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JCAHO's clinical alarm safety goal requires teamwork, collaboration

Work closely with biomed professionals to ensure alarms meet standard

As quality improvement professionals tackle the Joint Commission on Accreditation of Healthcare Organizations' patient safety goals, one of the goals is proving to be more challenging and confounding than the others. As one Joint Commission official puts it, the goal regarding clinical alarms is "the one that they assign to you if you didn't go to the patient safety meeting. They have a patient safety meeting and say, 'OK. Whoever didn't show up for the meeting, you do the alarm thing.'"

In the 2003 Patient Safety Goals released by the Joint Commission, goal No. 6 is "improve the effectiveness of clinical alarm systems." The goal states that accredited facilities should "implement regular preventive maintenance and testing of alarm systems" and "assure that alarms are activated with appropriate settings and are sufficiently audible with respect to distances and competing noise within the unit." Because that goal involves some technical issues that are not found in the other patient safety goals or accreditation concerns, peer review and quality improvement professionals often are unsure how to proceed, says **Britton Berek**, CCE, MBA, associate director of the standards interpretation group for the Joint Commission.

"This one is not as straightforward as the other ones," he says. "People have a hard time wrestling with who should do what. I think one of the problems has been that they see this is about alarms, so they think this must be for the biometric guys. But there's more to it than that. You can't just hand it off to the biometric guys and be done with it."

So what's the best strategy for addressing this patient safety goal? Berek says you break down the goal into different components and assign tasks to various departments throughout your organization. Ensuring that clinical alarms work well requires a multidisciplinary, collaborative approach, he says.

"When any one person looks at it, they're overwhelmed. That's probably the most frequent response to this goal. People say, 'I don't even know where to begin.' There are very different aspects to it; so if you dump it on nursing, they won't be able to handle the biomed aspects, and if you

dump it on biomed, they won't be able to handle the user concerns. So it really needs to be a multidisciplinary approach," Berek adds.

Because it poses a particular challenge, goal 6 may be the last patient safety goal addressed by many institutions. The 2003 National Patient Safety Goals — the first to be issued by the Joint Commission — were released in 2002 and are in effect through the end of the year. The Joint Commission established these goals to help accredited organizations address specific areas of concern in regards to patient safety. Each goal includes no more than two succinct, evidence- or expert-based recommendations.

Each year, the goals and associated recommendations are re-evaluated; some may continue while others will be replaced because of emerging new priorities. New goals and recommendations are announced in July and become effective on Jan. 1 of the following year. The goals for 2004 will be released this month.

The Joint Commission surveys accredited health care organizations for implementation of the goals, and failure by an organization to implement any of the applicable recommendations (or an acceptable alternative) will result in a special Type I recommendation.

Berek says your first step should be checking out the "Frequently Asked Questions" about the patient safety goals on the Joint Commission's web site (www.jcaho.org/accredited+organizations/patient+safety/npsg/faqs+about+national+patient+safety+goals.htm#goal6).

"Use that information to help define the scope, and divide this thing into buckets," he advises. "There are environment-related issues, user-related issues, and equipment issues. Then go on and assign people in those different buckets to different tasks. Then, finally, document for us that all this occurred."

The scope of the patient safety goal is broad, Berek says. "Clinical alarm" brings to mind ventilators and cardiac monitors, but he says the goal really involves nearly any device that emits an audible warning or alert.

The official definition offered by the Joint Commission includes any device "triggered by physical or physiologic monitoring of the individual, by variations in measured parameters of medical equipment directly applied to the individual, or self-actuated by the individual."

Examples of clinical alarms include cardiac monitor alarms, apnea alarms, elopement or abduction alarms, infusion pump alarms, alarms associated with gas pressure or concentration, and emergency assistance alarms such as the panic buttons found in patient bathrooms.

Work with experts in other departments

There are many ways to address the patient safety goal, but Berek says the best approach will involve a collaboration across many departments — quality improvement, facilities, biomed, and nursing, for starters.

The biomed department may take on the bulk of the work that is technical in nature, but there is a great deal of work that is not, Berek says.

That was what **Tim Cox**, RRT, director of respiratory care at the duPont Hospital for Children

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in Wilmington, DE, found when he sought to improve clinical alarms at his facility.

The hospital's effort to upgrade its pulse oximetry systems coincided with the effort to comply with patient safety goal No. 6, and Cox says it would not have been possible without the cooperation of several departments. Biomed and quality improvement representatives both sit on the hospital's patient safety committee, and Cox joined the effort to devise a better way to monitor pulse oximetry on pediatric patients. (They decided to acquire more sophisticated equipment, though that is not the only way to address alarm problems.) A key component of the project was making sure that all the different departments kept the end user in mind.

"You want to be able to look at it through the eyes of the health care provider," he says. "Whatever you do should enhance their care of the patient, as opposed to being obstructive. You could be obstructive by applying a lot of technology that is fundamentally OK and provides good data, but the bottom line is whether it is of value in managing the patient."

One of the first steps is to make sure that all equipment with an alarm is inventoried and included in a preventive maintenance program. A good starting point is to create a master list of all devices with alarms and make sure that you include all the different kinds of ventilators, for instance. Then make sure that each of those items is on someone's list for preventive maintenance. That task usually falls to facilities or biomed, and sometimes they share the task.

Just make sure that no device falls between the cracks. Frequently, those department will schedule annual or semiannual maintenance of each device that includes removing the cover, cleaning, and testing, a practice that Berek says is good but not enough.

"If that's the only time things are looked at — once a year to see if the alarm is working — that's probably not enough," he says. "There also should be some kind of quickie check that the user does without taking the cover off, rather than waiting for this major event to see if the thing makes noise."

Berek cautions that some alarms may not come to mind immediately when you are preparing your inventory and charting preventive maintenance.

Elopement and abduction alarms may be overlooked because they don't spring to mind immediately as "clinical" alarm systems, but he says they're included in the patient safety goal.

Involving the user for ongoing alarm checks doesn't have to be a burden for staff, Berek says. Some facilities implement programs in which some alarms are checked routinely by typical users, such as the nurses on an obstetrics unit.

You can devise a system in which individual infant abduction alarms are charted on the unit and the nurses test a few of them each day or week. It can be as simple as taking a few of the tags and walking to a protected exit to see if they activate. The results can be noted on a chart, and then a few different alarms are tested the next time. In the same way, the nurses can challenge a different exit each day to make sure that component of the system is functional. Over time, all the

Walking tour could reveal problems with clinical alarms

Listen to experiences of frontline providers

A walking tour of each patient care area that includes clinical alarms could reveal both problems and solutions you might not otherwise consider, says **Britton Berek**, CCE, MBA, associate director of the standards interpretation group for the Joint Commission on Accreditation of Healthcare Organizations in Oakbrook Terrace, IL. He advises talking to both unit managers and frontline providers to hear their experiences.

These questions may be useful:

- ✔ Do they have any problems with the alarms on the units?
- ✔ Is any device known for having a finicky or malfunctioning alarm?
- ✔ What happens when the unit gets busy and loud?
- ✔ Have the nurses ever missed an alarm because they couldn't hear it?
- ✔ Have they responded to the wrong patient because they misinterpreted where the alarm was coming from?
- ✔ Are doors typically left open or closed? Does that affect how well they can hear the alarms?
- ✔ Are there certain rooms or areas from which the nurses know alarms are difficult to hear?
- ✔ What happens if a nurse is tending to a patient on one end of the unit and an alarm goes off on the other end? Can it be heard?
- ✔ Does the night shift have any different concerns? ■

individual alarms and sensors are checked but without much burden falling on the user all at once.

Similar testing can be included in the start-up policies and procedures for equipment such as ventilators and cardiac monitors. If the nurses already have a checklist they go through to ensure the equipment is set up and running properly, Berek suggests you add a check of the alarms.

That type of user testing can be done quickly and easily, he says, and the documentation is created when the nurse simply checks off on a chart that the device was tested and functional on that date.

But Berek cautions that there will be some circumstances in which users cannot perform all the necessary testing themselves. With elopement and abduction alarms, for instance, there probably will be exits that are not easily accessible to the nurses.

"The engineering or facilities department may need to take care of some tasks instead of the users," he says. "There might be an elopement sensor on the back door at the dock, for example, and that's not accessible to the nurse user. Maybe engineering needs to put that sensor on a schedule and check it every month or two."

Human factors must be considered

Regular alarm checks are important, but according to Berek, there is more to the patient safety goal. Accredited facilities also have to ensure that clinical alarms are audible in the actual settings in which they are used, and that staff are adequately trained to discern their meaning and respond appropriately.

There has been some debate among health care providers about whether the patient safety goal requires comprehensive measurement of sound levels throughout the facility or minimal decibel levels for alarms, but Berek tells *Hospital Peer Review* that the answer is no. Decibel-level testing might be helpful but it is not required, he adds.

The Joint Commission is looking for a practical analysis in "real-world conditions," Berek says, but there usually is no need for a scientific measurement of sound levels.

Likewise, the Joint Commission does not have standards for the decibel level of clinical alarms. The bottom line, Berek says, is that staff should be able to hear the alarms in whatever situations they are used.

"You don't need a decibel meter to determine that. You can test it with just what you've got, by listening for the alarm in a realistic scenario," he explains.

That will require assessments of each unit or patient care area, giving consideration to the many different devices in use at once, the level of activity at different times of day or with different patient populations, and the physical layout of the area. Noise levels are an important consideration, Berek says, so you cannot assume an alarm is sufficiently audible when you test it at 9 a.m. before the unit gets busy and loud.

You may determine that some alarms are not audible from certain areas of the unit, and that's not necessarily a problem if you work around it, he says.

"You may determine that you just won't put a ventilator in the rooms at the end of the unit, or that ventilators have to be placed in rooms across from the nursing station," he says. "Your solution

Clinical Alarms and Patient Safety Information Sources

- Emergency Care Research Institute. Critical alarms: Patients at risk. *Health Devices* 1996; 25(1):25-30.
- Emergency Care Research Institute. Evaluation of monitors. *Health Devices* 1999; 28(1 & 2):15-17.
- Emergency Care Research Institute. Hazard report: Mis-set ventilator alarms can be lethal. *Health Devices* 1999; 28(4):165-166.
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- Emergency Care Research Institute. Critical alarms and patient safety: ECRI's guide to developing effective alarm strategies and responding to JCAHO's alarm-safety goal. *Health Devices*, Special Issue, November 2002; 31(11). To order, go to: www.ecri.org/documents/112702.asp.

can be incorporated into your policies and procedures, rather than trying to find a technical solution that makes every device audible from every room. We're certainly not suggesting you monkey around with a [Food and Drug Administration-] approved device to make it louder."

Staff education and surveys also can play an important role in meeting this safety goal. The Joint Commission expects staff to be able to prioritize alarms quickly and effectively, so that must be factored into the environmental assessment. It may not be enough that the alarm can be heard at the nursing station if the nurse can't discern the difference between an alarm that needs an emergency response and one that doesn't.

"Equipment density is currently 10 to 12 pieces of equipment per [intensive care unit] bed, for instance, so that's probably that many alarms, plus different levels of alarms on some of the equipment," Berek says.

"You need to make sure that staff are taught about the different alarms, and that they can make them out. If five alarms go off at once and the nurse can't tell which one to respond to first, that's a problem," he adds.

Cox also suggests that your record of sentinel events could help you focus your quality improvement efforts with clinical alarm systems. Have there been any sentinel events in which an alarm played a role? Any near misses?

Remember that you can't say it's the clinicians' fault for not hearing or responding to the alarm quickly enough. It is almost certainly a systemic problem that you can address, rather than just a health care worker who should work harder, he says. **(For information on how a facility tour could reveal potential problems, see box, p. 91.)**

Oximetry upgrade to improve patient safety

Buying new equipment often is an option when alarm systems are insufficient, but that is not always necessary. Sometimes a facility can address problems by adding auxiliary systems such as alarm relays, beepers for nurses who are out of hearing range, and other electronic systems that overcome physical barriers to hearing alarms.

Cox's hospital decided to upgrade its pulse oximetry systems, making it one of the first hospitals in the country capable of continuously monitoring the blood oxygen saturation levels of all of its inpatients anywhere in the hospital. The facility chose to use the Nellcor Intouch Remote Oximetry Notification System, a remote alarm paging system that transmits data from the bedside to a pager worn by the clinician. The page displays the bed number, alarm message, and the patient's oxygen saturation and pulse.

Cox says the system can help the hospital meet the clinical alarm system recommendations by providing a secondary alarm system, since the hospital found that primary alarms are not always sufficiently audible for clinicians to rapidly identify which room in the unit the alarm is coming from.

The hospital is installing 158 pulse oximeters next to every bed in its general care units and inpatient treatment rooms throughout the hospital and combining them with the notification system that immediately alerts physicians or nurses when a patient's SpO_2 value (the measure of the saturation of oxygen in blood) goes below a specific threshold.

Upgrading the oximeters and alarm systems should directly improve patient safety, Cox says. Recent research in his hospital system found that ICU monitor alarms were a major burden on both nurses and patients, with more than 90% of the alarms sounding being false alarms. (See: *Crit Care Med* 1994; 22:981-985.) Between 44% and 63% of alarms in this study were caused by pulse oximeters, and 94% of these alarms were nonsignificant.

"This was a case in which we determined that we could do better and we could improve patient safety," Cox says. "Clinical alarms sound like a very technical issue, but it really gets down to whether you can get help to your patient as fast as possible. There are a lot of ways to make sure you're protecting your patients." ■

Reader Question

Satisfaction data essential tool in accreditation

Satisfaction surveys can augment QI efforts

Question: Our hospital routinely surveys patients and family members to gauge satisfaction with our services, but so far we haven't really used those results in our accreditation efforts.

Can the data be used to show compliance with

Joint Commission on Accreditation of Healthcare Organizations' standards, for instance?

Answer: Yes, patient satisfaction data can be an important tool in accreditation activities, says **Mary P. Malone**, MS, JD, executive director for consulting services with Press Ganey Associates in South Bend, IN.

To get the most out of patient satisfaction data, Malone says you must help staff understand that the scores are more than just abstract data beyond their control. They must understand that the data can be affected by the implementation of certain policies and procedures, for instance, and not just by people working harder.

The most obvious potential for using patient satisfaction data lies with the Joint Commission's requirements for information management and using data for performance improvement.

"A lot of that section talks about using benchmark data to drive quality improvement, and these data can fit into that process," Malone says.

"When you focus on an issue and then look at what the patients say, the data are going to point out areas to improve," she explains. "You also can dig into the data and see if younger or older people are affected differently, or whether there are special concerns on the second shift or in the emergency department. Then you can use those insights gleaned from the data to ask your staff why patients and family members might be saying this."

Malone also encourages quality improvement professionals to seek other patient satisfaction data, nationally or from sister health care facilities. Patient satisfaction data often represent the final, end-user assessment of how well processes work within an organization, so survey data can highlight best practices that you may want to emulate.

Similarly, patient satisfaction data from your own organization can highlight systems and individuals who score especially well with patients. Those systems and individuals can be recognized for their good survey results.

"The survey results can be used very powerfully to reward and recognize people for doing a good job," she says. "Those successes become learning opportunities for the organization."

Malone says she sees health care providers make two major mistakes when they try to incorporate patient satisfaction data into their accreditation and quality improvement programs. The first is that people tend to overly personalize the data.

"Individuals often take the results very personally and get defensive, saying they did the best they could," Malone says.

"That defensiveness creates barriers and nothing gets done. They feel like they were criticized and then nothing good comes of it. You have to present the data in a way that discourages them from taking it so personally," she says.

The other common problem is allowing health care providers to think that the patient satisfaction survey results are beyond their control.

"If you're looking at length-of-stay data, nobody just stares at it and says they wish it would go down. They look at what they can change to make the numbers go down," Malone says. "That doesn't always happen with patient survey data."

To drive patient satisfaction scores up, you must encourage staff to think in terms of what processes might be improved and how those processes affect patient satisfaction. That may sound obvious, but Malone says people sometimes look at patient satisfaction data more simply than they see other data, thinking it is just a popularity contest they can't really influence.

"You must make the connection between what you do every day and the score on the patient satisfaction survey," she says.

"Clients who do that well tend to be among the benchmark performers, and clients who don't make that connection are those who don't do as well in quality measures. They may not do terribly, but they don't have breakthrough achievements," Malone adds. ■

QI project cuts patients' chronic pain dramatically

Facility earns Codman Award from JCAHO

A quality improvement project at a Michigan long-term care facility resulted in a decrease in the prevalence of chronic pain among its residents from 33% in March 2000 to 18% currently.

The reduction is even more significant — given that the assessment of an individual's pain is highly complex, particularly among the elderly, who may experience cognitive or communication difficulties.

(Continued on page 99)

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System's LOS shrinks as DP, UM functions are combined

How? Fewer people interact with patient, record

"Daily bed alerts," emergency department (ED) case management, and an express admit unit for direct admits from physician offices are among the initiatives that help streamline operations at Lehigh Valley Hospital and Health Network in Allentown, PA, says **Susan Lawrence,** MS, CPHQ, administrator, quality and case management.

It's been well over a decade since the health system took its discharge planning and utilization management (UM) functions and created a resource utilization department with a single director, and the "forward thinking" exemplified by that move continues to the present, she adds.

The payoff has come in continually decreasing lengths of stay (LOS) for the 750-bed system, which includes two hospital campuses in Allentown and another in Bethlehem, she notes.

Medicare patients at Lehigh Valley have an average LOS of 5.3 days, she notes, while the average medical-surgical LOS is 4.5 days.

The latter figure becomes more impressive, Lawrence points out, when one considers that it includes level-one trauma patients and those in the neonatal intensive care (NICU) and burn units. Babies in the NICU, she adds, can have stays from 20 to 40 days.

After the creation in 1990 of the consolidated department — now known as the case management department — the next pivotal move, she explains, was deciding in 1994 to combine the roles of the discharge planner and UM nurse, so that each could perform the other's duties.

"We were implementing patient-centered care, and we began looking internally at how we could adopt some of those principles and have less people interacting with the patient and the medical records," Lawrence says. "We looked at the job descriptions of the discharge planner and the UM nurse and thought we could put those roles together completely."

The department conducted a three-month pilot, with two discharge planners and one utilization nurse performing the blended function. The findings were that the discharge planners were able to review the medical record, assess severity of illness and intensity of service, evaluate the clinical information, and report all this to the insurance company to get authorization.

In addition, Lawrence says, the UM nurse was able to assess patient needs at the time of discharge and develop plans for post-hospital care, whatever those might be.

"It took about 12 months to cross-train everyone, so it was the end of 1995 by the time that was fully implemented," she notes. "We began to see some improvements in LOS, and we did not see an increase in denials."

With the combining of the two functions, Lawrence adds, the person handling the case is "constantly aware of whether the patient meets the criteria to be in the hospital and can immediately act to implement the plan. You're not repeating, so you save time."

The health system has used that model ever since, she notes, and in 1999, began an additional focus on decreasing LOS. "We tried to refine the role of case manager and increased the recognition of that role throughout the organization."

With LOS reduction identified as an important

priority, Lawrence says, the health system began holding weekly multidisciplinary meetings, pulling in representatives from such areas as respiratory therapy, pharmacy, and radiology. "We were able to bring to the surface what some of the delays were."

In response to those findings, she notes, the health system implemented Saturday thallium stress testing and weekend physical therapy, among other changes.

"We have also done some studies to evaluate what's impacting LOS, and we've identified a lack of short-term skilled nursing facility [SNF] beds," Lawrence says. "We happen to have a hospital-based SNF unit, but it was only staffed for 32 beds. Once we demonstrated the need, it was opened up to 42 beds. It's licensed for 55, so the data are evaluated periodically to see if we need to recruit more staff to open more beds."

'Daily bed alerts' instituted

Because Lehigh Valley's registration process is "fairly decentralized," there is no admitting department, Lawrence explains. Direct admits are sent from the front door to the nursing floor, and staff there perform registrations. ED registrars report directly to the ED management, Lawrence notes, and there is a person with the title of director of support services who supervises registrars in certain areas.

The director of bed management — a function that in many hospitals is part of access services — handles one of Lehigh Valley's LOS initiatives, she says. That individual, who supervises a department that is staffed 24 hours a day, seven days a week, issues what are called daily bed alerts when the hospital gets to certain occupancy levels.

"They will send pages, messages out to various members of the staff, including case managers," Lawrence says. "What that tells us is how many people are awaiting beds and what kind of beds they need. It helps the staff to prioritize."

Like many other providers, Lehigh Valley has looked closely at ED operations in its efforts to relieve overcrowding and increase bed capacity, she notes.

Case management in the ED was instituted after a pilot program showed that it avoided a significant number of inappropriate admissions, Lawrence says.

The ED case manager is able to arrange SNF admissions for non-Medicare patients directly from the ED, she adds. "Even the placement of Medicare patients can be facilitated if they don't need acute care."

The ED case manager also has helped a great deal in placing patients in assisted-living homes, setting up home care, and ordering durable medical equipment, Lawrence adds. "[The case manager] has been a really good resource."

A project called "Clockwork ED," she says, "implemented a lot of processes to improve ED efficiencies, but we realized that many of our inpatient operations were impacting [the ED's] ability to send patients to the floor."

"If a patient is not discharged from the bed, [another patient] can't move up from the ED," Lawrence adds, "so we created a large group called Growing Organizational Occupancy, which we call GOC."

That team, which began meeting in October 2002, has chartered a number of subgroups to focus on various parts of the hospitalization process, she says. The team's first mission was to look at the mechanics of discharge, Lawrence notes. "If you're being discharged and going home with your family, how do we get you to the front door?"

"Then we had a group that looked at how to get a bed cleaned as quickly as possible," she says. "We identified that the patient may have left the building, but we were unable to turn around [the room] quickly enough. Part of it is the nurses are busy with other patients and cleaning the bed is not a top priority."

A number of recommendations have been made to streamline the process, she notes, including a proposal for automating discharge paperwork. Under this plan, Lawrence explains, physicians would generate orders on the eve of discharge that would notify physical therapy, radiology, and other pertinent areas to move toward getting the patient out by 11 a.m.

"We're trying to increase the percentage [of early discharges] from 8% to 20%," she says. "To make that happen, we're working on a communication campaign targeting patients' families, all caregivers. We want to communicate a consistent message that — like a hotel — once you're discharged, it's time to go."

The idea, Lawrence says, is to eliminate such scenarios as telling a patient at 9 a.m. that she's been discharged and having her say, "I'll call my husband — he gets off at 4 p.m. — and have him pick me up."

"It's about changing everyone's mindset," she adds, "informing patients that as soon as they're

discharged, our goal is to make the bed available for the next patient."

Another plan has to do with establishing centralized dispatch for external transport, Lawrence says. At present, individual case managers call various ambulance companies to secure arrangements for their patients, she notes. "We're proposing they call a central number and have [a dispatcher] call and make arrangements."

Although case managers still would be making the same number of calls, Lawrence says, this method gives the hospital more control over the time that a patient is being picked up and allows prioritizing.

"If we need an ICU bed more quickly," she adds, "we could prioritize an ICU transfer out earlier in the day. If case managers are making arrangements independently, they're all vying for the same time."

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CHF readmissions decline as med needs addressed

'Medication Mission' improves quality of life

A discovery that came out of a congestive heart failure (CHF) project led to a "Medication Mission" that is improving quality of life and reducing readmission rates for patients at St. Joseph Health Center in Warren, OH.

While looking at factors surrounding the treatment and readmission of CHF patients, case managers realized "there was a compliance issue around being unable to afford the medications" the condition requires, says **Mary Spano**, RN, BA, manager for case management services.

"We decided to work on [the medication issue] as a way of increasing the overall quality of the CHF program," adds **Valerie Mihalik**, RN, CCRN, performance improvement coordinator.

The 30-day readmission rate for the first patients to benefit from the Medication Mission went from 12% to zero, she notes.

The CHF project began in July 2001, Mihalik explains. "We developed an entire program from beginning to end, which included standing order sets for admission as well as discharge and nursing protocol for the care of CHF patients — how often nurses assess patients, take vital signs, weigh patients, what they teach. We even had a unit specified for heart failure patients, with finely educated nurses who were experienced in that area."

"The thing that kept glaring at us," she adds, "is that the big problem was that patients could not afford their medications."

A large number of pensioners in the Warren area have lost health care benefits as a result of the large steel companies for which they had worked going out of business, Mihalik notes. "As a result, we're seeing a lot more patients who are underinsured or uninsured, especially for pharmaceutical benefits."

Caregivers would get wonderful feedback from patients on the treatment and education they received, she adds, but the conversation often would end with, "Don't bother filling that [prescription] out. I have $600 a month to live on, and the [medications] cost $600."

As hospital staff began to look at what could be done to address the problem, Mihalik says, "we got a lot of inspiration from the mission of our organization, which was founded by the Humility of Mary Sisters. Our mission statement from the sisters is to 'extend the healing ministry of Jesus to the poor and underserved.' We also looked at the example of Mother Theresa."

The CHF program's physician advocate is a cardiologist who had worked with Mother Theresa and who is very passionate about helping the underserved, she notes.

With that inspiration, funding from the St. Joseph Development Foundation, and the cooperation of Trumbull County's SCOPE (Senior Citizens Opportunity for Personal Endeavor) Center, the health center began its Medication Mission program, Spano says.

"In conjunction with [the county], we hired and underwrite the salary of a prescription assistant, who makes every effort to see [participating] patients while they are in the hospital," she continues. That person begins the process of qualifying the patients to receive help from the pharmaceutical companies' indigent funding program, and facilitates that. It takes about six weeks to get those medications once the paperwork is set up."

"What we started doing," Mihalik says, "is providing a 30-day supply with one refill of CHF

medication, and then added [other drugs] as we found we could afford it. We added all cardiac medications, including blood pressure meds, then diabetic medications — including glucometers and testing strips — because a lot of our patients have multiple things going on."

Now, she adds, a recipient might be a mother who needs antibiotics for a sick child.

Patients initially were given a 60-day prescription, notes case manager **Tammy Rienzi**, RN, but it soon became apparent that most patients were receiving the pharmaceutical company benefit before all the drugs were taken. To save costs, she adds, program administrators went to the 30-day prescription, with one refill.

The multidisciplinary committee that meets every other month to oversee the program recently discussed adding pulmonary medications, including those for chronic lung disease, to the list of drugs the medical center provides, Rienzi notes.

The idea, Spano explains, is to "create a bridge" so that there is no interruption in medications between when the patient leaves the hospital and when the pharmaceutical funding program kicks in.

Once the transition is made into that program, which is administered through the senior center, the benefit opens up to include any of the medications the patient needs, not just those "bridged" by the hospital, she points out.

The hospital directs its funds toward providing key medications, such as angiotensin-converting enzyme inhibitors and beta-blockers, without which the patient will end up back in the hospital, Mihalik notes.

"If the patient is without the oral medications that will lower cholesterol or help calcium loss for six weeks, they can get by," she says.

Before the medication program was instituted in February 2002, the hospital had been averaging a 14% 30-day readmission rate for its CHF patients, she says, "which is about the national average."

Now, Mihalik adds, the 30-day readmission rate for those who have been helped by the program is zero, and 68% of the patients helped had no readmissions for 204 days.

Patient screening is thorough

There is an extensive process in place to ensure that the patients who are most in need are served by the program, Spano says.

"They are identified by a case manager or by any staff nurse or physician. Then, because we are a religious-based hospital, someone from the pastoral care department talks to the patient.

"From the case management perspective," she adds, "we also check to see that the patient has no [prescription drug] benefits or that they are exhausted. We have to be prudent with the dollars we have available."

In addition, Mihalik says, a clinical pharmacist reviews the patient's medications to make sure they're appropriate, that there are no contraindications, and to determine whether substitutions can be made.

"At first," Spano notes, "we thought people might take advantage and come back for free medications, but that's not the case at all. Once they get in the [pharmaceutical indigent funding] program, their needs are being met and they don't return with the same needs."

In fact, adds Rienzi, she actually has patients who are offered the benefit and say, "I have access to some money. Give it to somebody else who really needs it."

The best of all job perks

One of the perks of her job, she notes, is being able to go to patients and tell them the hospital will supply their drugs for free for 60 days. "It's the most wonderful thing to see them just light up."

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(Continued from page 94)

The Joint Commission on Accreditation of Healthcare Organizations recently awarded Marwood Nursing & Rehab in Port Huron, MI, the Ernest A. Codman Award that recognizes excellence in the use of outcomes measurement by health care organizations to achieve improvements in the quality and safety of health care.

Marwood's nursing team focused on the potential benefits of better pain management by developing a resident assessment protocol tool consistent with the Minimum Data Set requirements of the Centers for Medicare & Medicaid Services.

Individual resident care plans then were revised to address the specific pain issues identified by using the new tool, in addition to other pain assessment and medication management tools developed through the initiative.

Forming the pain management teams

One of the first steps was the formation of two pain management teams. The first, which worked together on the overall program, comprised 30 members from all disciplines, including Marwood's medical director.

Suzanne Walker, RN, unit coordinator and leader of the clinical pain management team, says the large size of the team and varied backgrounds proved to be helpful.

The members had different life experiences and professional backgrounds, so they were able to develop better solutions, she points out.

Another important component of the program was the revision of forms that now call for more specific information about the physical and emotional conditions of residents being assessed.

Originally built as a 50-bed nursing home in 1963, today Marwood Nursing & Rehab is a 240-bed not-for-profit, skilled nursing facility that has been affiliated with Port Huron Hospital since 1987.

The focus on pain management began in 1999, Walker says. The first efforts involved education of staff, residents, and family. Using research showing that pain is not a normal part of aging and often not a result of the patient's diagnosis, Walker and her colleagues sought to change the way people look at pain.

"The cause could be spiritual, psychosocial, or emotional. It's broader than we really thought it was," she says. "We educated our housekeeping staff, maintenance, office staff, and all nonnursing staff in basic pain assessment. So a housekeeper who goes into a patient room to sweep can listen when the patient says she has a headache, or can notice that she is different from yesterday. Maybe the housekeeper can't explain why they're different, but they know something is wrong."

That nonclinical staffer is expected to report the observation to a nurse or physician, who can make a more thorough assessment. The idea is to empower the ancillary staff by educating them, Walker says, and the staff take it very seriously.

"They know it's not just the nurse's job. It's everybody's job," she says. "It's the job of the activity person walking down the hall who sees a resident who is restless or agitated. They know it's their responsibility to notify the nursing staff."

This type of shared responsibility didn't come easily, Walker says. It never would have worked previously, because the nonclinical staff didn't know what to look for, and the nursing staff didn't respect their concerns if they did speak up. But now, she says, the ancillary staff feel confident while still knowing their limitations, and the nursing staff know that everyone has been trained in the basics of recognizing pain.

And the education didn't stop with the ancillary staff. There still was plenty to teach the nurses about pain management, she says.

As in most health care settings, medication always had been the No. 1 defense, but now Marwood looks for nonpharmacological approaches — back rubs, quiet environments, soft music, music therapy, pet therapy, or just someone to sit and talk with the resident.

Walker and her colleagues used proven quality improvement processes for the project, first collecting data and conducting audits to get baseline information.

One immediate revelation was that the facility's documentation could be better. The existing documentation was "fair, but it wasn't great," she says, and made follow-up difficult. The pain management teams also quickly saw the need to improve forms.

"There were lots of form changes, and the input on form changes came from the nursing staff because they use the forms," she says. "Then we went back and audited it to see if the changes were effective."

Baseline data collection started with 25 residents who were monitored over a two-year period. The QI team also did a staff survey. The survey revealed that staff were very frustrated over poor

communication related to pain management.

"We had complaints that some people would hear of a resident's pain and blow it off, saying an 85-year-old patient is going to be in pain," Walker says. "That clearly had to change."

In addition to the overall pain management team with 30 members, Marwood developed a clinical pain management team with two registered nurses, a social worker, and a pastor. Staff can make a referral to the team, which Walker heads, if they feel frustrated with their own attempts to help a resident in pain.

If a staff member has notified clinical staff but still thinks the resident is not being helped, he or she can contact the pain management team for help. Then the team will conduct a chart audit, review the case history, and look at what the current recommended practices are and what the nurses are doing. Then the team makes recommendations to the nurses and physicians for changes that might be needed to manage the person's pain.

The QI project has led to a much more collaborative atmosphere at the facility, she says. It used to be that if the physician made a decision, the nurse followed instructions and the family went along with it. Now, Walker says, staff may decide with the family what they want for the resident, and go to the physician with their suggestion.

The results are convincing. When the program first started in 2000, the prevalence of pain was 33%. Now it's at 18%. The effort to better control pain had a direct impact on the facility's quality indicators — weight loss, decline in activities of daily living activity, behaviors affecting others, and decrease in range of motion. Walker found that as pain issues were handled better, residents ate better and weight became more stable. Residents got out of bed and felt better.

One of the best aspects of the project was that it didn't cost much. she says that when Marwood presented the project description to the Joint Commission, the accrediting body didn't understand Marwood's claim that it had an open-ended budget.

"What that meant was that our biggest expense was time, and we were willing to put in a much time as it needed," Walker says. "We didn't have to go out and buy equipment. We had to invest time to research and educate our staff, family, and doctors, so everyone has the same focus and the same information. That was our biggest expense, our time, and the administration made it easy to spend time on this."

The administration approved multiple teleconferences for staff, and the pain management teams used the in-house pharmacist as a key resource.

Walker offers this advice for any health care provider seeking to improve pain management and affect quality indicators:

- **Set a goal and be prepared to refocus your goal.** "It's a three steps forward, two steps back process," she says. "You have to be prepared for that."
- **You must have buy-in from staff.** It's not enough to get managers and administration on board. Tap into the nurses' desire to help people, the real reason they went into nursing in the first place.
- **Give staff the education they need to help the residents.** Pain management is more complex than most people realize, and strategies have evolved greatly in recent years. ■

Research institutions prepare for accreditation

First surveys expected to begin this summer

The Partnership for Human Research Protection (PHRP) in Oakbrook Terrace, IL, recently announced the approval of final standards for a new accreditation program to safeguard the interests of human subjects participating in research efforts.

Ten organizations that have committed to PHRP accreditation have begun work on survey readiness evaluations. The first accreditation surveys are expected to begin this summer.

The PHRP released draft standards in December 2002 for testing and public comment. The final standards address organization responsibilities, institutional review board structure and operations, consideration of risks and benefits, and informed consent.

Organizations will use an on-line tool to evaluate their readiness for a survey and to initiate the accreditation process. The accreditation process will involve a review of the evaluation results and supporting documentation, and an on-site survey, during which a team of PHRP surveyors — individuals experienced in biomedical research — will validate performance against the standards.

A partnership between the Joint Commission

on Accreditation of Healthcare Organizations and the National Committee for Quality Assurance, the PHRP provides a national set of standards and a voluntary oversight process that creates a framework for ensuring that processes are in place to inform and protect volunteer human research subjects. ■

THE QUALITY - CO$T CONNECTION

Before implementing changes . . . simulate!

Helps visualize, analyze, and predict performance

By **Patrice Spath**, RHIT
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Implementation of actions that achieve intended goals is the primary purpose of all process improvement projects. Whether your organization is seeking to reduce process inefficiencies or eliminate the chance of unintended patient harm, action taking is a critical step in the improvement cycle. The cycle involves devising a new or improved process, implementing changes, monitoring the effects of changes, making further adjustments where necessary, and continuing to monitor.

Repeating this cycle over and over again drives ever-improving quality and patient safety. Yet the process improvement cycle has some disadvantages. Implementing process changes can disrupt work activities and potentially compromise patient safety and satisfaction. Continual monitoring of the effects of redesigned processes is resource intensive and difficult to accomplish for lengthy time periods.

Simulation modeling, commonly referred to as simulation, offers a way to apply the process improvement cycle without actually implementing the proposed action plans. In using simulation, a model of a real system is designed and experiments are conducted to better understand the behavior of the system and/or evaluate various strategies for improving system operation. Simulation is a technique that helps to visualize, analyze, and predict the performance of a system without the cost and risk of disrupting current work processes.

Because of its great versatility, flexibility, and power, simulation is a valuable way of studying current processes in detail to pinpoint problem areas and identify opportunities for improvement. New policies, operating procedures, organizational structures, and information flows can be explored without affecting ongoing operations.

One of the greatest strengths of simulation lies in the ability to explore "what if?" questions. Theoretical process changes can be quantitatively studied and compared. In addition, simulation can be used to forecast system requirements such as staffing needs, capacity requirements, resource utilization, and expenditures with great precision.

Every health care system is made up of a network of processes and structures. Changes in one activity have a ripple effect throughout the system. For example, a change in the inpatient admission process can affect the way that nurses receive new patients on the units.

Revisions in the medication distribution system impact many clinical processes. In simulation, graphic models are developed to functionally represent the system. For example, a flowchart or model of the hospital accounts payable system describes the series of steps involved and decisions made when a hospital bill is generated and eventually paid.

Simulation is a way to create an imaginary representation of the process so that various redesign choices can be tested to determine the effect, if any, on the process.

How simulation works

Simulation can help health care organizations avoid counterproductive and ineffective process changes, both in strategy and implementation. It is a cost-effective mechanism for quickly exploring many "what-if" scenarios to zero in on an optimum solution to a problem.

To demonstrate how simulation works, let's look at the process of registering new patients during the day shift in the emergency department (ED). A patient arrives in the ED, enters the registration queue, and registration is completed on a first-come, first-served basis.

For demonstration purposes, let's say that an average of 10 patients arrive each hour and registrations are completed in an average of 10 minutes. Two people staff the ED registration desk during the day shift. Simple mathematics tells us

Baseline Measures for ED Registration Times (6 months of data)

Average number of patients registered per hour	10
Number of registration staff	2
Average number of patients waiting to be registered	1.7
Average patient wait time	10.4 minutes
Maximum wait time	57 minutes
Registration staff utilization	82.3%

Hypothetical Results from One Additional Registration Staff Member

Average number of patients registered per hour	10
Number of registration staff	3
Average number of patients waiting to be registered	0.9
Average patient wait time	5.4 minutes
Maximum wait time	38.5 minutes
Registration staff utilization	55.6%

Hypothetical Results from Reduction in Registration Time to 6 Minutes

Average number of patients registered per hour	10
Number of registration staff	2
Average number of patients waiting to be registered	0.2
Average patient wait time	1.3 minutes
Maximum wait time	20.1 minutes

that the registration staff are kept busy 83% of the time (10 patients per hour Φ [2 staff members x 6 registrations/hour] = 10/12 = 83%). **(See baseline performance data for the ED registration process, above.)** During a simulation, we'd be asking how changes in this equation would affect various aspects of the process. For example, what if an additional staff person was added? What would be the effect of decreasing the average time for the registration process itself?

To answer the "what-if" questions, the numbers are rerun two more times with different parameters. For example, we find that if another staff person is added, the time patients must wait before registering definitely will go down; however, staff utilization drops significantly, to 55.6%. **(See hypothetical results from adding staff member, above.)** Unless staff can fulfill other job duties during their idle time, adding a third registration clerk may not be a productive solution. If the goal of this inquiry is to determine the best way to reduce registration wait times in the ED, the right solution might be to redesign the registration process so that it takes less time. **(See example on what can happen if the time for registration is reduced from 10 minutes to 6 minutes, above.)**

Computer simulations

The mathematics needed to answer "what-if" questions can get complicated, especially for complex processes. The example of the ED registration process was purposely made very simple, and therefore the calculations are relatively easy. However, in many instances, computer simulation models will be needed to thoroughly examine all the factors in complicated and dynamic health care processes.

A set of equations called waiting line or "queuing" theory can answer some of the questions. But the equations have some constraints that often are not met in the real world.

The parameters (average arrival and service rates and staffing levels) must be constant over time. Stable processes are uncommon in the real life of health services.

As the process becomes more complex and less stable, computer simulation models are useful. These models can handle the more complicated or dynamic situations often found in health care.

Computer simulation models allow you to vary both the flow and the inputs of the process so that the "what-if" questions about the record request process can be answered simply by entering a different number into the model and rerunning the simulation.

Computer simulations allow you to evaluate more complex (hence more realistic) processes. For example, how should the ED admitting desk be staffed when the hourly number of patients varies from a low of 10 up to 22? Or what happens if the computer used to register patients is not working properly? In this situation, the process defaults to a troubleshooting mode.

Either the staff person needs to gather the patient's information manually (thus increasing registration time) or registrations are halted until the computer problem is resolved (thus increasing patient dissatisfaction). Simulation software is designed to consider all of the factors that might impact the process and help you determine the best solutions. And most important, you can do all this without making any actual changes in the process until you are fairly confident the changes will be effective.

A number of simulation tools are offered as statistical add-ins to spreadsheet software. For routine processes and tests of hypotheses, basic graphics, and even regression modeling, a statistical add-in product may be adequate. The functionality of products for use with spreadsheets is growing, particularly for risk analysis. For highly complex processes, a software product designed specifically for simulation modeling may be needed.

Not only can simulation software help you analyze both process inputs and outputs, many are able to exchange information with other software tools in an integrated way. For example, simulation may be integrated with presentation software to document and report on findings or to facilitate analyses on spreadsheet or statistical software. A large number of the vendors now provide families of products or modules rather than single, stand-alone software. SAS, a statistical software package commonly found in health care organizations, has add-on modules that can be used to build simulation models (www.sas.com). Many of the vendors have extensive web sites for further, detailed information, and many provide demo programs that can be downloaded from these sites.

For a list of vendors offering computer simulation software along with a description of the products, go to: www.lionhrtpub.com/orms/surveys/sa/sa-surveymain.html.

Simulation allows the user to visualize alternatives and obtain a fairly accurate analysis of how process changes will affect results. Before you start to use simulation software, it's important to have a solid grasp of flowcharting techniques to understand your process and create the model.

Knowledge of statistics is necessary to design the simulation experiment and analyze the results. Finally, an understanding of simulation applications is necessary to validate and verify the model.

Most simulation applications provide tools that greatly assist the user. The advice and support of an expert, however, may be needed for creating the model and the framework for analysis. Health care organizations with a management engineering department may have their own in-house simulation experts.

Another place to look for assistance is the Society for Health Systems sponsored by the Institute for Industrial Engineers (web site: http://shs.iienet.org/).

Pick 'ideal' improvement actions

Building a model rarely is an end in itself; instead, the goal of most analyses is to make a decision. Simulation can be used to study and compare alternative process designs or to troubleshoot existing systems. With simulation models, you can imagine how an existing system

might perform if altered or explicitly visualize how a new system might behave before the process redesign solutions actually are implemented. The ability to easily construct and execute models and to generate statistics and animations about results is one of the primary attractions of simulation software.

Using simulation during the process improvement cycle can help the project team identify and address improvement opportunities and determine the best strategies for achieving improvement goals. ■

CE *questions*

1. The Joint Commission's patient safety goals are announced in July and become effective when?
   A. immediately
   B. that October
   C. Jan. 1 of the following year
   D. July of the following year

2. Elopement and abduction alarms are not considered clinical alarm systems under the Joint Commission's sixth patient safety goal for 2003.
   A. true
   B. false

3. What is the first major mistake health care providers make when they try to incorporate patient satisfaction data into their accreditation and quality improvement programs, according to Mary P. Malone, MS, JD, executive director for consulting services with Press Ganey Associates?
   A. People tend to overly personalize the data.
   B. People tend to think the survey results are beyond their control.
   C. People do not believe the data are accurate.
   D. People do not fully understand the data.

4. In addition to its overall pain management team with 30 members, Marwood Nursing & Rehab in Port Huron, MI, developed a clinical pain management team with which of the following members?
   A. two registered nurses
   B. a social worker
   C. a pastor
   D. all of the above

Answer Key: 1. C; 2. B; 3. A; 4. D

CE objectives

To earn continuing education (CE) credit for subscribing to *Hospital Peer Review*, CE participants should be able to meet the following objectives after reading each issue:

- Identify a particular clinical, legal, or educational issue related to quality improvement and performance outcomes.
- Describe how the issue affects nurses, health care workers, hospitals, or the health care industry in general.
- Cite solutions to the problems associated with those issues based on guidelines from the Joint Commission on Accreditation of Healthcare Organizations or other authorities and/or based on independent recommendations from clinicians at individual institutions.

If you're not an *HPR* CE subscriber and would like to sign up, call customer service at (800) 688-2421. ■

Hospital Peer Review

Confidential Salary Survey

This confidential salary survey is being conducted to gather information for a special report later in the year. Watch in coming months for your issue detailing the results of this survey and the overall state of employment in your field.

Instructions: Fill in the appropriate answer directly on this form. Please answer each question as accurately as possible. If you are unsure of how to answer any question, use your best judgment. Your responses will be strictly confidential. Do not put your name or any other identifying information on this survey form.

1. What is your current title?

- ☐ A. QI manager/director
- ☐ B. outcomes management director
- ☐ C. VP of quality assurance
- ☐ D. nurse clinician
- ☐ E. medical director
- ☐ F. other_____

2. Please indicate your highest degree.

- ☐ A. associate or 2-year
- ☐ B. diploma (3-year)
- ☐ C. bachelor's degree
- ☐ D. some graduate work
- ☐ E. graduate degree
- ☐ F. other_____

3. How many people do you supervise?

- ☐ A. 1-3
- ☐ B. 4-6
- ☐ C. 7-10
- ☐ D. 11-15
- ☐ E. 16-20
- ☐ F. 21-40
- ☐ G. 41-60
- ☐ H. 61-80
- ☐ I. 81-100
- ☐ J. 101 or more

4. How long have you worked in case management?

- ☐ A. less than 1 year
- ☐ B. 1-3 years
- ☐ C. 4-6 years
- ☐ D. 7-9 years
- ☐ E. 10-12 years
- ☐ F. 13-15 years
- ☐ G. 16-18 years
- ☐ H. 19-21 years
- ☐ I. 22-24 years
- ☐ J. 25 or more years

5. How long have you worked in health care?

- ☐ A. less than 1 year
- ☐ B. 1-3 years
- ☐ C. 4-6 years
- ☐ D. 7-9 years
- ☐ E. 10-12 years
- ☐ F. 13-15 years
- ☐ G. 16-18 years
- ☐ H. 19-21 years
- ☐ I. 22-24 years
- ☐ J. 25 or more years

6. What is your age?

- ☐ A. 20-25
- ☐ B. 26-30
- ☐ C. 31-35
- ☐ D. 36-40
- ☐ E. 41-45
- ☐ F. 46-50
- ☐ G. 51-55
- ☐ H. 56-60
- ☐ I. 61-65
- ☐ J. 66 or above

7. What is your sex?

- ☐ A. male
- ☐ B. female

8. What is your annual gross income from your primary health care position?

- ☐ A. Less than $30,000
- ☐ B. $30,000 to $39,999
- ☐ C. $40,000 to $49,999
- ☐ D. $50,000 to $59,999
- ☐ E. $60,000 to $69,999
- ☐ F. $70,000 to $79,999
- ☐ G. $80,000 to $89,999
- ☐ H. $90,000 to $99,999
- ☐ I. $100,000 to $129,999
- ☐ J. $130,000 or more

9. On average, how many hours a week do you work?

- ☐ A. less than 20
- ☐ B. 20-30
- ☐ C. 31-40
- ☐ D. 41-45
- ☐ E. 46-50
- ☐ F. 51-55
- ☐ G. 56-60
- ☐ H. 61-65
- ☐ I. more than 65

10. In the last year, how has your salary changed?

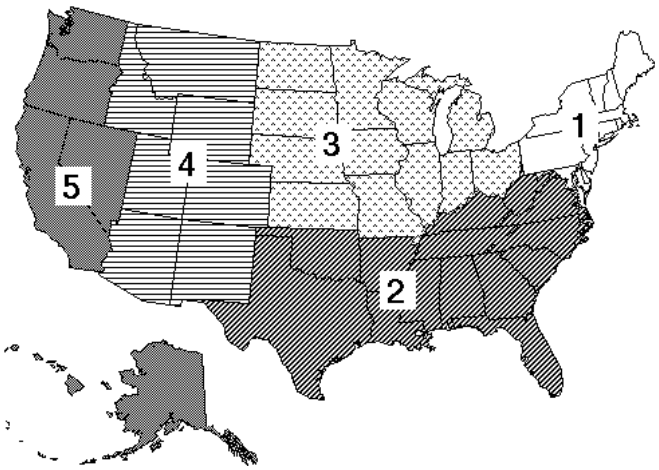
- ☐ A. salary decreased
- ☐ B. no change
- ☐ C. 1% to 3% increase
- ☐ D. 4% to 6% increase
- ☐ E. 7% to 10% increase
- ☐ F. 11% to 15% increase
- ☐ G. 16% to 20% increase
- ☐ H. 21% increase

11. Which of the following best describes the location of your work?

- ☐ A. urban
- ☐ B. suburban (outside large urban area)
- ☐ C. medium-sized community
- ☐ D. rural

12. Using the map (right), please indicate where your employer is located.

- ☐ A. region 1
- ☐ B. region 2
- ☐ C. region 3
- ☐ D. region 4
- ☐ E. region 5
- ☐ F. Canada
- ☐ G. other_____



13. Which best describes the ownership or control of your employer?

- ☐ A. college or university
- ☐ B. federal government
- ☐ C. state, county, or city government
- ☐ D. nonprofit
- ☐ E. for profit

14. Which of the following best categorizes the work environment of your employer?

- ☐ A. academic
- ☐ B. agency
- ☐ C. city or county health department
- ☐ D. clinic
- ☐ E. college health service
- ☐ F. consulting
- ☐ G. hospital
- ☐ H. private practice

15. If your work in a hospital, what is its size?

- ☐ A. <100 beds
- ☐ B. 100 to 200 beds
- ☐ C. 201 to 300 beds
- ☐ D. 301 to 400 beds
- ☐ E. 401 to 500 beds
- ☐ F. 501 to 600 beds
- ☐ G. 601 to 800 beds
- ☐ H. 801 to 1,000 beds
- ☐ I. >1,000 beds
- ☐ J. I don't work in a hospital

Deadline for responses: August 15, 2003

Thank you very much for your time. The results of the survey will be reported in an upcoming issue of the newsletter, along with an analysis of the economic state of your field. Please return this form in the enclosed, postage-paid envelope as soon as possible. If the envelope is not available, mail the form to: Salary Survey, Thomson American Health Consultants, P.O. Box 740058, Atlanta, GA 30374.