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The wired future

Technology brings an information boom, but will health actuaries benefit?

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Dramatic changes are occurring in the health care system, and behind them is information technology — a cornerstone of actuaries' work. For health actuaries in particular, information technology could have a tremendous impact. In 15 years or less, the technology structure today's health

actuaries work with "will look nothing like it does today," one expert says.

Consider:

- Several companies are offering services to manage any and all health care data — including medical information and patient eligibility data — over the Internet.
- Many software developers are offering products for "any-to-any" conversion of database file formats. The goal is to create "virtual patient records" carrying all medical and enrollment information, then allow sharing between doctors, pharmacists, insurance companies, Medicare, and others.
- A data warehouse company created a health care data depository from which participants can research, analyze, transmit, and track health data to help determine trends and treatments. The project includes 20 health care groups representing 3.5 million covered lives.
- Wireless technology lets a physician enter patient data into an institution's system from hospitals, clinics, private offices — anywhere the doctor is working.
- A high-tech company is offering "smart cards" for insureds. The cards would carry patient data and

eligibility information — and potentially, says an expert from outside the company, the patient's medical records themselves.

What's here, what's emerging For actuaries working in health care, the result will be the ability to work faster with more accurate ("cleaner") data than ever before. Knowledgeable observers say that technology can be expected to enhance — not eliminate — human judgment. They also say that an actuary's wildest dreams for gathering and analyzing data could be met today. The problem is turf protection and the need for industry-wide standards.

"Every hospital has its own information system that doesn't talk to any other hospital's system. The technology to exchange data is available. It's the implementation that's missing," said Kerry Evans, a 20-year information technology consultant now with Milliman & Robertson, Seattle.

With technology available now, Evans observed, "Information could flow into a data warehouse where actuaries could run experience studies non-stop." This is already practiced by some university medical centers, Evans said, where analysts "are getting minute-by-minute information on costs, empty beds, how many pills the pharmacies are distributing."

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Available and emerging technology and systems seem enormous in number, but a few stand out as having current and potential impact on actuaries' work.

Internet and intranets: "The nice thing about the Internet is it's everywhere," Evans pointed out. "You don't have to run phone lines. Just call an Internet service provider, and you're in business."

The Internet's ease of access and low cost make it a promising source for information exchange. However, "It's taking longer than originally thought," said Carol McCall, an actuary who is now Humana's chief information officer (CIO). (See story, page 9.)

Evans observed that part of the reason may be fears of security breaches — a fear he thinks is unfounded. "Technology exists that allows consistency checks at data collection sites, and you can check data during transmission to make sure it's secure and error-free [using encryption software and a technology known as secure sockets]. Right-to-privacy issues are a big concern."

Intranets and online services (in which networks are set up in a proprietary fashion) offer benefits similar to the Internet's and arguably greater security. "There's so much power in PCs, and with connections like the Internet and intranets, you have a real good chance of getting very accurate and timely data," Evans said.

Data warehousing: The name implies "database," but there's a

difference, points out Michael Davlin, head of the Society of Actuaries Computer Science Section. "Databases aren't automatically updated and available to be shared by many different groups, and that's the point of data warehouse technology," Davlin said. Data "cleaning" is another advantage, Evans observed, and this is crucial to actuaries' work. "When someone sends data tapes for the last 10 years, there will be missing fields, inconsistent entries — all of the things that could go wrong and probably did. There's a whole set of procedures to be done to get usable data, and that's what data warehousing is supposed to do automatically. It produces nice, clean data and makes it available quickly to a group of people, then sends new reports based on new information on a regular basis determined by the user or institution."

Data mining: This software is often used by marketing firms to examine customer information that could lead to new buyers for products. But actuaries might use data mining to find hard-to-see correlations. "Data mining allows the automatic discovery of patterns in information," explained McCall. "While people tend to find data that corroborates their own thinking, data mining searches information for existing patterns rather than demanding that the user pose queries, based on the user's hypotheses, of course, and then seeking answers to those queries."

Wireless technology: This will allow anyone "to get information from anywhere to anywhere," said Davlin. "It's now in an embryonic stage, but as it develops, it will result in a lot more bandwidth [a network's capacity to carry information], greater transmission speed, and tremendous convenience for information exchange. You could get information from doctors on vacation, anywhere." Will actuaries have access? As Evans noted, technology is abundant but implementation is slow. The central reason is the high value of

information, notes McCall. "Implementation will not be easy," she said. "As information becomes a currency of exchange, people will not give it away for free."

So as provider systems gather more information, actuaries could be left out of the loop. "If the hospitals and physicians are collecting this data, what would make them give it to insurers?" commented Jeff Nohl, an actuary who is president of Aurora Health Network, an integrated health services provider in Wisconsin.

"For example, how does blood pressure really affect costs? We have some idea now, but with the technology available, we could have much more solid information. Yet while some insurers have strong business relationships with providers, many do not. How would those companies and their actuaries get access to that data?"

Equally important, Nohl said that actuaries are still too often excluded from the managed care environment — to everyone's detriment. "Actuaries have a lot they can offer physicians in analyzing patient and cost data," Nohl said. "Doctors could go a lot further working with actuaries than without them. Someone has to look at more than anecdotal evidence. What are those numbers saying? What do they mean? The statistics of science can work with the physician's experience in medicine to find best practices and patterns of treatment." Human judgment, technological help. Perhaps no industry is as focused on the real needs of people as health care. Confidentiality, doctor-patient relationships, emergency needs, and many other factors make it impossible to replace human evaluations with technologically based analyses.

Both Evans and McCall caution against placing too much emphasis on information technology in health care delivery. Both say the "human factor" is too important to ignore.

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That keeps you from speaking up when a question is asked of someone else and you have helpful information.”

Lights in the hearing room turn yellow to warn that a speaker's time is almost up and red to signal the end. Rosenblatt spoke up when the red light appeared. “I said that I knew my time was up, but I had two points to make about comments expressed by the first panel earlier that day. The chairman, William Thomas, said, ‘Go ahead.’”

First, Rosenblatt told the subcommittee that suggestions made earlier that day to use loss ratios for Medicare risk plans ignored the fact that “there are lots of problems with any kind of loss ratio tests. Specifically, there is no standardized definition of the numerator or the denominator of the ratio. Also, there are significant problems that can distort test results.”

Second, she objected to an implication that Medicare's population of

frequent (high-risk) users was not a significant element of a plan's cost. Rosenblatt was able to cite the fact that “for under-65 populations, 5% of the claimants in an insured plan generate 50% of the claim dollars.” She observed, “While the number of people is small, the cost implications are great.” Copies available of testimony, monograph Copies of Rosenblatt's nine-page Congressional testimony are available free of charge from Doreen Evans, American Academy of Actuaries, 1100 17th Street N.W., Washington, DC 20036-4601 (phone: 202/223-8196; fax: 202/872-1948).

Copies of the 127-page monograph presenting Rosenblatt's and Dunn's risk assessment study are available for \$35 from the Society of Actuaries' Books Department (phone: 847/706-3526; fax: 847/706-3599; e-mail, for information requests only: ccimo@soa.org).

2 more actuaries testify

Two actuaries presented further testimony on Medicare to Congressional groups on March 19 on behalf of the American Academy of Actuaries.

William Bluhm, vice president heading the Academy's Health Practice Council, appeared before the House Conference Subcommittee on Health and Environment. He warned that proposed minimum solvency standards for provider-sponsored organizations may create undue financial risk.

Michael Thompson, chair of the Academy's Medigap Work Group, addressed the Senate Finance Committee. He cautioned that easing Medigap open-enrollment requirements may increase the cost of coverage for Medigap enrollees.

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“The medical profession is still in many ways a ‘cottage industry,’” McCall pointed out. “If anyone thinks we can successfully commoditize the delivery of health care, they're wrong. We never will.”

“It's so tempting to say that technology will tell us the right timing, the right decisions. No machine will think for you. Strategy is not that easy, whether it's for patient care or management of a health care network. If you focus solely on technology or data warehouses to deliver your information, you'll cut out more than half the information you'll need to run your business. The data that isn't in a warehouse is so important, if you don't find a way to integrate it, you'll miss the big picture.”

Davlin observed that health actuaries will need to be aware of the consumer uses of technology. With information and competitive physician consultations available worldwide, some consumers may be able to use health information in a way insurers would see as anti-selective: that is, consumers would seek insurance

because information they found on the Internet or another online source signals a possible health threat. On the positive side, “It may become much more difficult for insurers to detect pre-existing conditions,” Davlin noted. “People will be taking more responsibility for their health, and this could reduce health care and insurer costs in the long run.”

Current and emerging technology may not be a substitute for human judgment, but it could allow better medical decisions. “Encryption will make it possible to send patient information, even images, over the Internet, and this will allow highly experienced doctors to render second opinions — no matter how far the doctor is from the patient,” Davlin said. “What I imagine is that fewer doctors who are better at what they do will get more of the available work.”

Nohl observed that today's imaging technology is already enabling health care delivery at a distance, particularly the rendering of second opinions and the reading of X-rays. However,

improvements in encryption will expand the practice, he said.

Patients could benefit from other changes as well, noted Evans. “It would be nice to see computerized medical records instead of these charts no one can find. In the emergency room today, no one has access to your records if you weren't a patient at that hospital before. When institutions finally agree on (system standards to exchange information), no longer will patient records be lost.”

He said that health actuaries and others who analyze health care data have a tremendous responsibility. “We look at numbers and more numbers, but what you do with them has a great impact on people. In health care, it's literally life and death,” he said. “The goal of using technology in health care management is not just to cut costs. It's to do the right thing first. We want to help people get better. Technology can help partly to make us aware of the costs but also to know the effectiveness of treatments.”