Bringing Rationality To Information Transfer

Much of the criticism of our current healthcare system focuses on administrative waste—the 5 percent to 30 percent of the cost of healthcare eaten up by paper shuffling. "External reporting requirements are increasing at different rates throughout the country, but all external agents are requiring increasingly large sets of information," Alan Dowling, PhD, a partner at Ernst & Young in Cleveland, noted at the February meeting of the Healthcare Information and Management Systems Society. He added that one hospital he works with has 346 contracts for care—all with different reporting requirements.

Even as some are calling for complete overhaul of our healthcare system, government agencies and others are working to streamline and standardize the current system with the use of information management tools. Eventually, they hope, information technologies will increase the availability and currency of information within facilities, while generating reports for use by outside agents. The benefits will go beyond reduced administrative waste to improved quality of care because of better information about practice patterns and outcomes.

A major issue, however, will be finding the money to pay for these new technologies and capabilities, given the cost compression already present in the system. "An emotional collision is imminent," Dowling warned. "The technologies are moving forward, but the money isn't there." He said that many administrators he talks to think that becoming involved in these technologies is an option in the future, and they see the use of management information systems as an efficiency rather than an effectiveness issue. "As a result, the things that they need to act as guardians for their healthcare organizations are often given short shrift." He predicted that administrators who refuse to change may not survive.

Currently, he noted, "even within corporation structures, we find that we're not prepared to transfer information very well among entities." The situation is even worse when the information transfer involves external agents, which include governments (federal, state, and local), healthcare agencies, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), employers, insurers and other payers, and consumer groups.

"We're facing the challenge of helping to bring rationality to the information transfer," Dowling said. Many different organizations are involved in this effort, including the JCAHO, Health Care Financing Administration (HCFA), and the recently created Computer-based Patient Record Institute.

JCAHO's Principles

Recently, the JCAHO decided to restructure its accreditation survey to focus on the most important activities in terms of quality of care, Paul M. Schyve, MD, the JCAHO's director of research and standards, told meeting attendees. Schyve said the commission plans to introduce information management as a major activity in the 1994 edition of the accreditation manual for hospitals.

The current JCAHO standards assess three aspects of information management: medical records, the medical or professional library, and data collection on quality of care. The JCAHO will rewrite the current standards in light of these principles and expand its focus on information management to other areas, Schyve explained.

A task force of experts recently released a set of principles (see **Box**), which are the ideas that will guide the JCAHO as it devises the standards. Schyve emphasized, however, that the principles are not standards and may not all be represented in the standards. The standards will be much harder to establish because they will put specific language to concepts such as "timely." Development of the principles and the standards will involve the task force, two JCAHO committees, and testing and field review by professional organizations and a random sample of 500 hospitals.

Richard C. Peterson, a former partner with

"The technologies are moving forward, but the money isn't there," Dowling warned. "An emotional collision is imminent."

Anderson Consulting, St. Louis, and a member of the task force, noted that the group drafted the principles to accommodate either computer-based or non–computer-based patient information systems. "This is not a mandate for everybody to go out and buy a new patient care system, although I suspect that may be a long-term implication," he said. The standards will focus on how systems are used, not on specific computer applications, although they will have some technological implications (e.g., timeliness, accuracy).

Schyve noted that the principles are "a little utopian from where we are right now." The standards released in 1994 will only be a start, he said. For example, some state regulations interfere with the ability to computerize medical records, so the standards will encourage but not require that kind of automation. The JCAHO will also try to educate states to revise their statutes, Peterson said.

INDICATOR MONITORING SYSTEM

Another JCAHO initiative in the pipeline is an indicator monitoring system. Schyve explained that this system will identify measures of outcomes, such as complication rates, or of processes. "Let's all agree on exactly the same elements of data," Schyve said, "so in addition to collecting it internally as part of your production process, you can also transmit that data to the Joint Commission."

Schyve said the JCAHO will issue benchmarks to tell organizations where they are in relation to similar organizations.

The information submitted will go into a national data base, and the JCAHO will analyze the data and report quarterly to hospitals. These benchmarks, Schyve said, will tell healthcare organizations where they are in relation to similar organizations and where they need improvement. It will also provide information on facilities whose performance is better than the norm and how they achieved that. "We would want to see the organization use that information to improve their quality of care," Schyve said.

Some indicators will focus on outcomes of specific procedures, such as cardiovascular care for a percutaneous transluminal coronary angioplasty, Schyve said. The system will monitor mortality associated with various treatments, with built-in risk factors, such as whether the care was emergency and where it was delivered. Other indicators will deal with the process of the procedure, such as whether an attempt to clean out any specific lesions failed.

The JCAHO also hopes to use the information to assess how closely hospitals are following the practice parameters being developed and how that affects the outcome, Schyve noted. The commission will share these data with providers to help them improve the protocols. The commission also plans to use the data in its annual survey process to target problem areas in individual facilities.

Developing each component of the system will

JCAHO'S PRINCIPLES FOR INFORMATION MANAGEMENT

Last January the JCAHO released a draft of principles for information management in healthcare organizations, which it will use as a basis for developing standards. The principles are written to encompass both computer-based systems and those taking written, pictorial, graphic, and auditory forms. The commission is continuing to solicit reactions to the principles. Following is a synopsis of the major issues addressed.

• *Leadership*. Leaders have a role and responsibility, the principle states, to "achieve, maintain, and improve an organization-wide approach to information management."

• *Information needs*. "The physical structure of the information management function is designed to meet the organization's information needs," the principle reads. It lists considerations in the assessment of needs and categories of information the system should deal with.

• *Data definition and capture*. This set of principles addresses standardization of data definitions and terminology; the accuracy, completeness, and timeliness of the data; and systems to as-sess the data's reliability, validity, and accuracy.

• *Data analysis and transformation*. The necessary expertise and tools are available to transform data into relevant information.

• *Data/information transmission and reporting*. Among the issues covered are confidentiality, timeliness, accuracy, standardized formats, and linkages between data bases.

• *Education and continuous quality improvement*.

• *Improvement in information management*.

take the JCAHO and an expert task force several years, involving alpha testing and beta testing at more than 400 hospitals, Schyve said. To date, the JCAHO has received the results of the first beta test and reported them to the hospitals involved. By 1994 the commission expects to open the system for voluntary participation by hospitals. Within a few years after that it will be a required part of the accreditation process, Schyve noted.

Indicators currently under development include anesthesia, obstetrics, cardiovascular, oncology, trauma, medication use, infection control, home infusion therapy, and depression.

"We're now focusing on how we might use an external data base to reduce the data burden on hospitals and other healthcare organizations," Schyve said. The JCAHO will explore whether the data can be used for more than one purpose. The data base may be useful in developing new indicators or refining current ones, he said. And hospitals might be able to download some of the data from other data bases directly into the JCAHO's data bank, rather than submitting it separately.

ELECTRONIC INTERCHANGE WITH HCFA

HCFA is another organization with a lot to gain by computerization. It processes more than 600 million claims a year and saves 50 cents a claim when it receives the claim electronically rather than on paper, according to Richard H. Husk, director of HCFA's Division of Provider Procedures. Currently, more than 30 percent of the claims are submitted electronically.

HCFA is moving toward computerization on several fronts. Last year the agency issued a notice with opportunity for comments on requirements for providers to receive payment through electronic fund transfer, Husk said. One of the requirements is that the claim must be submitted electronically. The most contentious issue is a three-day waiting period before providers receive their reimbursements, so HCFA is still examining the requirements and plans to publish findings sometime this summer, he said.

For the past few months HCFA has been pilot testing an electronic remittance device with a format acceptable to all payers, he added. HCFA intends to issue instructions for intermediaries to use the device this fiscal year. "Some of the big hospitals will save in the [full-time equivalent

The paper chart traditionally used to keep patient records is "semicomplete, semiorganized, and semilegible," Tang said.

employees] they devote to getting remittance," Husk said.

HCFA is also working on automating some of the attachments, such as reviews by fiscal intermediaries, he noted. HCFA has been chairing a work group to develop a format for transferring supplementary insurance data electronically. "This would mean a considerable savings to providers and will save a lot of paper shuffling," Husk said.

Several months ago Health and Human Services Secretary Louis Sullivan convened a forum on administrative costs, which established two work groups. The first will develop a five-year plan to extend the benefits of electronic data interchange to providers and the administrative financers of healthcare. "Providers will move into a total electronic environment, computerizing standard definitions and standard formats . . . which should make life considerably easier for everybody," Husk said. A report is due in July of this year.

The second group is preparing an outline for the steps and processes necessary for computerizing patient medical data. A recent Institute of Medicine (IOM) report ("Computer-based Patient Record: An Essential Technology for Health Care," National Academy Press, 1991) estimates that it will take 10 years to accomplish this, Husk said. And then the possibilities will be almost unlimited, he continued, including electronic medical review and outcomes research with the use of sufficient data. "You'll be able to identify poor and good care even down to the facility level," Husk said.

ADVANTAGES OF COMPUTERIZED RECORDS

The development of standardized computerized medical records will be a great boon to healthcare providers. The paper chart traditionally used to keep patient records is "semicomplete, semiorganized, and semilegible," according to Paul C. Tang, MD, program manager at Hewlett-Packard Laboratories, Palo Alto, CA. Tang cited an ethnographic study where researchers studied the presentations of 168 cases by residents at a university clinic. For 86 percent of patients on return visits, Tang said, information was missing. In 81 percent of the cases the information was in the charts but the care providers could not locate it. And the providers' coping strategies were ineffective, he added: In only 13 percent of the cases

did they get an authoritative result to the problem; in 26 percent, they simply asked the patient if he or she remembered what the care provider had said at the last visit.

"So missing information and lack of information management tools does impact clinical decision making," Tang concluded.

Physicians need ready access to patient information, an effective presentation of that information, clinical decision support tools, support for consultation and collaboration with professional colleagues, and integrated access to resources such as the medical literature, Tang said. They also need an integrated patient data base that is patient centered rather than department centered. Another plus would be a problem-oriented display so all the information is available while the patient is there, during decision making, not after.

Getting from here to there first requires getting people together through such forums as the Computer-based Patient Record Institute (CPRI), Tang said. CPRI is attacking the technical and nontechnical obstacles to making the computerized patient record a national agenda item (see **Box**).

BARRIERS TO COMPUTERIZATION

Security is one of the major issues to be solved as the nation moves toward more integrated data bases. Dowling noted that information allows external organizations to conduct societally mandated jobs, but "in the wrong hands or used in the wrong way, information can do damage to

COMPUTER-BASED PATIENT RECORD INSTITUTE

The Computer-based Patient Record Institute (CPRI) was formed in January 1992 after an IOM report recommended that the public and private sectors form an institute to facilitate development of a computer-based patient record.

Ganzer

Donna Ganzer, a vice president of the American Hospital Association and chair of the interim board of CPRI, said its vision is to help form a "comprehensive, longitudinal system linking all clinical, practice, financial, and research data. We're going to be providing a framework in which all aspects of care, financing, and evaluation will be electronic, from site of care through final evaluation."

Margaret Amatayakul, ex officio executive director of CPRI, noted that the institute is composed of different types of organizations—such as medical associations, hospitals, professional organizations, vendors, facilities, payers, employers, consumer organizations. It is also working closely with government agencies, such as Health and Human Services, Department of Defense, and Veterans Administration.

To replace the cumbersome, inefficient paper records, Ganzer said, the institute plans to assemble organizations that will:

• Set standards for messages, communications, codes, and identifiers
• Demonstrate how aspects of computer-based patient records can lead to improved care
• Ensure the records are secure
• Educate the public and healthcare professionals on the value of computer records
• Coordinate the building of an infrastructure to accommodate computer-based patient record use

"Our purpose is to be a change agent and a facilitator," rather than a standard setter or educator per se, said Amatayakul. CPRI will be a clearinghouse for information, looking for redundancies and gaps and getting people to work together. "We will influence legislation and obviously broader societal change," she noted.

During the next six months the interim governing board will launch CPRI, putting together an organizational structure, bylaws, a business plan, etc. In mid-February CPRI began assembling work groups. Amatayakul said the work groups planned include:

Amatayakul

• Codes and structures
• Justification of computer-based patient records (benefits, costs, demonstration projects, prototypes)
• Confidentiality, privacy, and legislative issues
• Financing of CPRI (fund-raising)

The work groups will establish a work plan describing incremental steps and timelines to achieve their goals. "It won't be accomplished overnight or without additional costs," Ganzer said, but the costs of the system will be borne by all the users, including the government.

the organization and its patients."

Within the next 15 years, he added, we will have a system that will allow patients to be treated, no matter where they are, using clinical information that is relatively up to date, probably within a week. The drawbacks to such a system, Dowling said, include increased access to information that is embarrassing, the potential for information sabotage, and possible abuse of the information to discriminate against persons (such as using the fact that they were tested for HIV as an excuse to pass someone over for employment).

"So while we have the opportunity as a society to use this information interactively, as well as to improve the health status of the entire country," Dowling said, "it comes at a price—a price of responsibility—that, somewhere in our healthcare institutions, someone is looking out for these issues that are age-old and current at the same time."

Another barrier to development of nationally integrated data bases is that "individual states are acting as individuals rather than moving to a national entity," Dowling said. Although the system is currently fractured, he said that state par-

> The onus is on hospitals to ensure their records are secure, confidential, and tamper proof.

ticipation in federal data definitions is increasing. However, many legal obstacles remain (see **Box**).

A SOCIETAL STRATEGY

Changes in information technology are coming rapidly down the pike, but conference speakers emphasized that the issue is not one of technology alone but, more important, a human and a business issue. "It has to do with how an organization executes its mission," according to Dowling.

The movement toward cooperative ventures prevalent in the 1990s will be even more pronounced, as facilities, agencies, payers, and many other interested groups try to streamline and standardize information management and—just as important—come up with the funds to pay for the changes.

"In this transition, we can't simply think that we're going to make these changes off the back of the individual healthcare provider organization," Schyve said, because they will not save enough money with the new technologies to compensate for their costs and stay in business. Instead, he advised, the funding strategy needs to be a societal strategy.   —*Susan K. Hume*

LEGAL BARRIERS TO COMPUTERIZED MEDICAL RECORDS

Computerization of medical records is moving full steam ahead, yet many legal barriers remain, according to Bonnie Cassidy, senior manager at Ernst & Young, Cleveland. For a computerized medical record to take the legal place of a paper record, it must fulfill licensing and other regulatory requirements and be admissable as evidence in court.

"Be cautious," she warned seminar participants. "Computers have been recognized, but there still seems to be old language on the books in some states with which computerized records may not comply."

For example, Wisconsin requires providers to retain records in their original paper form or in microfilm. Alabama requires the records to be "ink or type-

written." Some states allow physicians to use a computer code for signatures on diagnoses and prescriptions, whereas others require them to be written in pen. Only 17 states specifically mention electronic records in their statutes, she noted.

"You need to consult with state authorities to determine what media, retention, or authentication restrictions apply to computerized medical records in your states," Cassidy said.

No court has explicitly ruled on the admissability of computerized medical records, but they must meet the same rules of evidence as any other record, Cassidy explained. These include a demonstration of how the records are made and stored; training and security methods; and the accuracy and reliabili-

ty of the hardware, software, and record-keeping process. "A computerized medical record is technically illegal in 12 states and ambiguous in 11 others," Cassidy said.

Security considerations are also of concern from a legal standpoint. "A *single* breach of security could result in a large liability because of the high volume of records that could be released to unauthorized parties," she said. The onus is on hospitals to ensure their records are secure, confidential, and tamper proof. Cassidy said hospitals need to establish a clear audit trail of who changed the record and when, sanctions for personnel for unauthorized access or sharing of computer authentication codes, ongoing security checks, and daily backup.