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Hospital slashes pneumonia rate with quality project for early intervention

Project helps identify at-risk patients, methods to prevent infection

When nosocomial pneumonia rates started going through the roof at St. Luke's Episcopal Hospital in Houston, the quality improvement leaders knew it was time to break out the big tools and find a solution. After soliciting ideas from a multidisciplinary team, the hospital achieved an astounding 50% reduction in its nosocomial pneumonia rates without any major expenditures or complicated changes in clinical care.

Though the project itself was intensive, the actual solutions to the nosocomial pneumonia problem turned out to be as simple as hand washing and suctioning. In addition, the hospital developed a tool for assessing which patients are at high risk so they can receive preventive care as early as possible. After five years, the quality improvement project has been a major success, says **Rosemary Luquire**, PhD, RN, senior vice president for patient care and chief quality officer.

Luquire worked with **Susan Houston**, PhD, RN, CNAA, FAAN, assistant vice president of clinical management and outcomes research to develop the quality improvement project. Nosocomial pneumonia rates began to increase significantly in 1994, when the rate was 4.7 per 1,000 patient days per year. In 1996, the rate had reached 6.5.

"In 1996, we saw that we would top off the year at a high rate, and though we do a lot of work with infections, we had the greatest opportunity to reduce nosocomial pneumonia because it was increasing at a faster rate than the others," Houston says. "We got together a multidisciplinary practice collaborative team with nurses, physicians, infection control practitioners, pharmacists, administrators, and a lot of others."

The first task was to create a fishbone diagram with the different causes of nosocomial pneumonia. With brainstorming and educated guesses, many potential causes were identified, from hand-washing practices to reuse of disposables, patient location, and the retaping and rotating of endotracheal tubes. Then the team sought verification that those causes

actually led to nosocomial pneumonia infections, but they found that there was no literature to support many of those supposed causes.

"We found that many of the things we think cause pneumonia are just gut thinking, hypothetical, not actually supported by any data," Houston says. "Our literature review also revealed that most of the research has been done on patients with emphysema, COPD, and asthma. But most of our cases are in cardiovascular surgery patients."

So to make the information more applicable to the patients at St. Luke's, the team went back to the fishbone diagram. This time, team members conducted a case control study of 240 medical records and plotted the causes of nosocomial pneumonia on the fishbone. With a univariate statistical analysis, the team identified a number of factors associated with the infections, but then a multivariate analysis revealed that only four particular factors were most strongly associated with the patients who developed infections.

Those factors were the use of aortic balloon pumps, renal failure, reintubation, and the total intubation time. The analysis revealed that those four factors were strongly associated with infections, so the team hoped they could be used to identify patients at risk and also develop a protocol to address those issues.

"These are all factors that we know preoperatively or intraoperatively, so we can use them to predict and prevent instead of just waiting to see who would get an infection," Houston says.

Using those factors, the team developed a scoring tool to identify high-risk patients. The cardiovascular recovery room nurses scored the patients every 24 hours, and if the patient met a certain cutoff score, he or she was put on the nosocomial pneumonia prevention protocol.

These are the steps in the protocol:

1. Obtain sputum sample.
2. Order "pneumonia protocol" sputum culture on routine culture order screen.
3. Order chest X-ray if not done within last 24 hours.
4. Order CBC with machine differential if not done within last 24 hours.
5. Ask respiratory care to institute use of in-line suction catheter.
6. Repeat orders 1, 2, 3, and 4 every 48 hours until extubated or trached (whichever comes first).

Notify physician if:

- Sputum gram stain is positive (greater than or equal to +3 WBC, 2+ GNR, or 2+GPC) or
- One of the following organisms is identified in culture: *P. aeruginosa*, *K. pneumoniae*, enterobacter species, *S. marcesoens*, *S. aureus*.

Physicians should consider empiric therapy as follows:

- If gram stain is positive for gram negative rods (GNR), consider ceftazidime 2g q 8h.
- If gram stain is positive for gram positive cocci (GPC), consider vancomycin 1g q 12h (doses altered for renal function) or clindamycin 800 mg q 12 h, if reintubated and/or possibility of aspiration.
- Reassess antibiotics at 72h or when culture and sensitivity results available.

If pulmonary disease and/or infectious disease physician is consulting, defer antibiotic decision to that service.

Protocol causes rates to drop immediately

"We implemented the nosocomial pneumonia protocol, and our rates dropped from 6.5 to 4.6 over a year. That's huge," Houston says. "We knew the protocol was working, so we looked at some other factors, too."

The quality improvement team studied the hand-washing and suctioning practices at the hospital and found ample room for improvement. The team updated the policies and procedures for both, and then sent observers out periodically to monitor how well staff follow them. The hospital still conducts in-person monitoring every so often to keep people aware of the need for good hand-washing and suctioning techniques, and there is some discussion about implementing video monitoring.

"People always do it better when they know

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someone is watching," Houston says. "Then it drops off slowly as people become complacent, so we come back and stand there again, looking over their shoulders as they wash their hands. It raises the awareness level again."

The quality team also conducted a study comparing the use of a 0.12% chlorhexidine mouthwash (Peridex), comparing it to Listerine, in hopes that one or both would lower the infection rate. The study found lower colony counts in the respiratory tract with the chlorhexidine, but there was no associated reduction in pneumonia rates. Houston suspects a larger study might show a beneficial effect.

The quality initiatives have been in place for about five years now, and Houston and Luquire say the project is a major success. The nosocomial pneumonia infection rate declined from 6.5 per 1,000 patient days in 1996 to 2.8 in 2001, putting the hospital in about the 15th percentile of the infection rates collected by the Centers for Disease Control and Infection in Atlanta.

Those good results come with very little investment. Houston says the hospital spent roughly $20,000 on the project itself, and the pneumonia prevention protocol costs about $30 per patient.

A single nosocomial pneumonia infection costs the hospital about $8,000, so Houston says the project's costs were recovered once it prevented only a few infections. With the lowered infection rates, she estimates the hospital avoids about 100 pneumonia infections per year.

Success leads to awards, opportunities

St. Luke's recently was honored with a Premier Award for Quality for the pneumonia project, awarded by Premier Inc., a national alliance of 1,600 not-for-profit hospitals. Houston's advice for other hospitals interested in emulating the project's success is to "go into the project for the long haul."

She says the quality improvement team still meets regularly to assess pneumonia rates and look for ways to improve.

The success of the project was one factor that led St. Luke's to joined 33 other hospitals that have achieved "Magnet" status from the American Nurses Credentialing Center in Washington, DC. The Magnet Nursing Services Recognition Program for Excellence in Nursing Services was developed by the American Nurses Credentialing Center in 1994 to recognize health care organizations that provide the best in nursing care and uphold the tradition within nursing that supports professional nursing practice.

Luquire says the hospital's achievement is largely due to the fact that nurses are involved with making decisions about nursing and patient-related issues.

"At St. Luke's, our nurses are empowered and encouraged to provide their input into decision making about issues related to their professional practice," Luquire says. "I'm convinced that our program of shared leadership — which is not just a concept, but a philosophy and organizational structure — had much to do with St. Luke's earning Magnet status."

Luquire says that same approach was key to the success of the nosocomial pneumonia project because nurses and others close to the patient were encouraged to recommend improvements in care.

"We view shared leadership as first and foremost a philosophy that the caregiver closest to the patient, if given appropriate resources, can tell us what works best at the lowest cost with the best outcomes," she says.

"So we actively promote a structure in which professional nurses help make decisions and establish research-based policies that affect their clinical practice," Luquire says. ■

What you need to know before hiring a surveyor

Surveyors as consultants OK, but watch the rules

Hiring consultants to help you interpret Joint Commission on Accreditation of Healthcare Organizations standards and get your program in shape before a survey is a common practice, and some quality professionals go a step further by hiring an off-duty Joint Commission surveyor as a consultant.

The arrangement works well for some, but for others it raises questions about the propriety of such an arrangement.

As far as the Joint Commission is concerned, you're allowed to hire a surveyor to help you improve your program, but only if you follow some very strict rules.

Getting your hands on those rules, however, is

not so easy. In a bit of a Catch-22, you have to rely on the Joint Commission surveyor you're trying to hire as a consultant to tell you if the arrangement is above board. *Hospital Peer Review* obtained a summary to make that assessment easier.

The practice is not uncommon, though no one seems to have a good idea just how many Joint Commission surveyors work on the side as consultants. Some quality professionals such as **Barbara Hocking**, RN, BSN, MPA, CHE, senior clinical director of medical, surgical, and outpatient services at the Evanston (IL) Northwestern Healthcare system in Illinois, say it's a great way to get your program in shape.

Hocking says her group hired a Joint Commission surveyor to consult on some special projects aimed at improving compliance with standards.

She says the arrangement worked out well and seemed to make sense. Who better to tell you how to interpret Joint Commission standards and get a better survey score than a Joint Commission surveyor?

Other hospital leaders tell *HPR* that they have used the same arrangement but don't want to publicize it because they are uncertain about how appropriate it is.

Ann Kobs, MS, RN, president and CEO of Type I Solutions in Cape Coral, FL, a well-known consultant who is not affiliated with the Joint Commission, says the practice is "very common, but a lot of people think it's a gray area as far as whether it's right or not."

She advises quality professionals to inquire about the surveyor/consultant's credentials and to explicitly discuss the propriety of the arrangement. Kobs notes that the situation can work well for health care organizations if the surveyor is good, but she cautions that you should not automatically assume that any Joint Commission surveyor would make a great consultant.

Some aren't so great at their surveyor job, so they won't be much help as consultants either, she says.

No matter how well it works for the accredited providers, some appear to think they're operating in a gray area by hiring a surveyor to consult. Not so, according to the Joint Commission. That is, if you're following some very strict rules.

Harold Bressler, JD, general counsel for the Joint Commission, says it is acceptable for accredited organizations to hire surveyors as consultants as long as certain rules are followed. But until *HPR* asked, the Joint Commission had not publicized those rules to anyone but the surveyors themselves. That could explain why some providers thought they were cheating the system, even if they weren't.

"As long as they're following the rules, we don't see a problem with this arrangement," he says. "Otherwise, it's a serious problem when the situation comes to light. It's the surveyor who's going to be held responsible for crossing the line, since it would be difficult to show that the accredited organization knew the arrangement was improper. But if there were evidence of that, I suppose there could be some repercussions in terms of the accrediting process."

Uncovering the rules you need to know

Bressler says surveyors have worked on the side as consultants for years, and there always have been strict rules about what is and is not allowed. Those rules are not easily available to providers because the Joint Commission has depended on the surveyors to follow them and not lead providers astray.

This is the summary that *HPR* obtained from Bressler:

- Only part-time Joint Commission surveyors may work as consultants. Full-time Joint Commission surveyors are strictly prohibited from consulting on the side.
- A surveyor cannot consult with an organization that he or she surveyed in the past three years.
- A surveyor cannot survey an organization that he or she consulted for in the past three years.
- The surveyor cannot suggest in any way that the accredited organization would benefit from the consulting "other than doing a better job at standards compliance. There can be no suggestion that there will be favored status of any kind."
- The surveyor, or any consulting firm with which he or she works, must not have any financial interest in the accredited organization.
- Surveyors are restricted in how they may solicit consulting business. In short, Bressler says, they may not solicit business during the survey process or use their association with the Joint Commission to pressure potential clients.

The Joint Commission does not require surveyors to report consulting arrangements, but it expects surveyors to speak up if they are assigned to survey an organization they recently consulted. If an accredited provider is uncertain whether an arrangement is acceptable under these rules, it can

call the Joint Commission's legal affairs department for an opinion, Bressler says. But the Joint Commission will not refer providers to surveyors who consult on the side.

"These rules are rigorous and very, very clear to the surveyors," Bressler says. "Anyone who violated these provisions would have very significant problems here. [That person] would not be able to survey here any longer."

JCAHO and JCR

The ongoing Enron scandal has raised questions about how Joint Commission surveyors and consultants work with health care providers accredited by the organization. While different from hiring off-duty surveyors as consultants, another practice still is raising questions about whether it is similar to some of the wrongdoing in the Enron scandal.

The question involves consulting services obtained through Joint Commission Resources, the consulting arm of the Joint Commission. Joint Commission Resources operates separately from the Joint Commission, and offers a variety of consulting services to help providers comply with the Joint Commission standards. The consulting services are not required in any way, and providers must pay a substantial fee for the service.

So where does Enron come in? Some observers have compared the consulting services offered by the Joint Commission to consulting services that the accounting giant Arthur Andersen provided to Enron.

Once Enron collapsed, Arthur Andersen came under fire for providing both consulting *and* auditing services to the company. Providing both services to a single client created a conflict of interest, critics said, and now some are saying that the Joint Commission / Joint Commission Resources arrangement poses the same conflict.

That description might sound like a conflict of interest on the surface, Bressler says, but in practice, there is no such problem.

"The most obvious difference between us and the accounting profession is that there is an absolute separation between the business operations of Joint Commission Resources consulting efforts and the Joint Commission's auditing or surveying. There's a firewall there that you didn't see with the accounting industry."

The separation is so complete, Bressler says, that the two groups cannot share information. If a hospital hires Joint Commission Resources to improve its operations and wants to show the consultant its accreditation history, the hospital must provide that information.

The Joint Commission will not give that information to Joint Commission Resources, even if the hospital asks.

The issue is addressed, at least indirectly, in a warning issued recently by **David M. Walker**, comptroller general of the United States and head of the General Accounting Office (GAO). In response to the Enron scandal, Walker issued a statement announcing "significant changes to the auditor independence requirements under Government Auditing Standards."

These standards, which were first published in 1972 and are commonly referred to as the "Yellow Book," cover federal entities and those organizations receiving federal funds. Various laws require compliance with the comptroller general's auditing standards in connection with audits of federal entities and funds.

Furthermore, and perhaps most significantly for health care institutions, many states, local governments, and other entities have voluntarily adopted these standards.

While the new standard deals with a range of auditor independence issues, the most significant change relates to the rules associated with nonaudit, or consulting services that might be compared to the services offered by Joint Commission Resources.

"Auditors have the capability of performing a range of services for their clients. However, in some circumstances, it is not appropriate for them to perform both audit and certain nonaudit services for the same client," Walker says. "In these circumstances, the auditor and / or the client will have to make a choice as to which of these services [the auditor] will provide."

New rules aim to avoid conflict of interest

Walker announced a new independence standard for nonaudit services, with these two main principles:

- Auditors should not perform management functions or make management decisions.
- Auditors should not audit their own work or provide nonaudit services in situations where the amounts or services involved are significant / material to the subject matter of the audit.

Some nonaudit services could be provided by an auditor, Walker explains, as long as certain requirements are met.

For instance, nonaudit services could be provided if handled by personnel who are precluded from performing any related audit work, if the auditor's work could not be reduced beyond the level that would be appropriate if the nonaudit work was performed by another unrelated party, and if certain documentation and quality assurance requirements were met.

The Joint Commission's consulting work meets those criteria, Bressler says. There is no similarity to the way Arthur Andersen provided both consulting and auditing to Enron, he says.

"The accounting firms were saying during an audit, 'Hey, why don't you use our consulting service?'" he says. "We don't do anything like that. It does not happen."

New standard takes effect Oct. 1

The new standard includes an express prohibition regarding auditors providing certain bookkeeping/record-keeping services, and limits payroll processing and certain other services, all of which presently are permitted under auditing standards of the New York City-based American Institute of Certified Public Accountants. At the same time, the standard recognizes that auditors can provide routine advice and answer technical questions without violating these two principles or having to comply with the supplemental safeguards. The standard also provides examples of how certain services would be treated under the new rules.

Though they were released on the heels of the Enron accounting scandal, the revisions contained in the new standard have been in the works for a while. The changes were developed over a three-year period, including extensive public comments and input from the comptroller general's Advisory Council on Government Auditing Standards. The council includes 20 experts in financial and performance auditing and reporting drawn from all levels of government, academia, private enterprise, and public accounting, who advise the comptroller general on Government Auditing Standards.

Because of the breadth of changes in the new standards, they are applicable to all audits for periods beginning on or after Oct. 1, 2002. "However, early implementation is encouraged," Walker says.

The new audit standard is available on GAO's web site at http://www.gao.gov/govaud/ybk01.htm. ■

Reader Question

Model business associate agreements will save work

Agreement should be ready well before deadline

Question: A while back, we heard that covered entities under the Health Insurance Portability and Accountability Act (HIPAA) that were accredited by the Joint Commission on Accreditation of Healthcare Organizations would need to come up with a business associate agreement. But then we heard that we shouldn't do any work on this because the Joint Commission was coming up with a generic agreement that would cover accredited providers. Is that true? We haven't heard anything and don't want to miss any deadlines.

Answer: The agreement is not ready yet, but you have plenty of time. The Joint Commission reports that the model business associate agreement will be ready well before the April 2003 deadline. If you use it instead of coming up with your own, you won't need to do much work and can wait until just before the deadline, the Joint Commission reports. The model agreement is supposed to be a simple solution to the HIPAA requirement. The Joint Commission says the model agreement can be used as a template when accredited organizations put together the appropriate paperwork to comply with the new rule.

Margaret Van Amringe, vice president of external relations at the Joint Commission, tells *Hospital Peer Review* that the model agreement is necessary because the HIPAA rule considers accreditors such as the Joint Commission to be business associates of the accredited organizations.

The HIPAA rule requires the Joint Commission to have business associate agreements with each accredited organization, specifying its own privacy and disclosure practices and how it will handle information that is identifiable by patient name.

Since there are almost 20,000 Joint Commission-accredited organizations, Van Amringe says it is unreasonable to have a different agreement for each one. The model agreement is meant to simplify the situation.

You could write your own business associate agreements from scratch, or you could use one

(Continued on page 55)

Discharge Planning Advisor®

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Discharge process enables faster placement

Report quality greatly enhanced, CM director says

Case managers at New York Hospital of Queens in Flushing are using a new software tool to determine the availability of post-acute services, then request and schedule those services over the Internet, says **Caroline Keane,** RN, MSN, ANP, CCM, director of case management and social work.

Since implementing eDischarge, a product of Curaspan Inc., in Needham, MA, in mid-January, her staff have dramatically reduced time spent on the telephone, enhanced the quality of report writing, and are able to make more precise matches of patients with care facilities, she says.

CM drives discharge plan

"It's real time," she explains. "We used to send out PRIs [patient review instruments] — maybe a 20-page package — to five facilities via fax. Even though it was programmed into the fax machine, it took a lot of effort, and then maybe it didn't go out right. Now we put in one [PRI] and send it out to all five at once. The PRIs are much more legible."

The high-quality reports alone are a huge plus to her operation, Keane says. But Columbia Presbyterian, the network to which her hospital belongs, chose to implement eDischarge in large part because of the patient privacy protection it provides, she notes.

With the privacy regulations of the Health Insurance Portability and Accountability Act (HIPAA) becoming effective in April 2003, Keane adds, "we're looking toward the future. This is an encrypted system, a secure system. We decide how much information the person on the other side receives, and at what time we give it."

As part of the eDischarge process, post-acute providers that take referrals from the hospital, including skilled nursing facilities (SNFs), home health services, and rehabilitation facilities, complete a profile outlining the services they offer. Each day, the provider updates the bed or service availability.

At her hospital, Keane explains, there is a merged case management/social work department, with 19 registered nurse case managers, seven social workers, and one placement coordinator, who acts as a liaison between the post-acute facilities and the social workers. The hospital has about 460 patients at any one time, she notes, and her department arranges between 200 and 220 nursing home placements per month.

The case manager drives the discharge plan, she says, determining whether the patient should be placed in a facility or cared for at home, doing the initial intervention with the patient's family, and performing the ongoing chart review. Once the discharge plan is ready and there is a solid placement need, the case manager makes a referral to the social worker, Keane says.

"The case manager continues to review the case, and as the patient becomes closer to 'discharge-ready,' issues the PRI, entering it electronically into the computer," she says.

Meanwhile, Keane adds, the social worker has developed a relationship with the family, helping them understand the process and negotiating

where the patient will receive post-hospital care.

When the patient is ready for discharge and the PRI is completed, the case manager transfers the PRI to the social worker, who completes the departmental screen of the patient and transfers the case to the placement coordinator with a list of appropriate facilities, Keane says.

"The placement coordinator electronically sends out queries to facilities the patient and family have chosen and awaits the follow-up. When she gets that, she transfers the information appropriately. If there is a medical need or question, it goes to the case manager, but if there is a financial or psychosocial need, it goes to the social worker."

Once the patient is accepted by the facility, she notes, the PRI is updated, if necessary, and the social worker proceeds with the transfer. If the patient came from a nursing home and is returning there, the process is driven by the case manager from start to finish, and there might not be a social worker involved, Keane adds.

To protect patient confidentiality, identifying information on the patient is sent to the provider only after the final match is made, she notes. "We can give [the provider] just a look at the PRI and whatever clinical information is necessary. We're not giving them next of kin until we're ready to give them next of kin, and we're not using fax lines that may not be secure."

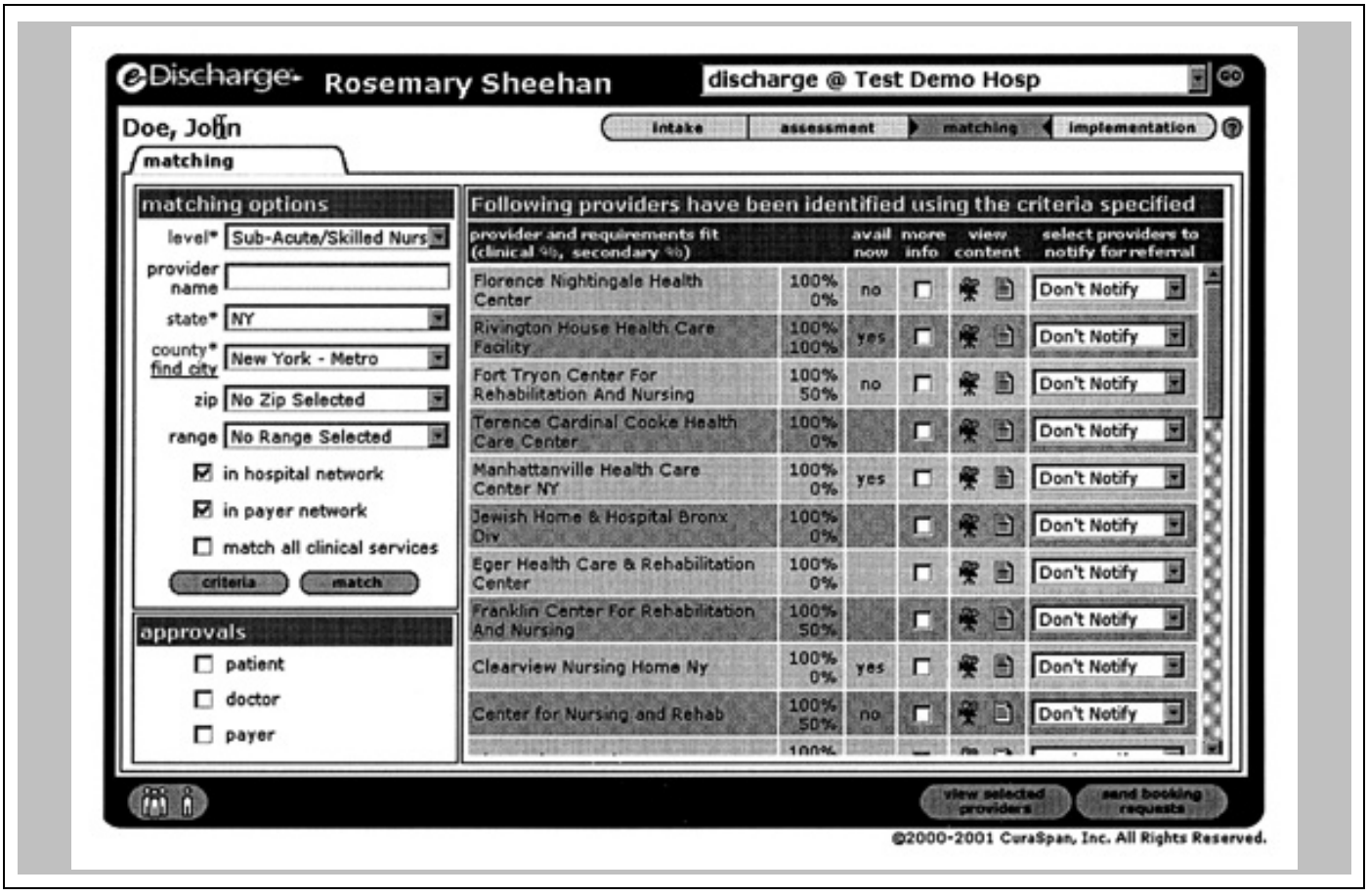
The eDischarge system "eliminates the back and forth," Keane points out. "Otherwise, people are going back and forth, faxing within the building, going up and down [floors] all day. We've decreased the unnecessary steps."

A clerical employee, for example, used to spend five hours collecting data and typing and distributing a monthly report showing where patients have been placed, she says. "The system does it in a minute, and we run a great report at the end of the business day."

Her staff can look at data showing where a patient was placed, how many facilities were sent applications, and what facilities have taken what types of patients in the past, Keane adds.

Using the criteria match, which is part of eDischarge, case managers sometimes are able to find an appropriate placement for patients they didn't think a facility could accommodate, she points out.

"We'd look at the criteria match and say, 'Oh, we didn't know they did dialysis,' so it was a heads-up that a facility we didn't think about would take a patient." Placing patients who need



dialysis is particularly difficult because of limited resources in the area, Keane adds.

Placement of people with "extreme needs," such as a recent 540-pound patient, also is facilitated by the on-line system, she says. "We can query [regarding] specific patients who have specific needs to see if a facility we don't use very often can provide that service.

"You know the facilities in your area that you use all the time," Keane adds, "but occasionally a facility is changing its scope of practice or opening a new unit. It's right there on the computer." Meeting a special language or dietary need, for example, is particularly crucial with long-term placements, she notes.

Communication with payers is enhanced, Keane says, in that her staff can take a list of all the facilities within a certain plan and electronically transfer the PRI and other information in real time. "We don't have to find a fax machine and fax to five different facilities. We can make one phone call to a managed care company and say, 'This patient has been medically approved by one of your preferred providers. Can I get an authorization number?'"

At present, Keane says, most of the post-acute facilities to which her hospital historically has made referrals are part of the eDischarge system.

"Some smaller facilities that service another community more than ours, or are borderline, have not joined, but it has not remotely been an issue," she adds. "If they didn't get on board in the beginning, I think most of those we do business with will join."

Similar products her hospital tried several years ago "didn't pan out," Keane says. "I don't think they were clinically as good. With one, we tried making referrals without enough information — we couldn't scan in enough to give the full package. Also, there was not a tremendous buy-in. [Participants] were not as computer savvy. There's been a lot of change in our environment that made this the right time."

What Keane likes about eDischarge, she notes, is that it is "very comprehensive and very user-friendly, and it's done at the front line. The case manager controls the discharge."

In addition, she says, the vendor provided a tremendous amount of support during implementation. "None of the other programs had the technical support this one has, or the time [the vendor] spent training and retraining."

What the vendor did make clear, Keane points out, is that the on-line discharge system by necessity must "change the way you do business. You have to set a limit [on telephone calls], squelch that knee-jerk impulse to use the phone."

And, she adds, "it takes getting used to seeing the PRI in the computer instead of in front of you — even though you can print it if you want to."

Although cases already are being turned around and decisions being made more quickly, Keane says she expects further improvements as staff get more comfortable with the system. "We've created our own security measures, but as time goes by we'll drop some of the unnecessary [backup] steps and will get faster."

"Any time there's a change," she adds, "there's always a little holding on to the past, but the future is where you need to be."

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To smooth discharge, check bed 'life cycle'

Defining terms spurs solution, physician says

Hospitals with ongoing bed management problems and high censuses would do well to look more closely to determine the true cause, suggests **John Whitcomb,** MD, medical director of emergency services for Milwaukee's St. Luke's Medical Center, which is a part of Aurora Health Care.

Although the emergency department (ED) is a popular scapegoat when it comes to assigning blame for hospital diversions, it is just a symptom of an inefficient hospital, he says.

That inefficiency is defined by several clinical processes, "all of which are slow," adds Whitcomb, who helped spur development of a cutting-edge bed management system at Aurora Health Care.

"They all happen at the same time in the middle of the day, and they all have in common one person occupying two beds or a bed with nobody in it," he explains.

Those problematic processes, he says, include the following:

• **Discharge from the hospital.**

From the time the physician writes the discharge order until the bed is reoccupied, Whitcomb says, is "in the range of six to eight hours. The patient is there for the first two or three hours, and then you have multiple handoffs — to nursing, to pharmacy, to transport the patient. Each one is just 15 minutes, but when you have 10 of them, suddenly that's six hours."

• **Transfers between units in the hospital.**

When a patient is transferred from the intensive care unit (ICU) to the nursing floor, he is in one bed and waiting for another, he notes. "The other bed has to be cleaned and the order has to be given and coordinated with pharmacy." Then the patient, along with his personal effects, has to be moved, and the family directed to a different waiting room. "Again, it's about a six-hour process," Whitcomb says.

• **Procedures in the operating room (OR).**

While an elderly or frail patient is in the OR for example, a five-hour procedure, "his slippers and robe are in the original room," he says. "He may go back there, or he may go to a room in the ICU, which is on hold because the patient is so frail." Both beds are held in reserve until the outcome is clear.

• **Outpatient procedures.**

There's a similar process with outpatient procedures, whereby physicians hold open the option of admitting a patient to the hospital, just in case there are complications or unforeseen outcomes. "In the meantime, there are all these other procedures where a bed is put in reserve, and all of those procedures peak in the middle of the day," Whitcomb adds.

That means that in the middle of the day, any hospital with an occupancy rate of more than 80% thinks it's at 120%. "It's because [clinicians] have saved a bed, 'just in case.' It's that 'just in case' stuff that's causing the problem."

At noon, Whitcomb says, hospital personnel are likely to get so panicked by these numbers that they "send business elsewhere," only to find there are 20 available beds at 8 p.m.

"That's because they didn't know how many beds they had, really," he adds. It doesn't help that various physicians are calling the units directly to "make private deals" to get their patients admitted, Whitcomb notes.

"It's a confusing process," he says. "You can't keep track, and you don't have control of how long it takes for one empty bed to get reoccupied. So how can you make a science of that?"

To correct what Whitcomb calls "the life cycle of a bed," certain hard information can be measured, he says. Terms that need to be clearly defined include the following:

• **Available bed.**

"This is not a licensed bed, not a budgeted bed, and not a bed with sheets on it," he says. "It's a *staffed* bed. [Bed management staff] need to recognize that the hospital they're working with is not the same every day. Every day it's a little different. Patients are complicated. Some patients have one nurse, and in another place, one nurse is caring for five patients."

• **Open bed.**

An open bed, Whitcomb says, is a bed for which a discharge order has been written. When the order is written, the clock begins ticking. "When is the secretary going to report it? When is the patient going to be moved out? When is it going to be cleaned? When is a new patient assigned to it? When is a report given from the incoming patient? When is the patient actually in the bed?"

If it generally takes six hours after the order is written for a bed to be open, Whitcomb notes, what would be the benefit if that time were cut in half? "If you can add three hours of occupancy, and the average hospital stay is five days, you gain 3%," he adds. "With a 500-bed hospital, you've gained three empty beds."

Once the situation is defined, Whitcomb notes, "you can put a tool together to manage it, and you can act prospectively. Then you can make what you do match the hospital's mission." ■

(Continued from page 50)
developed by a private consultant or another organization. But the Joint Commission urges you to use the model it releases to minimize the customization and the time needed to review each agreement.

All accredited organizations should receive the model business associate agreement by the end of 2002, and they must be signed by the April 2003 deadline, Van Amringe says. ■

JCAHO releases program for disease-specific care

Certification program is first of its kind

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has released its Disease-Specific Care (DSC) program, which it calls a "groundbreaking" development.

The program is the first of its kind in the country to certify disease management programs serving patients suffering from specific chronic illnesses — such as asthma, diabetes, and congestive heart failure — and identify ways to improve care and health outcomes. These organizations also identify at-risk groups and promote early detection, compliance, and prevention.

The 2001 Institute of Medicine report *Crossing the Quality Chasm* recognized that chronic conditions now are the leading cause of morbidity, disability, and death, and account for the majority of health care expenditures with more than 105 million Americans suffering from at least one chronic condition. Asthma, diabetes, and congestive heart failure are among the leading chronic diseases affecting Americans and account for nearly $400 billion spent annually, according to the Centers for Disease Control and Prevention's National Center for Chronic Disease Prevention in Atlanta.

However, there have been no consensus-based national standards broadly applied to disease-specific care services and no independent, external quality evaluation process to assess compliance with national standards. **Maureen Connors Potter**, RN, MSN, executive director of the DSC program, says the new Joint Commission program is designed to change that.

The new certification program requires compliance with consensus-based national standards; the effective use of established clinical guidelines to manage and optimize care; and the measurement and improvement of health processes, outcomes, and perceptions of care.

"Disease management service companies, health plans, and hospitals are seeking new methods to distinguish levels of care," Potter says. "JCAHO's national program offers an external validation of the quality and outcomes of DSC services. And the improved systems and processes derived from standards compliance contribute to operational efficiencies."

In addition, business purchasers are turning to disease management programs as a method to improve the wellness and productivity of their work forces as well as reduce health care costs. Consumers, too, increasingly are demanding reliable, comparative information regarding where to seek treatment.

The Los Angeles County Department of Health Services Clinical Resource Management (CRM) Program recently became the first disease management program to be certified under the new program. The program works to get children to the physician before they have an asthma attack. Collaborating with the Asthma and Allergy Foundation of America Southern California Chapter, and the Los Angeles Unified School District, the CRM Program has reduced the need for emergency department visits and inpatient hospitalizations for children with asthma in Los Angeles. It has accomplished this using multidisciplinary teams of health care professionals that include physicians, nurses, respiratory therapists, and patient service workers. ■

Teleconferences help educate on bioterrorism

AHRQ report: Equal to classroom training

Teleconferences are an effective way to train large numbers of physicians, nurses, and other clinicians and to standardize bioterrorism preparedness training across geographically diverse groups, according to a new report sponsored by the Agency for Healthcare Research and Quality (AHRQ) in Rockville, MD.

Furthermore, satellite teleconferences may be as effective as classroom training, according to the evidence report, which was produced by the AHRQ Evidence-based Practice Center (EPC) at

Johns Hopkins University in Baltimore. The report, *Training of Clinicians for Public Health Events Relevant to Bioterrorism Preparedness*, reviewed 60 studies on the most — and least — effective strategies for training clinicians in bioterrorism preparedness, using models such as infectious disease outbreaks and hospital disaster drill training.

Hospital disaster drill training appears to improve clinicians' knowledge of the disaster plan and allows them to identify problems in plan execution, says **Lisa Simpson**, MD, AHRQ deputy director.

But Simpson says the scarcity of studies on this type of training made it difficult for researchers to draw conclusions about the overall efficacy of disaster drills as a way to help prepare for a bioterrorist event. In fact, the report points out that very few bioterrorism preparedness training programs have been rigorously evaluated, and it provides a framework for developing evidence-based educational programs.

"This information will help health care leaders select educational strategies for frontline professionals who are likely to be involved in the assessment and management of victims of a bioterrorist attack," Simpson says. "And these important research findings are just one component of the Department of Health and Human Services' overall efforts to help clinicians prepare for a potential bioterrorist event."

Funding increases for bioterror response

The new evidence report is part of AHRQ's $5 million bioterrorism research portfolio announced in October 2000. The portfolio includes research projects that are examining the clinical training and ability of frontline medical staff — including primary care providers, emergency departments, and hospitals — to detect and respond to a bioterrorist threat. The research projects also focus on the use of information and decision-support systems to enhance clinical preparedness and will assess and improve linkages between the health system, local and state public health departments, and emergency preparedness units.

Free copies of the report are available by calling the AHRQ Publications Clearinghouse at (800) 358-9295, or by e-mail: ahrqpubs@ahrq.gov.

The President's budget proposal for fiscal year 2003 includes $518 million to enhance preparedness at the nation's hospitals to respond to incidents of biological or chemical terrorism, a 284% increase over the amount provided this year. The budget also includes another $100 million for programs for bioterrorism training for health care professionals, poison control centers, and emergency medical services for children.

Secretary of Health and Human Services (HHS) **Tommy Thompson** announced the funding increase recently. The funding would help build an effective nationwide network prepared to respond to large-scale casualties, as well as helping to provide specific materials to be immediately available in hospitals, and helping to support new clinical personnel. The spending would be used in these ways:

1. support expanded capacity of hospitals and outpatient facilities to confront large-scale casualty incidents;

2. improve capabilities to control infection and treat individuals at risk for a communicable disease;

3. provide training in recognition of rare diseases and treatment of toxic exposures;

4. improve infrastructures, including infectious disease containment systems.

"Our first goal is to ensure that hospitals on the front lines have the capacity to identify the signs of biological attack and to be prepared to respond to biological and chemical incidents," Thompson said in announcing the budget increase.

"In addition, hospitals must be better prepared to control infection for communicable diseases. We also want to help hospitals purchase the equipment they need, including personal protective equipment, to enable them to maintain service, control infection, and decontaminate as needed," he said.

Thompson said hospitals will work in coordination with their states' preparedness plans to ensure that emergency response networks are in place. Earlier this month, he provided $1.1 billion in fiscal year 2002 funds to the nation's governors to immediately begin the process of upgrading emergency response capabilities aimed especially at biological events.

In addition to the $518 million for hospital preparedness, the president's budget for fiscal year 2003 also proposes a new program that would provide $60 million for bioterrorism-related education and training for physicians, nurses, and other health care professionals; $21 million to ensure poison control centers provide scientifically based information about the latest threats; and $19 million to help prepare emergency medical services

systems to meet the special needs of children in a biological or chemical incident.

The funding proposed for hospitals and training is part of the total $4.3 billion proposed for bioterrorism preparedness in the HHS budget for next year, an increase of 45% over the current year, and more than 10 times the amount of HHS spending on bioterrorism in fiscal year 2001. HHS bioterrorism preparedness funding in fiscal year 2003 includes another $940 million to continue assisting state and local governments to prepare for potential incidents, and nearly $1.7 billion for research, development of vaccines, and diagnostic tools and treatments, as well as infrastructure for research laboratories.

The Centers for Disease Control and Prevention (CDC) in Atlanta unveiled a redesigned web site offering both new and updated bioterrorism resources for health professionals and the public. The site at www.bt.cdc.gov addresses the need for up-to-date and accurate information on health threats arising from exposure to biological, chemical, or radiological agents.

The redesigned site, which focuses on public health preparedness and emergency response, is the official federal site for medical, laboratory, and public health professionals to reference when providing information to the public and for updates on protocols related to health threats such as anthrax.

The CDC redesigned the site in response to overwhelming demand from the public and professionals for credible information during the anthrax crisis. ■

Task force continues to identify needless rules

The Standards Review Task Force is making progress in its effort to find redundant and needlessly burdensome rules in Joint Commission on Accreditation of Healthcare Organizations standards. At its most recent meeting, the group reviewed the Environment of Care and Human Resources standards.

According to a report from the Joint Commission, task force members suggested a new structure to help clarify and eliminate redundancy. For example, there are separate standards dealing with planning, implementing, managing, testing, and evaluating fire safety systems.

The task force suggested including each aspect in one standard covering fire safety. Task force members also focused on survey process issues, indicating a need to clarify the Environment of Care standards or issue clarifications on the Joint Commission web site. That would help reduce the potential for surveyor inconsistencies in surveying the standards, they said.

For the "Human Resources" chapter, the task force focused on standards concerned with assessing competency. Lack of compliance with these standards results in a large number of Type I recommendations during the survey process, the Joint Commission reports. Task force members indicated a need for clarification of the competency standards to facilitate compliance and reduce the paperwork burden. In addition, the task force received a preliminary draft of the revised "Performance Improvement" chapter for review. ■

THE QUALITY - CO$T CONNECTION

Assess carefully before starting training programs

Focus education on root causes, not symptoms

By **Patrice Spath**, RHIT
Brown-Spath Associates
Forest Grove, OR

Monitoring of incident reports suggests that caregivers are not performing up to your patient safety expectations. People seem to make many of the same types of mistakes over and over again. Cautionary memos and discussions in staff meetings haven't really changed the situation. What should your organization do to reduce patient incidents? Train your employees better?

Not necessarily: Be careful to assess the cause of the problem before spending time and money on training programs. When education solutions are directed toward treating the symptoms and not the underlying root causes, nothing will be resolved.

Consider the following scenario: Worried about a rise in the number of medications that were not

Causal Factors and Root Causes of Noncompliance

Was noncompliance due to people not knowing what to do? If yes, which of the following causal factors were present?

- ❒ **People never knew what to do.** This is often an indication of inadequate training or a system failure involving lack of dissemination of guidance to the work force. Improper training methods or communication failures may be root causes.
- ❒ **People forgot what to do.** This problem may be resolved by increasing the frequency of training or through periodic refresher courses. In addition, a systemic problem may exist if the process lacked sufficient safeguards to correct the error before an untoward event occurred.
- ❒ **People didn't realize that specific tasks were part of the job.** This is often the result of lack of experience or lack of detail in guidance. Faulty mechanics for staff orientation and/or oversight may be the root causes that need fixing.

Was noncompliance due to people not being able to do the job? If yes, which of the following causal factors were present?

- ❒ **People are unable to do the job because of scarce resources.** Lack of resources or funding is a common rebuttal to questions about noncompliance. However, resource allocation issues may be a symptom of flawed decision making and priority setting at some level of management.
- ❒ **People don't know how to do the job.** Even when people know what to do, they might not be able to comply with job requirements due to lack of knowledge, training, or critical-thinking skills.
- ❒ **People find it impossible to do the job.** Are there certain tasks that cannot be completed as required? Root causes may be inadequate resources, insufficient knowledge or skills, or unrealistic job expectations. The reasons for these problems must be identified before solutions can be found.

Was noncompliance due to people's refusal to do the job? If yes, which of the following causal factors were present?

- ❒ **People are not rewarded for meeting job expectations.** There may be no incentive for individuals to complete the tasks expected of them. This problem suggests that the organization's performance management system for employees needs to be evaluated and strengthened.
- ❒ **People are not penalized for failure to meet job expectations.** Simple human errors should not result in disciplinary or punitive action. When individuals repeatedly and intentionally fail to carry out critical tasks, some type of enforcement action should occur. Failure to take these actions is a symptom of problems in the management and supervision system.
- ❒ **People disagree that the task should be done.** Some individuals refuse to comply with job requirements that they disagree with or think unreasonable. This attitude can be a symptom of a variety of problems. Collect additional facts to determine the root cause.

being given to patients at the prescribed time, the nurse administrator surveyed the supervisors to find out what type of training was needed to resolve this problem. The supervisors indicated that they needed more skills in communication and employee motivation. A similar survey of staff revealed their need for time management and conflict-resolution training. The survey results yielded a shopping list of topics for inservices and workshops. Educational initiatives were undertaken, and everyone participated in the mandatory training. Upon completion of the programs, the organization anxiously waited for the rate of on-time medication delivery to improve. However, six months later, the number of late medication doses had returned to pre-training levels.

This attempt at improving patient safety was doomed from the outset. Asking people for their training needs presupposed that a lack of skills was the cause of medication being administered at the wrong time. There is an old training adage that asks the question: "If the employee's life depended on doing the task, could he or she do it? If it could be done with this 'ultimate' motivation, then training is not the solution, because a skill deficiency is not the cause of the problem." Were the supervisors really incapable of communicating with their staff or encouraging people to perform according to expectations? Were the staff nurses truly incapable of managing their time efficiently or taking charge in disruptive situations?

If supervisors and staff honestly believed that they needed training to improve on-time administration of medications, then the question that must be asked is "Why?" Why do they think they need training to perform what should be considered a routine job responsibility? What is the real problem they want to solve? Teaching supervisors better strategies for motivating employees usually will not solve a performance problem when the real cause may be unrealistic performance standards or allowing insufficient time for staff to

properly complete their jobs.

Learning about conflict resolution will do nothing for employees who feel de-motivated by pressures to do more work with less-qualified staff. It would have been more useful if supervisors and staff were asked "what do you want to be able to do to improve on-time medication administration and why?"

Too often, health care organizations prescribe training solutions for problems that, when properly diagnosed, turn out not to be training-related problems. As a result, people are inundated with training and monies are expended, and yet significant problems remain unresolved. It's no wonder that employees begin to question the credibility of performance improvement initiatives that often rely primarily on training solutions. Many times, a quality or patient-safety concern is a symptom of an organizational design or management problem and not the result of skill deficiencies in the work force. What may be missing is a systematic process for managing the performance of all employees. Focusing on a few individuals' apparent skill deficiency will not solve the performance problem if the problem is the failure of fundamental management and supervision systems.

There are a number of reasons why people don't properly follow procedures or fail to meet performance expectations. When designing solutions to noncompliance problems, start by investigating the cause. Through interviews and surveys, discover the causal factors that affect people's decision not to follow generally accepted patient management practices. The knowledge gained through this analysis will lead to the right solutions. **Use the checklist on p. 58** to help determine the reason why people don't do what is expected of them and the possible root cause of those actions.

Safeguard training dollars

With budgetary allowances for staff training and education shrinking, the need to spend training dollars wisely is more important than ever before. Accreditation standards and other external requirements consume lots of training resources, leaving very little for specially focused education. When determining the best way to solve noncompliance issues, don't assume training is always the solution. Digging deeper into the causes of noncompliance may unearth systematic problems with the organization's management systems that require more than a quick-fix training session. Your training resources should be preserved for those situations in which knowledge or skills deficits are at the core the problem.

[Editor's Note: In a new book, Guide to Effective Staff Development in Health Care Organizations: A Systems Approach to Successful Training *(Jossey-Bass/AHA Press, 2002), Patrice Spath and a panel of health care experts describe how to link performance improvement goals with education and training priorities. Included in the book is a model for integrating all facets of staff education and performance evaluation as well as tips on how to select the best training methods. For ordering information visit the Jossey-Bass web site (www.josseybass.com) or call (800) 956-7739. ISBN: 0-787-95874-3.]* ■

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CE questions

Please save your monthly issues with the CE questions in order to take the two semester tests in the June and December issues. A Scantron sheet will be inserted in those issues, but the questions will not be repeated.

13. List the 1994 nosocomial pneumonia rate per 1,000 patient days per year at St. Luke's Episcopal Hospital in Houston.
    A. 4.7
    B. 5.2
    C. 5.7
    D. 6.3

14. According to the rules of the Joint Commission on Accreditation of Healthcare Organizations, only part-time Joint Commission surveyors may work as consultants.
    A. true
    B. false

15. According to Margaret Van Amringe, vice president of external relations at the Joint Commission, accredited organizations should receive the model business associate agreement by when?
    A. September 2002
    B. end of 2002
    C. beginning of 2003
    D. June 2003

16. In its review of the Human Resources standards, the Joint Commission's Standards Review Task Force focused on standards concerned with what?
    A. planning
    B. promoting learning
    C. promoting self-development
    D. assessing competency

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. ■

PATIENT SAFETY ALERT™
A quarterly supplement on best practices in safe patient care

Early results of Leapfrog hospital survey promising

Nearly half of institutions contacted provided replies

In mid-2001, a total of 525 hospitals in six regions around the country were invited to complete a web-based patient survey by the Business Roundtable's The Leapfrog Group in Washington, DC.

Now, the first returns are in, and The Leapfrog Group's top official says she is encouraged by what she sees.

"Overall, the results are very promising," said **Suzanne F. Delbanco**, PhD, executive director, during a press briefing held Jan. 17, 2002. "Nearly half of the hospitals that we invited to take the survey submitted responses (241, or nearly 48%). That's an enormous achievement."

53% meet standards

What's even more exciting, she added, is that of the hospitals that responded, 53% already met at least one of Leapfrog's standards for three key safety practices: The use of computerized physician order entry (CPOE); staffing intensive care units (ICU) with intensivists; and evidence-based hospital referral.

By practice, the results broke down as follows:

- Of the responding hospitals, 3.3% have instituted CPOE.
- About 10% of the responding hospitals have fully implemented the intensivist model, and another 18% indicated plans to enlist intensivists by 2004.
- In terms of specific volume recommendations, 12% meet Leapfrog's recommended level of annual experience for coronary artery bypass graft; 31% for coronary angioplasty; 21% for abdominal aortic aneurysm repair; 20% for carotid endarterectomy; 15% for esophageal cancer surgery; and 22% have neonatal ICUs that meet Leapfrog's recommendations.

The six targeted regions include urban hospitals in Atlanta, California, East Tennessee, Minnesota, St. Louis, and Seattle-Tacoma-Everett. Three of the six regions (California, East Tennessee, and Minnesota) reported having at least one hospital with a fully implemented CPOE. Five of the six (California, East Tennessee, Minnesota, St. Louis, and Seattle) have at least one hospital that has fully implemented the ICU physician staffing or intensivist practice.

The greatest impact

The three standards were selected because, according to Leapfrog members, the greatest impact could be made on patient safety in the shortest period of time. If implemented, nearly 60,000 lives could be saved each year and more than half a million serious medication errors could be prevented, the group claims.

"CPOE has been shown to reduce serious medical errors by more than 50%. Staffing intensive care units with intensivists has been shown to reduce the risk of patients dying in the ICU by more than 10%. Appropriate referrals for high-risk procedures and conditions can reduce the risk of a patient dying by at least 30%," Delbanco declared.

Private industry is an integral part of this effort, and companies have their own incentives for participating, noted **Charles R. Lee**, chairman and co-CEO of New York-based Verizon Communications.

"We have two standpoints. First, we care about our employees and our retirees, and their

dependents, and their families," he said.

"The other one is the whole matter of quality. Quality is a never-ending journey. You're never satisfied with the current results; you always want to get better and do better. It's a standard practice in big corporations. We hope that we can, over time, develop relationships with some of the institutions that are involved in the medical profession to move them forward."

Sharing the information

Now that Leapfrog has this survey information, the next step is to share it with specific stakeholders. "Our members are going to share it with their employees, retirees, and dependents, through internal communications like newsletters, benefits materials, and corporate web sites," Delbanco said.

She also noted that Leapfrog, with the help of the Portland, OR-based Foundation for Accountability, has created a consumer test and tool kit that members, health plans, physicians, and others can use and customize to educate consumers. The hospital information is being made available to the public on the group's web site www.leapfroggroup.org.

Delbanco noted that sharing these results fulfills a commitment not only to consumers but also to the hospitals that took the time to complete the survey.

"Sharing this information is only part of what we're doing with hospitals," she added.

"In some cases, our members will offer financial incentives to hospitals to implement the Leapfrog practices, as well as other types of reward and recognition," Delbanco said.

Such strategies are, of course, intended to engender change at the institutional level, which is critical to the success of Leapfrog's efforts. The survey information "is only significant if people change behavior," noted **John Rother**, director of policy and strategy for the Washington, DC-based American Association of Retired Persons (AARP).

"It's only significant if the hospitals respond not only to a request for information but start to implement these changes to save lives." **(Some institutions and health care organizations already have; see article, at right.)**

It's also important for all of us, as patients and family members, to pay attention to the information and make decisions based on it, Rother noted.

"Do not send your parent to a hospital that's refusing to give this kind of information," he warned. "Do not send a family member to a hospital for an operation where we know that another hospital in your area does it better — a lot better. These choices are life and death decisions."

[For more information, contact:

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Putting safety principles into practice

Incentivizing safety efforts

When it comes to safety, theory is nice but results are better. Two panelists at the Leapfrog Group press briefing reported how they have given teeth to safety principles with transformative initiatives.

Michael A. Stocker, MD, MPH, CEO of Empire Blue Cross and Blue Shield in New York City, described an innovative incentive program being undertaken in his area.

"We represent about 100,000 employees and dependents in the New York City area," he said.

Making it worth the effort

"Those hospitals that meet the computerized physician order-entry (CPOE) standard and the enclosed ICU [intensive care unit] standard will receive a 4% bonus on all income that we provide to them if, in fact, they fulfill these standards. We are actually going to send a check quarterly to the CEO to make the point to the hospitals in the area." In the second year, a 3% bonus will be provided, and a 2% bonus will be paid in the third year, he added.

Why is Empire Blue Cross and Blue Shield doing this? "From its inception, what we really

liked about The Leapfrog Group's standards is the fact that they are evidence-based," Stocker noted.

"The evidence is simply overwhelming; one large company estimates that one or two of their employees died because of medical errors every day, including retirees and dependents," he said.

Because the standards are evidence-based, he continued, "Everybody can intuitively understand what it means if you have a volume standard, what enclosed ICUs mean, if you have intensivists [who] are available and [CPOE]. Second, it can be done anywhere. You could do this all across the country, and our hope, of course, is that's what's going to happen."

CPOE implementation

At Cedars-Sinai Health System in Los Angeles, CPOE is about to become a reality. "We've been working on it for about two years, and it's set to go live in May of this year," reported **Michael L. Langberg**, MD, FACP, chief medical officer and senior vice president for medical affairs.

The medical executive committee at Cedars-Sinai passed a motion in January that basically would suspend a physician's ability to practice in the institution if the physician was not certified competent in his or her ability to use the CPOE system by the time it goes live.

"The reason for doing this is not punitive," Langberg explained. "It's a very strong belief in the marriage of a physician order-entry system with clinical decision support. So at the time physicians submit an order to the hospital, they will have available to them all the important information to make the best judgment or choice for their patients.

"Once we establish that standard, all patients and all physicians will have to be involved in that kind of support in real time," he said.

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Safety tool stresses education and action

Tragedy transforms facility into industry model

Two tragic medication errors seven years ago prompted Dana-Farber Cancer Institute in Boston to undertake what CEO **Jim Conway** calls "a journey of change."

That journey has led to industrywide praise and recognition, including the recent awarding to Conway of one of the two inaugural Individual Leadership in Patient Safety Awards from the Joint Commission on Accreditation of Healthcare Organizations and the National Committee for Quality Assurance.

Among Conway's most notable accomplishments was the development of a patient safety self-assessment tool that encourages executives to initiate improvements proactively rather than to wait for the occurrence of adverse events to force action.

In early 1995, Dana-Farber discovered that two patients had received massive chemotherapy overdoses. As one of those patients was Betsy Lehman, a well-known health reporter for the *Boston Globe*, the events received extensive media coverage, including 28 front-page stories in the *Globe*. The question on everyone's lips seemed to be, "How could such a bad thing happen at Dana-Farber, and to such an informed patient?"

This led to what Conway calls "a journey of change for our leadership and staff." Naturally, he says, Dana-Farber carried the burden of these events, but that was not enough.

"It was also our responsibility to learn all we could about why our system failed," Conway says. The events, he says, took on significant power, driving health professionals across the country to learn about medical errors.

"It's mentioned in the first sentence of the executive summary of the [Institute of Medicine] report [*To Err Is Human*]," Conway notes. "It was not only a sentinel event, but a seminal event."

The development of the safety tool grew out of the ongoing process of change. "Myself, the chief of nursing, the staff, the directory of pharmacy, the director of risk management, and others have all spoken on the subject extensively," Conway notes.

"We get two common questions from health care leaders. The first is, 'In the absence of high-profile events, how do you create the tension for

change?' The second issue we hear is something like this: 'You would never catch my boss standing in a public forum and talking about *our* stuff!' We have talked a lot about the gap between excellence and perfection," he explains.

It was not surprising then that last November, the Joint Commission asked Conway to give a talk at its annual meeting on leadership and patient safety. "In preparation for that talk, we had conversations with our trustees and executive leadership, as well as with our staff," he says.

"We asked ourselves, 'What are the things we do that work and seem to make sense, and that lead to success?'" Conway then put up a posting on the National Patient Safety Foundation listserv, asking if health care professionals believed their organizations' leaders "got it" when it came to patient safety.

"We got a number of comments from people who said they did, and they told us what they do," Conway reports. "Then we went and looked in the literature. We spoke with people like [the Institute for Healthcare Improvement's] Don Berwick and [Harvard University's] Lucian Leape, and asked what they thought."

Dana-Farber also consulted two other groups: a state coalition of 20 organizations dedicated to improving patient safety, and their patients.

The result was the patient safety tool, which has been given the title, "Strategies for Leadership — Hospital Executives and Their Role in Patient Safety."

It is divided into four basic sections:

- **Personal Education.**

How do you educate yourself? What books and articles have you read? Do you take courses? Do you understand the facts of your organization?

- **Call to Action.**

What are you doing to establish a framework for safety in your facility? What policies and procedures have you put in place?

- **Practicing a Culture of Safety.**

How do you do this every day?

- **Advancing the Field.**

What do you do outside of your institution to support others?

The tool is presented in the form of a questionnaire, with "Y" and "N" boxes next to each of the 42 questions. The American Hospital Association in Chicago has put its imprimatur on the tool and has distributed it to hospital executives. In the cover letter, Conway notes: "To be sure, having a number of checks in the 'Yes' column of the self-assessment is far more significant than having none. But identifying a plan to move some checks from 'No' to 'Yes' could be equally significant."

Clearly, he says, some "Y's" are more important than others, but that can vary from institution to institution.

"The question to ask is, 'How can I move in my organization from No to Yes?' It is an opportunity to step back and reflect," Conway says. "We propose that you not only reflect with yourself, but with a group of other people before checking off the box."

The Dana-Farber program actively involves patients and family members at all levels of institutional planning; this is what helps keep safety at the forefront of all Dana-Farber activities, he adds.

"We have patient and family advisory councils in both adult and pediatric care," he says. "They sit on most of our operational committees — at the board level on our quality committee. [They leave if the board goes into executive session.] We share error rates with patients, and slips and falls. When we go through the Joint Commission survey, they are involved."

Nearly instant feedback

By actively engaging patients and families in the process, Dana-Farber can get almost instant feedback. "We can implement a new system today, and the next day a patient can say, 'The infusion room is too crowded,' or 'The construction project is making the staff uncomfortable,' or 'When I was admitted they couldn't find my records,'" he explains.

"Our patients are experiencing care in ways that none of us do, and to the extent our processes are not working, they can tell us — and quickly. Sure, we do statistical surveys, but the results often come in two or three months later. We want our patients to pick up a phone and give us a call."

Out of a tragedy have come some very good things indeed. Today, Dana-Farber sees nearly three times as many patients as it did in 1995.

"Not only has our volume grown, but our research has grown; the center is vibrant," Conway says. "Our story is the story of how an institution took a tragic situation and used what it learned to leverage the whole organization to a better place."

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BIOTERRORISM WATCH

Preparing for and responding to biological, chemical and nuclear disasters

Building a bridge over the abyss: Will bioterrorism help bring disjointed health system together?

Getting in same boat as 'tsunami' of money builds

Diverse and disjointed, the nation's public health and clinical settings have education needs and communication gaps that must be bridged if the system is to improve its response to bioterrorism, a group of consultants recently told the Atlanta-based Centers for Disease Control and Prevention (CDC).

The CDC's national center for infectious diseases is holding a series of meetings to assess the lessons of last year's anthrax attacks and begin to close the long-standing breach between public health and clinical medicine.

The gap may stem from differences between the private and public health care systems, both of which are fragmented and highly variable by geography and urban vs. rural settings, according to a CDC draft summary of the Jan. 7, 2002, consultants' meeting, which was obtained by *Bioterrorism Watch.*

Seeking collaboration

"There was lot of [discussion] about the gap between public health, private practices, and hospitals and how to bridge that gap and make things more collaborative," said **William Scheckler**, MD, a consultant at the meeting and hospital epidemiologist at St. Mary's Hospital in Madison, WI. "[We need] to reduce some of the redundancies in the systems both in terms of preparing and education."

Scheckler also is a member of the CDC Healthcare Infection Control Practices Advisory Committee (HICPAC), which met Feb. 25-26, 2002, in Atlanta.

Scheckler gave a report on the consultants' meeting, telling HICPAC members that the CDC had input from a broad range of bioterrorism groups and clinical specialties. There is a wealth of information scattered among these groups and on numerous web sites, he noted. For example, a dermatology group at the meeting has photographs of skin lesions that could be a good resource in an investigation of cutaneous anthrax.

"When an outbreak occurs, the same questions [arise]: What do people need to know? What is the best way to get out the information?" he said. "There should be one best-practices web page that you can go to."

The CDC currently operates several different clearinghouses for information as well as different public inquiry numbers. The agency now is considering the possibility of centralizing its clearinghouses and public inquiry services, the CDC report states.

"During the anthrax crisis, the CDC public inquiry system was overwhelmed, and therefore the agency set up a new system during the outbreak," the CDC report continues.

In addition, the CDC found that "during the attacks, the amount of information on anthrax increased from virtually nothing to an overwhelming number of e-mails, web sites, printed

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documents, and other materials. Much of this information and work was duplicative."

The consultants suggested that the CDC devise a strategy to centralize information development activities and then distribute the product, rather than having so many individuals working independently. **(See CDC action items, below right.)**

Linking the data base

Regarding public health and clinical partnerships, a relatively simple system of linking health departments with hospital emergency departments (ED) was described by HICPAC member **Alfred DeMaria Jr.**, MD, state epidemiologist at the Massachusetts Department of Public Health in Jamaica Plain.

Under the program, participating hospitals in the Boston area report their daily number of ED visits to the health department. The numbers are compared against emergency visits a week earlier and on the same date a year prior to detect surges that might suggest a bioterrorism event, he said.

The information is easily obtainable by the hospitals and can be submitted electronically to the health department without extra work. That is important because bioterrorism surveillance systems that are labor-intensive will likely falter as vigilance inevitably wanes, DeMaria noted.

The system has provided the secondary gain of improving communication between public health and clinical sectors. The threshold for investigation occurs at two orders of magnitude above baseline, which thus far has occurred with influenza ED visits and those associated with a large trauma event such as a bus crash, he said.

Sometimes, the threshold will be reached simply out of random chance, as ED visits increase for no single reason. "The question is, we don't know how big an event has to happen [to be detected]," DeMaria said.

The CDC is interested in such bioterrorism surveillance systems, and also may seek to apply its existing hospital sentinel networks, including the National Nosocomial Infections Surveillance system, said **Steve Solomon**, MD, chief of special studies activity in the CDC division of healthcare quality promotion.

National concerns about patient safety and bioterrorism have created a "tsunami of money" to address such issues, Solomon told HICPAC members.

"We have a lot of concerns about the surveillance and response needs," he said. "We are seeking a small trickle of that tidal wave of funds."

Ultimately, the CDC may help shape a national system or contribute to a "mosaic" of systems that track surrogate markers such as severity of illness in "real time," he said.

The research and development needs for such a system are in the ballpark of $120 million to $180 million, which may be available in the current climate over the next four or five years, he said. There is considerable interest being expressed from health care-related industries in partnering with the CDC on such efforts.

"They are standing in line," Solomon told HICPAC members. "The phone is ringing off the hook. We are trying to figure out who is the best partner." ■

CDC gets plenty of advice for action

Clarify roles, make info user-friendly

A recent consultants' brainstorming session on education and communication needs for bioterrorism resulted in numerous suggestions to the Centers for Disease Control and Prevention (CDC) in Atlanta. Some of the points of information and recommended items for action included:

- ✔ Strengthen the CDC Health Alert Network e-mail notification system to ensure that all state and local health departments are involved.
- ✔ Make surveillance and reporting as automatic as possible, and do not depend on the clinician to initiate the report quickly.
- ✔ Because the CDC is recognized as an authoritative source for information provided through *Morbidity and Mortality Weekly Report* and press releases, the CDC web site should be changed to make it more user-friendly.
- ✔ Ruling out disease is the most important clinical issue, rather than identifying new cases of disease.
- ✔ Clarify roles when a criminal investigation is going to occur during a public health emergency.
- ✔ Develop a prototype disaster plan for use by communities and make it readily available.
- ✔ The cacophony of information is a problem. For clinicians, an appropriate tool would be a page of bulleted information necessary for the

clinical setting. This should be provided in addition to baseline information.

✔ The CDC smallpox plan is a good model for allowing outside review during the development phase.

✔ Identify additional ways for using communication technology, particularly e-mail, to link local resources together. ■

Was anthrax mailer a bioweapons researcher?

'This has military lab stamped all over it'

Given the difficulty of creating high-quality anthrax in a civilian research lab, the original source of the *Bacillus anthracis* that killed five people last year was likely a U.S. bioweapons facility, the president of the American Society of Microbiology (ASM) tells *Bioterrorism Watch*.

"Given the high quality of the preparation that was used, this has military laboratory stamped all over it," says **Abigail Salyers**, PhD, ASM president and a professor of microbiology at the University of Illinois in Urbana-Champaign.

The U.S. bioweapons program was formally disbanded as part of a global treaty in the early 1970s, but many military labs remained open for "biodefense" research to counter bioterrorism, she says. "These anthrax spore preparations last for decades," Salyers says.

Anthrax mailer is 'criminal, but not stupid'

The atmosphere of a university research lab is too open and freewheeling for someone to produce anthrax undetected, she says. Salyers' personal theory is that someone who worked in a military bioweapons laboratory stole the anthrax, possibly years ago.

"It's anybody's guess as to what is going on here, but I would be astounded if this came out of a university laboratory," she says. "[This person] is crazy, criminal, but not stupid. I can't imagine that anybody who was going to do that would take the trouble and risk of trying to do that in a university laboratory environment."

In a related matter — despite a published report to the contrary — the Federal Bureau of Investigation denies it has narrowed its anthrax investigation to a former scientist in a U.S. bioweapons lab.

A FBI spokeswoman at the agency's national office in Washington, DC, told *Bioterrorism Watch* that the agency has not identified "a prime suspect" in the hundreds of interviews it has conducted in the investigation.

A story that was published in the Feb. 25, 2002, *Washington Times* reported that the FBI's search was focusing on a former U.S. scientist who worked at a government bioweapons laboratory. The government's chief suspect, the article reported, is believed to have worked at the U.S. Army Medical Research Institute of Infectious Diseases at Fort Detrick, MD, which has maintained stores of weapons-grade anthrax. No charges had been filed as this issue of *Bioterrorism Watch* went to press.

Do you know this person?

Salyers described her theory on the case — before the newspaper report was published — when the FBI openly solicited help from the ASM in the investigation. In a message appealing for help from ASM members, **Van Harp**, assistant director of the FBI's Washington, DC, field office, said "a single person" is most likely responsible for the mailings. "It is very likely that one or more of you know this individual," he told ASM members.

A $2.5 million dollar award is offered to anyone providing information that leads to an arrest of the bioterrorist. The FBI profile describes a socially withdrawn person who has "a clear, rational thought process" and is very organized. "The perpetrator might be described as 'standoffish' and likely prefers to work in isolation as opposed to a group/team setting," Harp told the ASM. It is possible the mailer used off-hours in a laboratory or may have even established an improvised, concealed facility to produce the anthrax, the FBI profile noted.

"The person is experienced working in a laboratory," Harp told the ASM. "Based on his or her selection of the Ames strain of *Bacillus anthracis,* one would expect that this individual has or had legitimate access to select biological agents at some time. This person has the technical knowledge and/or expertise to produce a highly refined and deadly product."

Indeed, the Ames strain used in the attacks has been used in bioweapons research both in the United States and worldwide, Salyers says. In

addition, given the elaborate research protocol required, it is unlikely a university laboratorian creating anthrax would go undetected no matter how "standoffish" he or she was.

"I'm just telling you what you have to go through if you were crazy enough to be a bioterrorist," Salyers says. "If a deranged scientist tried to do this in a university laboratory, red flags would be going up all along the way."

Recipe for disaster

The first step — cultivating the bacteria and producing spores — is something that almost any microbiologist could do, she says.

"But you get this slush, and that is not going to hurt anybody," she says. "There are people who will tell you that you can do this the hard way with a mortar and pestle and grind it up in the laboratory. But it is clear that the powder that was in the letters was a much higher quality than that."

The anthrax "slush" must be ground into a fine powder to be capable of getting past human respiratory defenses. "The machinery for doing this is mostly in military research laboratories," Salyers says. In addition, sophisticated treatment of the spores must be done to defeat their general property of clumping and sticking together.

"You would want to treat the spores so that they don't stick together and also so that you get a preparation that is very volatile — goes into the air and stays in the air," she adds.

Regardless of whether the mailer worked in a military lab or other facility, there is growing consensus that the attacks were not the work of foreign terrorists.

"The current thinking among many people is that this is a domestic event that kind of occurred in the slipstream of 9/11," says **William Schaffner**, MD, ASM member and chairman of preventive medicine at the Vanderbilt University School of Medicine in Nashville, TN.

"The [FBI profile] characteristics don't seem terribly surprising. They seem akin to the kind of characteristics that were part of the picture of [the Unabomber] Ted Kaczynski — a disgruntled person who is very bright, and in this instance, has a substantial amount of professional and technological expertise in order to carry this off."

[Editor's note: Those who think they may have information relevant to the case can contact the FBI via telephone at (800) CRIME TV — (800) 274-6388 — or via e-mail: Amerithrax@FBI.gov.] ■

Bioterrorism forensics: The burden of proof

If bug does not fit, you must acquit?

Already asked by federal investigators to assist in finding the anthrax mailer, the American Society of Microbiology (ASM) is taking the next step and discussing the emerging science of bioterrorism forensics.

Despite an impressive array of scientific methods, primarily used in health care epidemiology and outbreak investigations, linking a pathogen to a terrorist will not be easy.

"You want to trace it back to the 'smoking gun,' says **Abigail Salyers**, PhD, ASM president and a professor of microbiology at the University of Illinois in Urbana-Champaign. "We know how to tell what bullet came from what particular gun. But when it is bacteria, viruses, or other microorganisms we really don't have established forensics for that."

To address the issue, the ASM will hold meetings later this year that may result in a booklet on how to use molecular epidemiology techniques to establish a chain of evidence rather than identify the source of an outbreak, she says.

The methods typically used by outbreak investigators include DNA fingerprinting and pulsed-field gel electrophoresis. But using such methods to link a bioterrorist to a biological weapon would be unprecedented, Salyers notes. "Suppose they find somebody [who] might have perpetrated the [anthrax attacks], and they find some spores on that person or the immediate environment."

"Trying to prove that that is the [exact strain] will be unprecedented. It is not just a question of finding the person. It is a question of what are going to be the legally binding types of evidence," Salyers explains.

Another problem in the anthrax attacks is the separation of act and outcome, she says. As opposed to a bomb exploding and leaving an immediate impact, the anthrax mailer had time to dispose of evidence after the mailings.

"You have a perpetration of an act and the consequences of the act separated by nearly a month," she says. "There has been a lot of time for the perpetrator to cover up tracks. This is very different from putting nerve gas into a subway system, where the cause and effect are very close together," Salyers adds. ■