HOSPITAL CASE MANAGEMENT™

the monthly update on hospital-based care planning and critical paths

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IN THIS ISSUE

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CMS' changes to IPPS will affect your hospital's reimbursements

CMS expands post-acute transfers, ties reimbursement to quality reporting

The Centers for Medicare & Medicaid Services (CMS) has made sweeping changes to the Inpatient Prospective Payment System (IPPS) that will have a major impact on hospital reimbursement.

The final rule, issued Aug. 1 and effective Oct. 1, 2005, expands the number of diagnosis-related groups (DRGs) covered by the post-acute care transfer policy from 30 to 182 and takes an additional step toward its pay-for-performance initiatives by giving the full 3.7% marketbasket reimbursement increase only to hospitals that submit previously voluntary quality data, and only if the quality data meet accuracy standards for two consecutive quarters. **(For details on the quality measure requirements, see related article, p. 147.)**

The new CMS regulations make it more important than ever for case managers to ensure patients get the best possible care in a timely manner and everything done for the patient is documented correctly, says **Deborah Hale**, CCS, president of Administrative Consultant Services Inc., a health care consulting firm based in Shawnee, OK.

Case managers should continue to ensure their patients receive the right services at the right time, she suggests.

"The main thing that case managers need to do is to focus on the appropriate site of service and not push patients prematurely into a post-acute level of care," Hale says.

According to CMS estimates, the expansion of the post-acute care transfer policy will result in approximately $780 million in reduced payments to hospitals, or 1% of the total Medicare payments.

"We were very disappointed with CMS ordering this provision at a time when Medicare payments are already not covering the cost of care for Medicare patients," says **Don May**, vice president for policy for the Chicago-based American Hospital Association (AHA).

The AHA is continuing to work with Congress on other options.

Congress has the power to override the final rule, May points out. He suggests hospital officials write to their senators and representatives and urge them to do so.

CMS had proposed to expand the post-acute care transfer policy from 30 to 231 DRGs at a cost of $880 million, but in response to public comments reduced the number of DRGs to 182.

In the final rule, CMS issued new criteria for including a DRG in the post-acute transfer rule:

- The DRG has a geometric mean length of stay of at least three days.
- There are at least 2,050 post-acute transfer cases.
- At least 5.5% of the cases in the DRG are discharged to post-acute care prior to the geometric mean length of stay.
- In the case of DRGs that are paired, based on the presence or absences of comorbid conditions, both DRGs are included in the policy if either meets the other criteria.

The post-acute transfer provision covers discharges to skilled nursing facilities and to other hospitals that are reimbursed under IPPS. It also covers home health services provided by a home health agency if the services are provided within three days and related to the reason for the hospitalization.

"We are taking this step because in many cases of incomplete hospital stays when patients are transferred, it is not appropriate to pay for a full hospital stay. At the same time, we have limited the payment changes based on concerns raised about the criteria for transfer payments that we proposed earlier this year," according to **Mark B. McClellan**, MD, PhD, CMS administrator.

The payment rate paid to a transferring hospital for 169 of the 182 new transfer DRGs is calculated by dividing the full DRG payment by the geometric mean length of stay for that DRG.

Under the post-acute transfer rule, hospitals receive twice the per-diem rate for the first day of the hospital stay since most of the costs occur on the first day. After that, they receive the regular per-diem rate up to and not exceeding the full DRG payment.

"Hospitals will get the full DRG payment if the patient stay is one day less than the geometric mean length of stay," Hale points out.

In the case of the remaining 13 of the 182 DRGs, which have exhibited an even higher share of costs very early in the hospital stay, the hospital will receive 50% of the full DRG payment plus single per diem for the first day of the stay and 50% of the per diem for the remaining days up to the full DRG payment.

As a practical matter, the inclusion of so many DRGs in the post-acute transfer rule means case managers are unlikely to be able to track which cases they manage are covered by the rule, Hale notes. "When there were 10 DRGs covered by the

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rule, it wasn't hard to keep up with them and track the length of stay. With 182, it will be very difficult for case managers to know which patients are covered by the post-acute care transfer rule." *[Editor's note: For a list of the DRGs covered by the post-acute transfer rule, see 70* Federal Register *47,617 (Aug. 12, 2005).]* Case managers should be extremely careful to make sure that documentation regarding post-discharge placements is very clear, she recommends.

For instance, discharge status codes for placement in nursing homes following acute care are different for skilled nursing beds, which Medicare pays for, and nonskilled beds, for which Medicare will not reimburse. "If the case manager or social worker writes that the patient was discharged to a particular nursing home, the person responsible for billing doesn't know if the patient went to a skilled bed or an intermediate care bed," Hale adds.

The transfer provision covers discharge with home health services within three days, unless the home health services are unrelated to the reason for hospitalization.

"Sometimes, the patient or family refuses home health services but changes their mind after a day or so. If they call the doctor, who then orders home health services and they are received within three days of discharge, the hospital is held accountable for that discharge status to home health," she says.

In the final rule, CMS moved to stabilize the post-acute transfer payment policy by tentatively proposing to conduct a review of the DRGs every five years instead of annually. Unless CMS makes a change to a specific DRG, the list of those covered by the policy will remain the same. When new DRGs become effective, they will be subject to the policy if the total number of discharges and proportion of short-stay discharges to post-acute care exceed the 55th percentile for all DRGs. ■

Ensure quality indicators are documented

Hospital reimbursement will hinge on accuracy

Now that the Centers for Medicare & Medicaid Services (CMS) is requiring hospitals to submit data on 10 quality measures to get the full 3.7% inflation-adjusted payment increase, it is more important than ever for case managers to ensure accurate documentation.

"It is essential that all case managers understand their hospital could suffer financially in the future if they don't look good on the measures. They should be involved with other clinicians at the point of care in encouraging appropriate patient care and documentation that will support the data collection efforts," says **Patrice L. Spath**, BA, RHIT, a health care quality specialist with Brown-Spath & Associates in Forest Grove, OR.

Under the Inpatient Prospective Payment System final rule, which goes into effect Oct. 1, hospitals that do not report the quality measure data and those with data that do not pass a validation audit will receive a marketbasket reimbursement increase of 3.3%, or 0.4% less than hospitals that submit valid data.

Many hospitals have been reporting clinical data on 10 quality measures related to the treatment of heart attack, heart failure, and pneumonia cases on a voluntary basis since 2003. Many now are reporting data on 17 quality measures.

According to CMS, preliminary results show that more than 98% of eligible hospitals have submitted quality data. Quality improvement organizations still are in the process of validating the data to certify that the hospitals are eligible to receive the full update for 2006.

In addition to requiring the data submission, the final rule mandates that to receive the full payment, hospitals must correctly abstract the data for two consecutive quarters.

CMS estimates that approximately 2% of hospitals will fail the validation test, resulting in reduced payments of approximately $8 million.

"We have taken steps to improve care through quality measures because it is important, not only to the health of our beneficiaries, but for avoiding unnecessary health care spending," according to **Mark B. McClellan**, MD, PhD, CMS administrator.

The requirement that hospitals report performance data to get the full reimbursement increase is the next step toward a pay-for-performance system and makes it imperative that hospitals collect the data and do so correctly, Spath says.

Case managers should be careful to make sure the services measured by the quality indicators not only get done, but also are correctly documented in the patient record, she adds. "The problem is that if the care is not documented, it isn't considered done. The information has to be available in the patient record before the quality department can gather the data for reporting purposes. The role of case managers at a minimum is to be aware of what the core measures are."

For instance, if the physician doesn't order an ACE inhibitor at discharge for a heart failure patient, in some hospitals, the case manager calls him or her and asks for it to be ordered, if it's appropriate for that patient.

If the record doesn't indicate the patient received smoking cessation counseling, the case manager should ask the nurse to ensure it is happening and it is documented.

"Case managers can be a monitoring agent for making sure that the right things are done. This works well only in hospitals where every patient is seen by the case manager, and not everybody has that model," Spath explains.

In those cases, she suggests the nursing staff own the responsibility for reminding the physician of the things that need to be done and documented and that the case managers act as backup.

"The challenge is defining a point person with accountability for the core measures. Sometimes, it's easier to make the case manager the point person because there are fewer of them," she adds.

Case managers need to have a general awareness of the public reporting of data, the measures used to gather the data, how the data are being used, and the impact information can have on their facility, Spath explains.

Each facility needs to analyze how the work of the case managers can assist in meeting the public reporting challenges. How the case managers can be involved will vary from facility to facility, according to the model of the case management program, she adds.

"There are a lot of challenges in collecting data. For instance, the admitting diagnosis is not always correct. It may not be determined that the patient had an MI until he had been in the hospital three days, and by then, it's too late to ensure the right things are documented in the patient's record," Spath says.

Some of the tools that hospitals have developed to assist with care coordination and managing patient care can include reminders of the quality measures, she notes. For instance, many hospitals have created standing order sets or clinical pathways that incorporate the required patient care interventions.

"These are a more efficient way to remind the physician of what needs to be done for patients. Hospitals can't expect a case manager who works five days a week to be responsible for monitoring compliance with patient management recommendations," Spath says.

Under the final rule for 2006, the CMS Clinical Data Abstraction Centers will identify a random sample of five charts per hospital each quarter and will request the paper medical records, which will be tested for valid data.

The data must pass the CMS validation requirements of a minimum of 80% reliability based on the chart audit, beginning with data submitted for the third quarter of calendar year 2004.

Hospitals will receive educational feedback, including an overall reliability rate and case details on each abstraction and will have 10 business days in which to appeal if they don't meet validation requirements.

Any reduction in payment will apply only to the year involved. ■

Clinical pathways can help you track data

Ensure services are provided in a timely manner

If you're not using your clinical pathways on a regular basis, you're missing an opportunity to facilitate the collection of quality indicators and outcomes information and to affect your patients' length of stay.

Many hospitals have gone to the trouble of developing clinical pathways but have stashed them away in a drawer somewhere, and few staff members use them, says **Teresa Fugate**, RN, BBA, CPHQ, CCM manager, Pershing, Yoakley & Associates, a Knoxville, TN-based health care consulting firm.

"Many patients who would be perfect for a clinical pathway aren't on them because physicians don't use them," she adds. More hospitals are using physician order sets instead of clinical pathways, but the order sets don't replace the pathways.

"What we're seeing is almost two separate things — physician order sets and multidisciplinary clinical pathways. In many cases, the clinicians have the option to use them or not use them as they see fit," Fugate says.

Hospitals need a multidisciplinary clinical path to guide the treatment team in what they need to be doing when the physician isn't around, she adds.

"The importance of developing clinical pathways is for the multidisciplinary team to focus in on the timeliness and efficiency of the services

provide by the team. When there is not guidance on time frames and important issues, there often are delays in services or some tests or procedures are not done."

For instance, if the quality initiatives call for a patient to be given an antibiotic within the first four hours and the case manager doesn't review the patient immediately after admission, it's unlikely any omissions will be caught.

"Even when the physicians are following the clinical pathway, if the interdisciplinary team isn't using them, services can fall through the cracks, directly impacting the length of stay and leading to avoidable days," Fugate notes.

Documenting core measures

Clinical pathways make it easier for busy nurses and physicians to document the core measures rather than having to write it down in their notes, she explains.

Pathways can be great documentation tools for case managers, allowing them to determine whether or not the services were rendered in a timely and efficient manner, Fugate adds.

They also can give case managers the ability to easily collect information, particularly when it comes to collecting information for the Centers for Medicare & Medicaid Services (CMS) and making sure that the core measures are documented in the record, Fugate says. **(To find out more about how CMS is linking the quality measures data to reimbursement, see related article, p. 147.)**

"If it's on the clinical pathway and nobody has signed off on it, the case manager automatically knows it didn't occur, and they can prompt someone to make sure it happens. If they have to check through the nurse and physician notes to find the information, it takes a much longer time, and they might miss something," she points out.

"What CMS is doing with the core measures is looking to improve the efficacy of services to patients. Hospitals should incorporate these national standards in their care plan to improve the process of care," Fugate adds.

Clinical pathways make it much easier to create reports, demonstrate outcomes, track the quality initiatives required by CMS, and comply with Joint Commission on Accreditation of Healthcare Organizations and other accrediting organization standards, says **Jeff Rose**, MD, vice president of clinical excellence informatics for Ascension Health, a 63-hospital system based in St. Louis.

"Pathways allow anyone on the interdisciplinary team to look and see where the patient is on the plan. There are a lot of other ways to make sure patients get good, high-quality care, but the clinical pathways pull it all together. For those people who do use the clinical pathways, there is a lot of accumulated evidence that they have better outcomes and better reporting," he adds.

The fact that many hospitals still are using pathways on paper is one roadblock to their continuous use, Rose adds. "In order to make really good use of a clinical pathway, you have to have an automated system. Paper has long limited our capability. If a nurse has the care plan, but it's in her pocket, it doesn't do anyone else any good."

Ascension Health is helping the hospitals in its system develop pathways in a collaborative way and rolling them out with the clinical information system. "Ascension Health hospitals that do not yet have an electronic medical record system are more likely to use the pathways if they have an older automated system rather than pathways that are on paper, he adds.

In developing its clinical pathways, Ascension Health has chosen 55 of the most common diagnoses, based on DRGs and the kinds of care that are delivered. Nurses are heavily involved in creating interdisciplinary plans of care because most are largely nursing-driven, Rose says.

Ascension is developing its pathways in modular forms so that some sections may be incorporated into multiple pathways.

For instance, a clinical pathway for fall prevention can be incorporated into the overall pathway if a patient is elderly or frail or comes in with neurological problems or another condition that makes him or her at risk for falls, he adds.

The University of Wisconsin Hospitals and Clinics, based in Madison, has more than 200 clinical pathways developed by a team that typically includes nurses, case managers, staff from each unit, and a physician champion, says **Barbara Liegel**, RN, MSN, director of coordinated care. Her department includes case management, social work, utilization review, and discharge planning.

"Our initial vision is that they would be multidisciplinary; but as it evolved, we have found that it would be even more beneficial to have standardized physician order sets matched to the pathway, and the pathways became more of a nursing tool," she explains.

The clinical pathways are on paper, and where they are kept and how they are used varies from

unit to unit. The case management department is accountable for the pathways and physician order sets and drives the review process.

"It's a huge challenge to make sure they reflect the current best practices," Liegel says.

Some pathways have fallen by the wayside because they simply don't fit a lot of the severely ill patients on the medical units, she adds.

"It's hard to fit everybody into a peg, especially on the medical side where patients often have severe comorbidities, and it's hard to know which pathway to put them on. It's much easier for surgical patients to fit on a pathway because their care is more predictable," Liegel notes.

The hospital is in the process of instituting an electronic medical record and is likely to eventually develop an electronic version of the pathway, she says.

"My sense is that we're moving beyond pathways. When they first became widespread, there weren't a lot of electronic systems. Now the patient moves so quickly that we need a better way for care providers in all settings to have the information they need about the patient, rather than consulting a paper pathway," Liegel adds.

Fugate recommends that the case management and quality improvement departments join together and prompt a revitalization of clinical pathways.

If you have clinical pathways and they aren't being used, consider simplifying them to make them easier to follow. "One of the problems with clinical pathways in the past is that people have put everything that can be done on the care path. Too many pathways include too many things that aren't key steps, and this makes it overwhelming," she notes.

Fugate suggests focusing on your top DRGs and developing an action plan that includes the key activities that each member of the interdisciplinary team must perform to assure timeliness of care.

Make sure the CMS quality indicators are listed on your pathways and protocols, she adds. "When the CMS quality indicators are on clinical pathways and protocols, there's a lot better compliance and documentation and the overall quality of care increases," Fugate says.

Make sure staff are held accountable for following the pathways. If no one is accountable for their use, they're less likely to use them, she points out.

When a clinical pathway is implemented or revised, Children's National Medical Center in Washington, DC, publicizes the fact through posters in the lounges, table tents in the cafeteria, notices to all the residents and nursing managers, and e-mails to everyone who should be following the pathway.

When **Fran R. Cogen**, MD, CDE, director of the diabetes program is called on to give a lecture on diabetes to new interns, she teaches it with the diabetes pathway in front of her, emphasizing the importance of following the guidelines.

"The reality is, it is a constant struggle to get people to follow the pathway. When we started seeing results and people were getting good care and being discharged, people began paying more attention to the pathway," Cogen adds. **(For more information on Children's diabetes pathway, see related article, below.)** ■

Pathway keeps LOS low for young diabetes patients

Standardized family education is key

Since Children's National Medical Center in Washington, DC, implemented its diabetes clinical pathway, the hospital's average length of stay for diabetes patients has been significantly lower than the national average, and the 72-hour readmission rate has been less than 1%.

The hospital's average length of stay for diabetes patients for fiscal year 2005 is 1.49 days, compared to nearly 2.5 days for the hospitals that submit data to the Pediatric Health Information System database, a collection of data from a number of freestanding pediatric academic medical centers. In fiscal year 2004, the length of stay was 1.53 days.

"Largely because of the level of diabetes education contained in our pathway, our length of stay is nearly a day lower than the average length of stay for the benchmark," says **Fran R. Cogen**, MD, CDE, director of the diabetes program.

At the same time, the hospital's readmission rate within 72 hours consistently has been less than 1%.

"We know that the fact that we're getting them out faster doesn't mean we're sending them out sicker. They're getting all the care they need here and talking with the nurse on the telephone every day," she adds.

(Continued on page 159)

CRITICAL PATH NETWORK™

Hospitals collaborate to reduce surgical infections

QIO-led program cuts rate 27% in one year

Fifty-six hospitals from 50 states as well as U.S. territories, collaborating to improve surgical care, significantly cut the rate of surgical infections for more than 35,000 patients in a yearlong, nationwide effort sponsored by the Centers for Medicare & Medicare Services (CMS) and led by Qualis Health, the quality improvement organization (QIO) for Washington, Alaska, and Idaho.

The 44 hospitals that provided data throughout the collaborative reduced their surgical-site infection rate by 27%. The results were published June 23 in *The American Journal of Surgery.*

Conducted in 2002-2003, the National Surgical Infection Prevention Collaborative also involved 43 QIOs working under contract to CMS.

A major cause of preventable morbidity and mortality in hospitals, surgical-site infections complicate an estimated 780,000 operations each year.

Research has shown that compared to similar-risk patients undergoing the same surgery, a patient who gets a surgical-site infection is twice as likely to die, five to six times more likely to require readmission, and likely to stay in the hospital twice as long.

The costs of these complications may range from $30,000 to $50,000 per major surgery.

The collaborative emphasized rapid testing of small changes in the work of surgical teams, then incorporating successful modifications into routine care.

Surgical teams from the national collaborative hospitals joined staff from state-based QIOs at a series of two-day learning sessions with Qualis Health over the course of a year.

Most of the teams came from large, urban hospitals, although some small, rural institutions participated as well.

Between sessions, the teams worked with their local QIOs and communicated frequently with each other to share information about implementing improvements, barriers encountered, and lessons learned.

Three processes to improve

All teams in the collaborative agreed to focus on improving performance on three processes that CMS uses as national quality measures:

1. administration of antibiotics within 60 minutes of surgical incision;
2. use of appropriate antibiotics;
3. discontinuation of antibiotics within 24 hours of the end of surgery.

Most of the teams also worked on improving performance on one or more of the following: control of glucose levels during surgery, avoiding hypothermia during surgery, use of supplemental oxygen during surgery and recovery, and clipping rather than shaving the surgical site.

Over the course of the collaborative, the median performance of participating hospital teams improved on all process measures. The overall infection rate fell more than a quarter, from 2.3% in the first three months of the collaborative to 1.7% in the last three months.

Hospitals participating in the collaborative began with a higher-than-average performance on this measure: a median 70% rate of administering antibiotics within 60 minutes of incision. By the end of the collaborative, median compliance had risen to 92%.

Recent research shows, for example, that patients receive antibiotics in the 60 minutes

prior to surgical incision — a key technique for avoiding infections — only a little more than half the time.

Training in the adoption of successful interventions identified in the National Surgical Infection Prevention Collaborative subsequently was conducted over the past three years by QIOs in every state.

Multiple goals sought

There were multiple reasons for doing the collaborative, explains **Jonathan Sugarman**, MD, CEO of Qualis Health.

"The first was to kick off an effort to prevent surgical infections and to try this [collaborative] method at the national level," he continues. "But another was to provide QIOs the ability to learn how to implement the collaboratives."

This, Sugarman says, was a nontrivial undertaking. "It requires a lot of content knowledge, a lot of structure, involving what works and what does not in these groups," he explains.

"This involved training for QI professionals. There was additional time spent with the QIOs — they had some coached practices and asked questions," Sugarman notes.

"The goal was to develop in each state a hospital that could participate in a statewide collaborative that would be facilitated by them." Almost every hospital that was asked to participate did so, he says.

There are a couple of key requirements for setting up a collaborative, Sugarman continues.

"Since they are not in and of themselves research, you tend to focus on the implementation of evidence-based practices," he adds. "There has to be an actual set of changes that are known to be effective."

"It's a fairly structured event," adds **E. Patchen Dellinger**, MD, professor and vice chairman of the department of surgery and chief of the division of general surgery at the University of Washington, Seattle, the lead facility in the cooperative.

"Our national collaborative was preceded by a two- to three-day meeting run by IHI [the Cambridge, MA-based Institute for Healthcare Improvement, credited with pioneering the collaborative model] to get everyone up to speed [on the collaborative process]. Qualis, the functional arm that ran it, was of course already very experienced in this process," he explains.

"At the same time, however, Qualis was teaching the other QIOs how to run collaboratives, with the goal of going back to their regions and running their own," Dellinger adds.

During the training session, there was much talk about how to begin change with small units, and then achieving "spread" — engaging more physicians, more patient groups, and so forth, he says.

"Once you've done that, you must hold your gains," Dellinger continues. "In my personal observation, change is difficult, but you can do it; and the IHI model helped us get going. Spread is more difficult, and holding gains is more difficult still."

The model for improvement

The collaborative's efforts to improve delivery of antibiotics at the appropriate time offer perhaps the clearest example of the "model for improvement," which is based on beginning with tests of small changes. It also was one of the best-documented and best-studied aspects of the evidence on which the initiative was based, he notes.

There have been a number of papers on the subject over the past 10 years, culminating in one two years ago on about 34,000 Medicare patients across the nation, which showed appropriate antibiotic delivery was accomplished in the average hospital less than 60% of the time, Dellinger adds.

"That's not because docs did not know what to do, or they didn't give the right order; it happens because it is a very complicated process, and hospitals do not focus on the mechanisms of delivery happening in the same way every time," he points out.

When Dellinger's collaborative focused on the issue, for example, the teams typically would include a nurse, a QI professional, sometimes a surgeon, and sometimes an anesthesiologist.

"They would diagram the process — what happens between when a surgeon orders the antibiotic and when it's given," he explains. "They would document what could make this process go wrong. Then we'd talk to 'Dr. Smith,' and tell him, 'Here's what we think we need to happen to make things right.'"

At that point, Dr. Smith's patients would be tracked for six weeks or so. If the change did not work, another change would be tried.

"We'd do a couple more tests, and if the process worked, then we'd take all four colorectal surgeons in our hospital," Dellinger continues.

"Then we'd do it for every surgeon, and that's how to achieve spread."

One of the keys strategies for many hospitals was giving responsibility to the anesthesiologist, since he is in a very good position to judge when it is the right time to give the antibiotic.

"This worked for a lot of hospitals but not all of them. Others decided to use the nurses in the OR; this emphasizes that the same solution does not work for every facility," he observes.

Ongoing contact with QIOs

Another key to success was the ongoing contact between the QIOs and participating facilities, Dellinger says. "There were three learning sessions over 12 months, as well as an Outcomes Congress," he reports.

"At each learning session, there were content experts lecturing, basically sharing what the evidence showed. There were also human factors experts — one from IHI and several from Qualis. They talked about how to do the small change tests and so forth."

After that, he notes, the meeting would break into small groups where hospitals would share their experiences. "We shared what worked and what didn't, so there was a lot of cross-pollination," Dellinger says. "Also, there was an e-mail list to which all participants in the collaborative could write questions, and the content experts could answer and share those answers with the list. There were also conference calls at least once a month."

Anecdotally, he says, "The impression I had, as well as a number of people from Qualis and the teams themselves, was that having an active clinical physician, preferably a surgeon, involved in the team was also very important. They are the captain of the ship, so if a surgeon went back and sold a concept to a colleague, this was *very* helpful."

States reap the benefits

Following the national collaborative, QIOs and participating facilities went back to their own states to foster more regional efforts. "Qualis subsequently ran one for Washington, Idaho, and Oregon in which we got 30 to 40 hospitals to participate," Dellinger reports.

"The results were quite good, in fact, quite comparable to the national collaborative," adds Sugarman. "In many cases, those organizations active in the national collaborative continued as mentors."

QIOs in more than 30 states report hospitals taking part in the training have gone on to show significant improvement. For example, 26 hospitals participating in California increased the proportion of surgical patients receiving antibiotics within one hour of incision from 73.8% to 84.3%.

In Colorado, 16 hospitals increased the proportion receiving antibiotics within one hour of incision from 62% to 88%; in Maryland, 16 hospitals went from 72% to 91.9%.

Nineteen hospitals in New Mexico went from 47.6% to 68%; and in Texas, 42 hospitals went from 61% to 84%. ■

Early '100,000 Lives' participant sees benefits

Facility sees dramatic reductions in ventilator use

One of the better known ongoing collaborations in the United States is the Cambridge, MA-based Institute for Healthcare Improvement's (IHI) "100,000 Lives Campaign," whose goal is to save 100,000 lives through targeted QI interventions by June 14, 2006. The campaign, launched in January 2005, features "Six Changes That Save Lives":

- Deploy rapid response teams (called when a patient seems to be losing ground but isn't yet a true emergency).
- Deliver reliable, evidence-based care for acute myocardial infarction (AMI).
- Prevent adverse drug events (ADEs).
- Prevent central-line infections.
- Prevent surgical-site infections.
- Prevent ventilator-associated pneumonia (VAP).

To date, more than 2,300 hospitals have enrolled in all 50 states, accounting for about 50% of all U.S. hospital beds, according to IHI. If all U.S. hospitals joined, says IHI, 183,000 lives could be saved every year.

One of the early adapters, Hackensack (NJ) University Medical Center (HUMC), a teaching hospital in northern New Jersey with nearly 700 beds, already has started reaping the benefits.

"It's incredible," says **Regina Berman**, director of process improvement. "It goes to the concept that a group mind is better than a single thought.

We have a brain trust — some of the best minds in the country — to sit down with to share. They include great scientists, operations people, and pharmacists. We are benchmarking and sharing collaborative data all over the place."

A good foundation laid

Berman notes that one of the reasons why the program has been effective so quickly is that HUMC already had laid a strong foundation. "We've been part of the IHI network for some time because we are a 'Pursuing Perfection' [another IHI initiative] hospital," she explains.

"In December [2004], we were down at the annual forum and heard Don's [Berwick, head of IHI] kickoff speech [on the campaign]. It was quite impassioned and very moving, so we signed up immediately," Berman adds.

HUMC already had worked at reducing AMI mortality and, in fact, had some of the lowest rates in the country, she reports.

"We focused on our systems for patient care by starting to work with first responders to transmit vital information even before the patient arrives," Berman relates. "Plus, thrombolysis used to be the gold [clot-busting] standard; now, we do angioplasty."

HUMC also was part of the [Centers for Medicare & Medicaid Services] demonstration project, "and we're in the top decile in each category," she adds.

HUMC already has deployed its rapid response team. "Our understanding is that it should be the senior rehab nurse, a critical care person, who leads the team, because others feel more comfortable calling them," Berman observes. "In some cases, you can use physicians, but we feel nurses may be reluctant to call a physician-led team."

There are clear benefits to a rapid response team, she continues.

"Sometimes, you have an intuitive sense of a change in patients — they just do not look good; they are anxious, but you do not have objective data yet," Berman explains.

"A nurse may hesitate to call a doctor, but if they can call and say 'I'm worried' and someone will come, it tends to help capture a downward spiral more quickly," she adds.

Berman says that typically, from the time a patient is perceived to have a change in status to the time he or she actually expires, there is about an 8- to 12-hour window. "So the idea is to catch that change as early as you can," she asserts.

One of the areas in which HUMC has seen dramatic improvement, and in which there is a slight overlap with the start of the 100,000 lives campaign, involves VAP infections.

"It's what we call our 'ventilator bundle,' says Berman — five steps every day at exactly the same time. "We've not only been able to prevent pneumonia, but we get our patients off the ventilator more rapidly."

When the initiative began in October 2004, she recalls, "We might have had 12 patients on ventilators in the ICU." Now, Berman points out, "There may be one or two."

A similar approach is being used regarding central lines and avoiding bloodstream infections — keeping patients connected for as short a time as possible.

"We want them connected as long as they need to be, but not one second longer," Berman notes. Success in this area involves proper technique and preparation of the site before the line is inserted.

"We're creating a video for the staff to show them the best technique," she says.

Another evidence-based practice HUMC is adopting involves surgical infection prophylaxis.

"The evidence suggests that instead of shaving patients, you should use a clipper," Berman points out.

"Patients used to be shaved the night before surgery, and when they got nicks, bacteria got in them. Now, no one gets shaved until they are up in the OR and antibiotics have been started," she explains. Finally, HUMC is working on further improvements in medication reconciliation, to help prevent ADEs.

"The concept here is to do everything we can to include a call to the patient's pharmacy for a complete and accurate list [of the medications the patient is on]," Berman says.

"Throughout their stay, changes are updated electronically, so we can ensure when they go home, they know exactly what to take, how often, and who to check with to make any changes," she notes.

Part of that effort, she adds, is to try to get patients to take more responsibility for compliance. "For our heart patients, we've created pillboxes and created a sample of what a day looks like," Berman adds. "We'll take simple approaches to see what works to make things better."

Joining the 100,000 lives project involves no fee, and paperwork is minimal, according to IHI. ■

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Innovative program helps homeless, frees up beds

Collaboration among competing health systems

An unusual collaboration among three competing California hospitals is providing much-needed post-discharge care for homeless people. It is linking those individuals to ongoing medical benefits while freeing up hospital beds for more acute patients.

Establishment of an innovative homeless shelter — where people who need care after discharge are allowed to stay 24 hours a day — came about after representatives of homeless services in the community asked to talk with hospital officials about homeless people who were being discharged from the facility but still needed follow-up care, says **Kate Tenney**, RN, manager for case management at Sutter General Hospital in Sacramento, CA.

"In California, if you are going to have home care, you have to have a home," Tenney adds. "They won't see you on the street or in a car. Homeless people who had no address and no physician were showing up at shelters with dressings that needed to be changed."

When Sutter case managers met with the advocacy groups, which included the Salvation Army, they brought along case managers from two other major hospital systems, she says. "We decided that what we needed were shelter beds where patients could stay 24 hours a day or could come there and get services during the day."

To establish what is known as the Interim Care Program, each of the hospital systems donated $50,000, and the state of California contributed $150,000, Tenney says.

The program, which uses beds located within the Salvation Army of Sacramento facility, opened in April 2005, has a capacity of 18, and averages about eight to 12 patients a day, she adds.

The managers of the three hospitals' case management departments serve as permanent board members, Tenney notes. They represent the sponsoring hospital systems, which in addition to Sutter Health include Catholic Healthcare West and the University of California-Davis Medical Center.

Also represented on the board, she says, are the Salvation Army, the California Department of Assistance, and MAAP, formerly the Mexican American Alcoholism Program, which is a foundation established to promote the welfare of California's Latino population.

"When our individual case managers have a patient they think would benefit from the program, they run it by someone on the board, and the nurse on the project looks over what the patient will need," Tenney explains.

"For case managers who normally have to see patients discharged to the street knowing they will come back with an infected wound, it's very positive to know we can put them somewhere safe," she notes.

Only individuals with a medical need — such as keeping a leg elevated or having a dressing changed — are allowed to stay in the 24-hour shelter, Tenney says, noting that homeless shelters normally are open only at night. "We have been very conservative about who we send there — we didn't want anything to go wrong."

A part-time nurse makes sure the patients follow physician orders, keep their wounds clean, and get to their scheduled appointments, she notes.

One recent shelter patient was an 18-year-old whose family lives on the river. She had broken her leg. Only the girl stayed in the shelter, because the rest of the family didn't need to be there, Tenney says.

The program has been particularly helpful, she points out, for homeless patients who are in need of surgical procedures but otherwise wouldn't

have them because of concern by physicians that they had nowhere to recuperate and couldn't take care of themselves afterward.

"This turns out to be one of the biggest benefits, and one that we had not anticipated," she says. "We were not aware that people weren't getting procedures done because they had no safe place to go. Now they can actually have the surgery."

"There was one gentleman — in his 40s and with an alcohol problem — who was hit by a car a number of years ago and needed to have pins removed and reconstruction done to both ankles," Tenney adds. "He had needed [the surgery] for a while but had to be able to do dressing changes, because an infection could have made him lose his legs."

"He came in and said the physician wanted to do the surgery if he could get into the interim care program," she says. "I saw him a few days ago, and he was up and around. Home health [nurses were] coming by [the shelter] to give him wound care and intravenous antibiotics."

Without the support provided by the shelter, notes **Barbara Leach**, RN, director of case management for Sacramento Yolo Sutter Health, the man "never would have had the surgery, or would have had it and been stuck in the hospital, [becoming] someone who could not be discharged and would be staying for free."

In addition to preventing the financial shortfall that results from the hospital stay of a nonpaying patient, she says, "[the program] opens up hospital beds that we otherwise would not be able to place patients in."

Having the option of referring patients to the Interim Care Program helps prevent the misunderstanding and resentment that can occur when homeless people are returned to a shelter after receiving treatment in the emergency department (ED), Tenney notes.

"A lot of times, homeless patients come into the ED with multiple problems but are there for one particular thing," she explains. "We deal with that one thing, and then they are back on the street. When they end up back at the shelter, the [shelter managers] believe we're just dumping them without taking care of their problems."

The misunderstanding is that they mistakenly believe that all health care is provided in the hospital, Tenney adds. "The community expectation is that when [the homeless person] comes into the ED, we take care of everything."

Her explanation of the situation during the initial conversation with the homeless advocates led to their asking Tenney to get involved in devising a solution, and ultimately the group began meeting on a regular basis, she says.

Expanding the mission

Although the program was designed for people who need follow-up care after hospitalization, it has been expanded to include ED patients who don't need to be in the hospital, Tenney adds.

"In the past," she says, "with the logistics of the homeless, the only real access to care is through the ED. If [they] call the doctor's office and say, 'I need to come see you,' if there's no insurance, the likelihood is they'll be turned away.

"If they go to a community clinic," she continues, "they'll be put in line with everyone else who needs a procedure, and it might be a long time before they get what they need. The simplest way of accessing care has been to wait until they're very ill and walk into the ED."

Another benefit of the interim care shelter is that it provides linkages to community resources that the patient otherwise wouldn't have known about, Tenney says, "like finding a primary care physician or a drug rehab program or getting into a clinic for ongoing medical care and getting that funded."

For some of the homeless patients, many of whom don't have insurance, staying at the shelter provides the opportunity to qualify for Medicare or Medicaid, she adds.

Individuals who are homeless typically "have some sort of addictive personality or substance abuse problem, usually an alcohol or drug problem," Tenney points out. For that reason, she says, they are very resistant to anything that will permanently take them off the street.

"For someone with a chronic disease to go into a facility, they have to sign over their resources to that facility forever, which eliminates the ability to go out and buy a fifth of whiskey every other day," Tenney notes. "Decisions are made around that, so they are not willing to give up their freedom. They avoid the health care system and only come in when they are very ill."

Such people rarely take the medications they are prescribed, she says, either because they don't understand the purpose or because they sell them on the street.

Getting these individuals connected to a clinic that can provide ongoing care "teaches them what it's like to have health care, to seek care

on a regular basis," Tenney adds. "When they do that, an illness doesn't get as serious as it otherwise might."

Because they have never before been involved with the health care system except in an emergency, many of the shelter clients need guidance in accessing care, Leach explains.

"It's a real learning experience," Tenney adds. "These are people who don't even know how to ask the questions. [Staff at] places like the Salvation Army are much better at speaking their language, which is a crucial part of it. They translate after we tell them what the medical needs are, and then they tell the patients how to go about getting those needs met."

The aspect of the program that is of most concern at present is obtaining the funding to continue it when the initial allocation comes to an end in April 2006, Tenney says. One of the challenges has to do with measuring the initiative's effectiveness, she notes.

"We have to come up with some way of showing success," Tenney says. "We don't know what that looks like. Is it a certain bed capacity, the fact that it's still running? We're not quite sure what we will use."

Originally, the idea was to keep track of the hospital days saved when a person is at the shelter instead, she adds, "but there's not a real correlation between a stay at the homeless project and a stay at the hospital. A lot of the [shelter residents] we wouldn't have kept in the hospital."

Another possibility, Tenney notes, is to look at the cases in which a person initially was unfunded and classified as self-pay, and then on the next visit was on Medicaid. Because the federal government gives money to the state to affect homelessness, she adds, another way to measure success might be to take credit for getting people off the street.

"The California Hospital Association has a grant for putting together a data collection database that we are going to try to apply for," Tenney says. "We're hoping that if we get that, we will have an experienced person put together a measurement [tool]."

She points out, however, that saving money and reducing lengths of stay were not the motivating factors for Sutter Health's part in the project.

"Sutter has a mission to provide charity care, and that was our main reason for participating," Tenney adds. "It was not so much [about] cutting back on care but to be active in the community."

One of the things that makes the project unique, Leach points out, is that it involves the collaboration of three competing hospitals. That kind of cooperative arrangement is particularly difficult in the state of California because of laws designed to prevent monopolies from forming, she says. "It's exciting because there are no such laws around [projects of] community benefit."

"It's made the case managers involved feel that we are doing incredible work, with outcomes we can see with our own eyes," adds Tenney. "The fact that we can come together like this and collaborate in the community has made this one of the most fulfilling situations I've ever seen in health care. It's been a great experience for all of us."

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Sutter Health seeks dialysis solutions

Long stays expensive, risky

One of the biggest discharge planning challenges at Sutter General Hospital in Sacramento, CA, involves patients who need dialysis after they come into the hospital, says **Kate Tenney**, RN, manager of case management.

These might be people who didn't need dialysis before but have renal failure during the course of the hospital stay, she explains, or they might be dialysis patients who were refused care in a dialysis unit because of noncompliance.

In some cases, there are no dialysis chairs available in the community, Tenney adds, or the person can't tolerate sitting in a chair and needs to lie down during the procedure. "They will stay for months at a time because of the need for dialysis, and no skilled nursing facility [SNF] to send them to."

The issue, says **Barbara Leach**, RN, director of case management for Sacramento Yolo Sutter Health, is that "the patient has no ability to sit up and [be transported] to dialysis. They can't go to a SNF because of their inability to do outpatient dialysis."

"The rule is they can go [to a SNF] if they can get up out of a wheelchair and walk to the dialysis chair and then get back up," adds Tenney. "But probably the biggest problem is patients who have been banned from treatment [at dialysis units] because of noncompliance."

Not only are dialysis patients among the most expensive patients to keep in the hospital, Leach says, but the prolonged stay is detrimental to their condition.

"There are huge risks to being in the hospital unnecessarily," she points out. "The longer you stay in bed, the more debilitated, the more exposed to other injuries you become."

Leach and Tenney are seeking a solution to the problem and would welcome feedback from colleagues at other facilities who may have dealt with the same situation.

"We've talked to a local SNF about building dialysis units within their [facility] that we would help them set up," says Tenney. "We had hoped to take a couple of rooms and to provide them with staff and chairs, but the state has laws around whether or not you have a dialysis unit in a facility, and you can't get reimbursed for it under the current laws."

Another option that is being pursued, she notes, is getting licensing for a freestanding dialysis unit next to the facility that would have both chairs and beds.

While Sutter Health is not going so far as to try to change the law, Tenney says, "we did say we would be happy to participate on any level if they were running into barriers and needed us to step in and testify.

"Eventually, we hope the [state] will look into [changing] the law, because they are paying for these patients to stay in the hospital," she adds. "It's in their best interest to make this a priority."

This kind of activism on the part of health care organizations is a new trend, Tenney suggests, born of the need to make the most efficient use of limited funds.

"Hospitals more and more are going out to the community and saying, 'Let's work together to create something [because] this is impacting our hospital and our community," she adds. "I think this is a shift. In the past, [a hospital] would not be so involved."

[Editor's note: If you have feedback on this issue, please contact Discharge Planning Advisor *editor Lila Moore at (520) 299-8730 or by e-mail to lilamoore @mindspring.com.]* ■

CE *questions*

16. In its final rule for the inpatient prospective payment system, CMS increased the number of DRGs covered by the post-acute care transfer rule from 30 to how many?
    A. 231
    B. 182
    C. 65
    D. 126

17. To receive the full 3.7% Medicare reimbursement increase, hospitals must submit data that pass a validation audit for how many quality measures?
    A. 10
    B. 17
    C. 21
    D. 30

18. According to Teresa Fugate, many hospitals have clinical pathways, but they're stashed away in a drawer and never used.
    A. true
    B. false

19. According to Children's National Medical Center, the benchmark length of stay for diabetes patients among other academic children's medical centers is nearly 2.5 days. What is the fiscal 2005 average for Children's National Medical Center?
    A. 2.1 days
    B. 1.49 days
    C. 1.53 days
    D. 2 days

Answer key: 16. B; 17. A; 18. A; 19. B

CE instructions

Nurses participate in this continuing education program by reading the issue, using the provided references for further research, and studying the questions at the end of the issue. Participants should select what they believe to be the correct answers, then refer to the list of correct answers to test their knowledge.

To clarify confusion surrounding any questions answered incorrectly, please consult the source material. After completing this semester's activity with the December issue, you must complete the evaluation form provided in that issue and return it in the reply envelope provided to receive a certificate of completion. ■

(Continued from page 150)

The pathway — one of 55 used by the hospital — was designed by a physician-led multidisciplinary team including diabetes educators, endocrinologists, social workers, nurses, and pharmacists who started work in 1997 and implemented the pathway in 1998.

The diabetes pathway dramatically reduced the length of stay and improved coordination of care to the point that a large payer contracted with the hospital to be its disease management entity for children with diabetes.

"We knew from the beginning that our length of stay was good, but we didn't have the data to show our payers graphically that it was the case. We wanted to show that we were providing clinically appropriate care in the most timely and efficient way, that our patients were receiving the best medical care, and that we were able to discharge them safely," says **Pat A. Johnson**, PhD, LCMFT, practice facilitator.

The team's goals included reducing the variability in the way care was being provided; identifying specific skill sets for diabetes educators to guarantee that every patient and caregiver has the same level of education prior to discharge; ensure that education is provided on weekends to ensure a timely discharge; and provide some kind of outpatient education to shorten the stay.

The pathway includes everyone who is admitted with a primary diagnosis of diabetes, whether it is Type I or Type II. The only variances would be when a patient has a different primary diagnosis with diabetes as a secondary diagnosis. For instance, a patient with cystic fibrosis-related diabetes would not go on the pathway.

If the patient is readmitted and not newly diagnosed, the team still follows the pathway but omits the education component.

Patients are started on the pathway as soon as they arrive in the emergency department. Young diabetes patients may be admitted to the intensive care unit or the floor, depending on how ill they are. The pathway includes specific instructions based on where the patient is admitted and discharge goals.

"Many of these patients are hospitalized because they are so sick that they require care. Another group that is not that sick are hospitalized because if they start insulin early and get on the pathways quickly, everything is done in a timely manner and they are stabilized quickly," Cogen says.

The diabetes clinical pathway is a combination of medical treatment and education. Patients get medical treatment, usually throughout the night, with the medical education component starting the next morning.

The hospital calls its diabetes education program Survival Skills. Patients are not discharged unless they are capable of giving themselves their own insulin injections.

In the case of patients whose maturity level or psychosocial situation makes it difficult for them to learn to give themselves injections, the caregiver is taught to give the injection.

The training goes on throughout the day, with physicians and nurses monitoring the patients to make sure they are receiving the appropriate medications. At dinner, the floor nurse makes sure the patient or caregiver knows how to give the injections and discharges the patient.

Following discharge, caregivers are instructed to check the child's blood sugar level four times a day and call the diabetes education nurse each afternoon for an insulin dose adjustment until the blood sugar is stable.

"We have a long umbilical cord from the hospital to the home. The caregivers know how to get in touch with the doctor on call and are encouraged to call if there is a problem," Cogen says.

A lot of questions are not addressed until the next day when the patient goes home and the caregiver calls the hospital with questions.

The diabetes education nurse handles the calls during the week. On weekends and at night, the physician on call answers the questions and coordinates the dosage adjustment.

"We are always aware that people who are diagnosed with a chronic illness face many psychosocial issues. We know that parents are traumatized and sleep-deprived, and it's hard to

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address all the issues. For the first month, the caregivers or patients are on the phone every day with either a nurse or a doctor, going over the insulin injections," Cogen explains.

After two weeks, the young patients and their families attend what the hospital calls Concepts Class, where diabetes educators teach caregivers and family members to learn more about what they're doing and why.

"As a result of our increased population and through our continuous quality improvement initiatives, we determined that the classroom setting is the best place for the second round of education to happen," Johnson says.

When the hospital implements or revises a pathway, it is publicized through posters in the lounges, table tents in the cafeteria, notices to all the residents and nursing managers, and e-mail to everyone who should be following the pathway.

The hospital has pre-printed standing orders on the pathway, making things easier for physicians because they don't have to write individual orders.

At the end of the year, the hospital is switching to on-line physician order entry with all of the pathways and other order sets included in the computerized order-entry form. If a physician orders something other than a standing order, the system will flag it and the physician will have to override the flag. ■

CE objectives

After reading each issue of *Hospital Case Management*, the nurse will be able to do the following:

- identify particular clinical, administrative, or regulatory issues related to the profession of case management;
- describe how those issues affect patients, case managers, hospitals, or the health care industry in general;
- cite practical solutions to problems associated with the issue, based on independent recommendations from clinicians at individual institutions or other authorities. ■

PATIENT SAFETY ALERT™

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HCA nears completion of systemwide eMAR

A million medical errors identified and thousands of medical incidents already have been averted

While most American hospitals and health systems have yet to take the plunge into electronic medication administration (eMAR), Nashville, TN-based HCA (Hospital Corporation of America) soon will complete the implementation of eMAR across its entire network of 190 U.S. hospitals. According to HCA, eMAR is in place in less than 10% of U.S. hospitals; of these, about half are HCA facilities and about another third are VA facilities.

Already, HCA's system has demonstrated its value. In 2004, even before all hospitals were on-line, there were 51 million doses scanned, 1 million errors identified, and 20,000 serious medical incidents averted. The 2005 numbers, which will be released soon, are anticipated to be even more significant. And beyond the identification of errors and averted incidents, HCA already is using the data to identify process problems and as a foundation for PI projects aimed at bringing those numbers down.

HCA's eMAR system got its impetus in 2000, when 126 employees and physicians representing each division of HCA came together in an intensive two-day meeting to review evidence describing the scope of medication errors and the effectiveness of potential solutions. From the meeting surfaced the ideas behind two new technologies for improving medication practices: eMAR and ePOM (electronic provider order management).

Since such systems were in use by so few hospitals at the time, what led HCA to believe they made sense? "Basically, the main thing that influenced us was the research that was out there — plus common sense," recalls **Jane Englebright**, RN, PhD, vice president of quality and patient safety. "Bar-coding technology itself has been around for awhile, and as we got going, the results pushed us to go even faster."

Here's how eMAR works:

- Each patient admitted to an HCA facility receives an armband with a bar code. The bar code corresponds to the patient's current medical record, including drug history, allergies, and lab results. Bar-code identifiers also appear on shrink-wrapped doses of medication.
- Before a medication is administered, bar codes on the patient armband and the medication are scanned, allowing the nurse or therapist to verify the right patient is receiving the right drug in the right dose at the right time.
- The software checks each medication against the patient's drug history and lab results. If conflicts or potential drug interactions are identified, warnings alert the nurse to double-check, verify, and/or call the doctor before administering the medication.

The hardware was a bigger challenge than the system, for staff and management, Englebright says. That's because HCA was using MEDITECH as the vendor for its clinical information system, so there wasn't a steep learning curve on the technology. "It was harder moving from a hard-wired system to wireless and to a mobile workstation. For example, some of our hospitals had gone to carpeting in the halls to control noise, but that makes it harder to roll the carts."

In finding the right equipment, HCA went through a couple of different generations and still is looking for the ideal hardware. "It's not a one-size-fits-all situation. Different patient environments need different hardware," she adds. At present, HCA is using Dell for its equipment.

Equipment was not the only adjustment that had to be made, Englebright says. "Some processes had to be changed. For example, it was common

practice to have one multidose vial for all nurses on the floor. When you have all you need right at the bedside, however, multiple vials make more sense."

As Englebright points out, eMAR does not address the ordering or distribution phases of medication but focuses on the administration phase. Nevertheless, the system provides a wealth of information. "We can tell how many of the errors were the result of missed doses, wrong patient/wrong med, and so on. We were surprised at how many errors were wrong-med errors."

The most common error, she notes, was the administration of a sustained-release formulation when it should have been an immediate-action formulation. "It was, however, a little comforting the patients were not getting the wrong meds."

In terms of serious medical incidents averted, of course, the only things that can be measured are errors that didn't happen. "If it was the wrong med for the wrong patient, we assumed it to be serious, even though it could have been a vitamin that was given," Englebright says.

The "warnings" referred to earlier are a key component of the system. When the nurse is at the patient's bedside, he or she pulls up on the computer screen a medical profile that has a list of all the meds the doctor has ordered. The nurse then scans the dose. "If it is incorrect, they get a visual and an auditory warning — a little beep — she says. "Then they check the patient's armband, and if it's not a match, they also get a warning." At any point along the way, the nurse can abort the process, "and that's what we count as an averted error," Englebright adds.

In December 2004 alone, eMAR at HCA hospitals evaluated 7.4 million medication doses. The bar-coding system noted 233,540 warnings and prevented 183,215 doses from being administered. Without eMAR, HCA anticipates 2% of the doses would have been given in error.

In addition to helping staff avoid potential errors, are the data being used educationally to help lower the number of potential errors? "Yes. Absolutely," Englebright notes. "Probably one of the most important things we've done is looking at our late meds. You can get the computer to tell you what happened in the process of a chart, which can point out why you are late." This has led to quite a bit of process improvement activity, she says. "The No. 1 reason, it turns out, has been in X-ray. The system does *not* tell you how to fix that. That's what individual teams at hospitals need to figure out, now that we know where the problem lies."

HCA gradually is rolling out the ePOM system as well. It is a process in which physicians submit medical orders for their patients using a clinical software application in CPCS, HCA's Clinical Patient Care System. The system is designed to automate prescribing and clinical decision making and improve timeliness of care.

HCA says ePOM will increase patient safety because it will:

- reduce medication ordering errors and injury to patients;
- improve accuracy and completeness of physician orders;
- reduce time from order to initiation of order;
- reduce physician time spent on admission, discharge, and transfer orders;
- increase physician use of clinical information system.

"In studies we've looked at, the most common errors involved lack of information on the patient or lack of information about the drug — not knowing interactions, and so forth. We think the computer is a wonderful tool to solve those problems, Englebright adds. If, for example, a physician is going to order a heart medication, the patient's pertinent lab results will be displayed on the screen as they order it."

More than 400 physicians in three pilot facilities have reviewed the electronic provider ordering software. Physicians in 12 more facilities will be live on ePOM by the end of 2005. The rollout to all HCA U.S. hospitals will continue as pilot results are reviewed. Englebright says she is extremely pleased with what the eMAR system has shown and taught staff at HCA. "Last year, while we were still rolling out and only 114 hospitals were on-line, we know we gave 51 million doses through the system. How did we *ever* think we did this right all the time? We averted over 1 million errors last year."

In addition to improving performance within its own facilities, HCA has gathered a wealth of information it is willing to share to improve patient safety in all hospitals. "We are currently attending conferences and sharing our results, and we hosted two recent meetings where people from other organizations have come in and seen the eMAR in action," Englebright adds.

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