylaws, and bylaws require joint endorsement of both medical staff and the governing body."

Under the revised standard, if the medical staff wants to have the associated details in the bylaws they can, but they can also reference them in rules and regulations or policies and procedures, he says.

For ED managers, says Mowll, the revised standard might not require many changes at all. "It is our hope that this change will not have any dramatic impact on well-functioning staff in terms its relationship with the governing body," he says. "We don't want to fix what isn't broken."

Michael R. Humphrey, MD, the chief clinical officer at St Rita's Medical Center in Lima, OH, agrees. "Everything they're saying should be changed, we have had in the form of written bylaws," Humphrey says. "Maybe we're unique or fortunate, but there's not one line-item we would have to change."

Collaboration means safety

Another key aspect of the standard is its emphasis that the medical staff's self-governance be maintained and its collaboration with the hospital's governing body enhanced, says Mowll.

"We want to emphasize the goal here is safe, high quality care," says Mowll. "When these three [medical staff, the medical executive committee, and the governing body] work together collaboratively, the patient benefits."

This change led to a change in the standard concerning communication. "What we all assume is that when the medical executive committee acts on behalf of the medical staff, it lets them know what changes it is making in advance," Mowll says. "That was never written down before, so we added it into the changes — that there needs to be pro-active communication between the med-exec committee and med staff and vice versa — so if the medical staff makes changes and takes it to the governing body, that is communicated beforehand with the medical executive committee."

That active communication builds trust and a more positive working relationship, he says. In addition, Mowll says, the features that are required in the bylaws, such as the credentialing process, ensuring a fair hearing and appeals process for doctors under scrutiny, and formal processes such as history and physicals "have a direct impact on patient safety." That's why the various leadership groups must see eye to eye in these key areas, he emphasizes.

The ED at St. Rita's has a clinical director and an administrative director, notes Humphrey. "They are the ones who build all the policies and procedures applying to the department itself," he says. It is usually the clinical director who makes bylaws recommendations, Humphrey says.

In terms of quality improvement, there is strong communication with the medical executive committee, he says. "We operate on a 6-point quality assurance level," Humphrey says. "Any case rated 3 or above gets referred to the med-exec committee, and they will determine what needs to be done."

Another thing the revised standard accomplishes is a sense of shared responsibility for patient safety and quality, Mowll says. "The new emphasis in the way we rewrote the standard is that you can't point fingers," he explains. "It's not just the hospital's responsibility. It is the hospital and medical staff working collaboratively and supporting each other." (*Editor's note: Detailed information about revised standard MS.01.01.01 can be found on The Joint Commission Web site, www.jointcommission.org. On the right-hand side of the page, under "Joint Commission News," click on "Joint Commission approves revised medical staff bylaws standard MS.0.01.011.)* ■

Hospitals hiring more ED pharmacists

Model works well for all

Five or 10 years ago, few pharmacists would have been able to gain experience as an emergency department pharmacist, even if they had thought about that field as a specialty. But times are changing.

There are increasing numbers of emergency pharmacy residency programs. And the National College of Clinical Pharmacy (NCCP) has an emergency practice program that quickly grew from 20 members to more than 200 members in the first year of its existence.

"What we're seeing right now, and what we'll continue to see is one of the biggest growth areas for acute care pharmacy, which is a specialty in emergency medicine," says **Curtis E. Haas**, PharmD, FCCP, BCPS, director of pharmacy at the University of Rochester Medical Center in Rochester, NY. The medical center created the emergency pharmacist position in 2000. It also has one of the nation's earliest pharmacy emergency residency programs. Its ED has 95,000-100,000 visits each year.

"It wasn't that long ago that it was rare to have pharmacists working in the emergency department, and when you did it was as a dispensing satellite," Haas says. "What we're seeing across the country now are more and more organizations adding emergency pharmacy programs."

Emergency pharmacy residents are in very high demand when they graduate, and they have their pick of where to go in the country, Haas says.

Hospitals are scrambling to add emergency pharmacy programs, and this specialty will continue to grow rapidly, he predicts.

Emergency pharmacy medicine was such a new area a decade ago, that one emergency pharmacist says he was unfamiliar with what such a job involved when he began his hospital career as a clinical staff pharmacist, says **James Jensen**, BS, PharmD, emergency department clinical coordinator at Advocate Christ Medical Center in Oak

Lawn, IL.

Jensen moved into emergency pharmacy as soon as the opportunity arose.

"I think it's a great area for pharmacy," he says. "It's exciting to be in the ER, and it's challenging on a day-by-day basis."

One of the chief factors pushing the increasing demand for emergency pharmacists is evidence that this can prevent medication errors, increase ED team satisfaction, and improve patient outcomes.

A recent study that observed emergency department pharmacists found that they identified 7.8 recovered medication errors per 100 patients and 2.9 per 100 medications. Most of these recovered errors involved potential adverse drug events, which were averted by the pharmacists' review of medication orders. And most of the errors were serious or significant.[1]

Some hospitals and studies also find cost savings with having this program.[2]

The use of an emergency pharmacist undoubtedly prevents some unnecessary patient care and extended lengths of stay.

But putting a dollar amount to that utilization impact is difficult, Haas notes.

"I have trouble selling those soft numbers to my administrators," he says. "They want a hard number based on actual costs and outcomes."

And the ED typically uses less expensive drugs than those used in other areas of the hospital, so showing significant hard cost improvements in drug use is challenging, he adds.

Instead, Haas focuses on how the hospital can use an emergency pharmacist to impact some of the quality markers that are important to the Centers for Medicare & Medicaid Services (CMS).

"Can we work with the ED folks to improve quality measures that we're scored publicly on?" he says.

For instance, one quality measure is how quickly the ED can move an acute myocardial infarction (MI) patient from entering the door to diagnosis and to being taken to the cardiac catheterization laboratory, says **Nicole M. Acquisto,** PharmD, BCPS, clinical pharmacist specialist in emergency medicine at the University of Rochester Medical Center.

Acquisto led a study into acute MI outcomes with a pharmacist present.

"What they found was that when a pharmacist is present and involved in care, then it results in patients moving through the system more quickly," Haas says. "It shortens the time from diagnosis to cath lab and from door to balloon [angioplasty] time."

The study found that when an emergency pharmacist is present, it took an average of 11 minutes less for the patient to be taken to the cardiac catheterization laboratory.

In another measure of how fast an acute MI patient receives a balloon angioplasty, the mean difference from door-to-balloon angioplasty when a pharmacist is present is 14 minutes less time, she adds.

For acute MI, 90 minutes is considered a marker for significant mortality risk. Acquisto and co-investigators found that when an emergency pharmacist was present, these patients were 3.8 times more likely to meet an adjusted door/electrocardiogram to balloon angioplasty time of less than 90 minutes. They also were three times more likely to meet an adjusted door/ECG to cardiac catheterization laboratory time of less than 30 minutes.[3]

The study found that having a pharmacist present was one of three factors that independently impacted the time factor for acute MI patients. The other factors were whether the >hospital had catheterization lab staff present and whether the patient arrived by ambulance, as opposed to walking into the ED, Acquisto says.

"At the time we did this study, an acute MI was a very medication-dependent emergency," Acquisto notes. "We ran heparin infusions and got the patient aspirin and beta blockers."

Now patients are moved more quickly from the ED to the cath lab, bypassing some of the interim drugs, she adds.

"The idea is to find out how to further shorten the time to get patients to the cath lab," Haas says.

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ED pharmacy program has quality benefits

Reduction in drug use saves $3 million

An Illinois hospital has shown that it can save considerable money and improve safety and quality outcomes by having pharmacists cover its emergency department (ED).

The program has helped reduce medication errors by 70% and improve clinical outcomes for patients with congestive heart failure (CHF), says **James Jensen**, BS, PharmD, emergency department clinical coordinator for Advocate Christ Medical Center in Oak Lawn, IL.

For example, the improved safety largely is the result of pharmacists' involvement in implementing safety initiatives, including using smart pump technology and putting alerts in the automated dispensing cabinets.

"We have a drug cabinet called Omnicell, and when nurses pull certain medications, we have a how-to pop-up on the computer screen that they have to read before they can take out the medications," Jensen explains.

Pharmacists can program these messages and add new alerts as needed.

The main goal for CHF patients was to achieve a 20% drop in their arterial blood pressure through correct titration of nitroglycerin. Once the pharmacist got involved, the ED reached this goal, Jensen says.

Another positive outcome involved improved antibiotic administration. Prior to having an ED pharmacist, it was not uncommon to have pneumonia patients who were not given antibiotic treatment for more than 6 hours after presenting in the ED, he says.

An ED clinician might have missed a chest X-ray, or nurses were backed up with difficult cases and hadn't gotten back to the patient to administer antibiotics. Once pharmacists began to work in the ED, all pneumonia patients received antibiotic treatment within 6 hours of presentation in the ED, Jensen says.

There also has been cost avoidance for the hospital since the ED's use of drugs has decreased with pharmacist participation.

In 2005 and 2006 when the first pharmacist began to work in the ED, the cost avoidance was more than $1 million. In 2007, the hospital added a second pharmacist position, which increased the total cost avoidance to more than $3 million.

Now the ED has three pharmacists who provide 16-hour coverage from Monday through Friday and 10-hour coverage on Saturdays and Sundays. And there are plans to add another pharmacist to cover a midnight shift, Jensen says.

Also, the ED pharmacy program includes a pharmacist residency for first-year and second-year residents. And there's an elective, 2-week rotation available to medical residents who might be interested in learning more about pharmacy and drug interactions, he says.

"They can work with me for 2 weeks and see the pharmacy side of things," he adds. "We probably get a couple medical residents who rotate with us each year."

Pharmacists in the ED also have developed and annually review protocols for handling patients with CHF, ischemic and hemorrhagic stroke, acute coronary syndrome, diabetic ketoacidosis, and sepsis.

Physicians and nurses use the protocols when these patients are admitted and follow the protocol guidelines for drug administration and dosing. The protocols are in paper format, but they'll soon be in electronic format, Jensen says.

The forms are kept at the nurses station where they're pulled and then filled out and signed by physicians. Nurses and doctors check the forms to note any potential medication contraindications, and they use these to verify recommended dosing levels.

"We help carry out the medication orders from the protocols," Jensen says. "And we check lab results."

Jensen describes how a typical day in the ED might unfold for a clinical pharmacist:

• Review cases where patients who have been waiting for a long time: "Usually when I come in there are patients who have been waiting in the ED

COMING IN FUTURE MONTHS

- Bar code/eMAR combination reduces administration and transcription errors
- Mentoring and support of junior nurses by senior staff can help improve quality
- Medical education firm, medical school join forces for QI education

for results," Jensen says. "On bad days they might be waiting for beds for 20 hours or so."

Jensen reviews why these patients are in the ED, what they're being treated for, and he sees if there are any treatment adjustments that should be made. For instance, patients who have been in the ED for a long time might need another administration of their medication.

"I discuss with the doctor their dosing — whether it's antibiotics, steroids, asthma drugs, or medication for chronic obstructive pulmonary disease exacerbations," Jensen explains. "And I make sure they receive the medication they need."

Pharmacists also check to see if these patients have any daily medications that need to be taken.

• Review medication histories: "We try to obtain a medication history from all patients who are admitted," Jensen says.

Nurses assist with this process of asking patients for their list of medications and calling community pharmacies to fill in the blanks.

• Help where needed: As patients arrive, ED pharmacists will help as needed in intubating patients in respiratory distress, dosing medications for sedation, and recommending appropriate therapies.

"We'll be at the bedside, helping nurses with any patients who have full or traumatic arrest, and we help with any code situations," Jensen says. "We help with resuscitating patients and cardiac stability."

ED physicians have liked having pharmacists at the bedside to serve as medication double-checks to minimize or eliminate errors, he notes.

"Doctors ask us all kinds of questions about patient's symptoms and whether these could be from medications," he says.

• Provide antibiotic therapy: ED pharmacists assist with antibiotic dosing and monitoring patients' antimicrobial medication, such as vancomycin therapy.

"We make sure these patients have an appropriate renal function for the drugs they're given, and we look at their complete blood count," Jensen says.

• Assist with transitions: "When patients are discharged from the emergency room, we help with medication education, home prescriptions, medication counseling, as well as diabetes education for patients who are discharged with insulin or a glucose meter for the first time," Jensen says.

Pharmacists also educate patients who were prescribed injectable anticoagulants and are returning home. ■