Health Care Information Technology

❖ Can Texas become a national leader in the massive conversion to electronic health records?

Introduction

Demand for information technology workers in the health care field is rising and is expected to dramatically increase in the near future. The medical field is complex and constantly changing; however, few physicians have incorporated advances in computer technology into their office management. For every eight physicians nationwide, only three are using electronic medical records in their practices. In addition, medical industry surveys show that even the majority of physicians who are using computers have still not converted all of their patient scheduling, billing, medical records and other practice management operations to electronic forms. However, this practice is getting a jump start with new job creation beginning in 2010.

The federal stimulus bill (American Recovery and Revitalization Act of 2009) provides the first tangible incentives for automating medical records. The stimulus package includes $50 billion in incentives to doctors, hospitals and clinics to move from paper records to electronic records. As a result of this legislation, federal agencies will measure the number of converted records in a doctor's office or hospital to determine who qualifies for the federal incentive, which will be awarded beginning in 2010.

With federal incentive money on the table, the medical profession is now debating which kinds of workers it needs to convert the billions of paper records into electronic forms. Many of these new jobs require knowledge and skills that are in short supply or are not traditionally bundled with current health care occupational requirements. Defining these workers and requisite skill sets is proving to be a challenge for both the medical community and government labor organizations. As a result, a new "health care informatics" profession has sprung up.

"Health care informatics is a niche, but it's going to be huge," said Robert Ligon, senior health information technology consultant at TMF Health Quality Institute in Austin. His organization is working with four universities — University of Texas Health Sciences in Houston, Texas A&M University, Dallas-Fort Worth Hospital Council and Texas Tech University — to set up regional extension offices that will help medical professionals automate their practice. Ligon's organization as well as others are receiving some of the stimulus funding that is designed to initiate the computerization of medical records. "People are needed now. We're going to be hiring 20 to 40 people this year. We can't wait."

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What's Happening

Health care information technology (IT) is a new discipline that promotes comprehensive management of medical information and its secure exchange between health care consumers and providers. In general, health care IT is expected to enhance health care quality by improving individual patient care, preventing medical errors, reducing health care costs through administrative efficiencies and decreased paperwork and expanding access to affordable care. Also, public health officials are counting on health care IT workers to assist in early detection of infectious disease outbreaks around the country, improve tracking of chronic diseases and decrease patient care costs.

According to those in the medical industry, most medical records are still stored on paper. Proponents of electronic records believe that transferring all medical records to electronic format will simplify medical record management, allow multiple health organizations to coordinate patient care, help measure quality care and reduce medical errors. In addition, electronic records will save money since processing paper claims costs twice as much as processing electronic claims.

But change is difficult. In many ways, automating the medical industry is similar to increased automation in other industries, such as Internet shopping, digital music file downloads, online newspaper access and electronic banking. Just as those industries endured gut-wrenching change as they moved business practices online, the medical industry is now experiencing difficult and sometimes confusing changes — only what is at stake is the protection of the lives and private medical histories of every American.

Essentially, industry experts in Texas say the process of automating health care records includes six major stages: creating infrastructure, transferring scheduling, transferring billing, automating medical records, putting it all together and implementing software that can analyze a

patient's health issues and identify trends. A discussion of each of these stages follows.

- **Stage 1—IT Infrastructure:** Health care is an industry unlike any other. A physician's office needs to interact with and be connected to patients, their employers, insurance companies, state agencies, federal agencies and pharmacies. For decades, phones and fax machines facilitated those connections. Although automating this process further will save time and money for the patients and insurance companies, it will create additional costs for medical professionals. Exchanging information using specialized software backed by massive computers, servers and high-speed Internet connections costs money. Medical professionals also must contend with new federal laws forcing them to save more patient information and, at the same time, protect the security of that information. This puts additional pressure on medical professionals to invest in their computer networks and the people who run them. The tasks associated with this first step focus on the installation of computers, servers and medical software. Workers hired to perform these tasks will have varying education levels along with specialized computer and software training.

- **Stage 2—Scheduling:** Along with appointment-scheduling automation, this step includes automation of general office management. Most hospitals and physicians' offices now use computers and basic software packages to record and store some patient and scheduling information. The workers hired for this step need basic computer literacy training.

- **Stage 3—Billing:** Hospitals, clinics and physicians' offices tend to have billing specialists who understand the medical codes needed to exchange information with insurance companies, Medicare, Medicaid and employers. Many of these workers use medical billing software supplied by a growing industry of health care software development firms, many of whom are based in Texas. This step is automated in some doctors' offices and hospitals; workers who perform these tasks have some formal education.

- **Stage 4—Medical Records:** Converting the medical histories of millions of patients from old mainframe computers or paper records to modern electronic files is a daunting task with multiple legal constraints regarding privacy and data backups. Billing records include basic coding, whereas medical records contain a more complex list to track patient histories and disease trends. Such complexity requires workers with high-level training in both medical practice and information technology.

- **Stage 5—Putting It All Together:** This step pulls together the infrastructure, patient scheduling, billing, medical records, prescriptions and business processes. Physicians can buy and install a software program to move from paper records to electronic records, but the move changes the processes of a doctor's office. Many in the medical community, including Ligon, note that this stage will be one of the most difficult. Implementing electronic medical records requires changes in work habits and entire business processes within a hospital or physician's practice.

- **Stage 6—Analytics:** A key benefit of moving to electronic medical records is the ability to install and run software programs that analyze patient health problems, identify trends and more accurately track billing problems. Forward-thinking doctors' offices and hospitals are incorporating data analysis to track patient behaviors — such as recording which diabetes patients consistently take prescribed insulin and return for check-ups and which do not — in an effort to improve the quality of patient care. Federal agencies also want all patient data to be stored in electronic files to speed research on the spread of diseases. Accomplishing this high-level analysis work requires employees with higher, specialized degrees.

| The Data

The federal taxonomy for classifying business does not include "health care IT." New jobs are being created using the buzzword "health care informatics." But the North American Industry Classification System (NAICS) manual that the federal government uses to organize business activity does not list an entry for health care informatics. Under federal job classifications, health care IT is not an actual occupation either, although medical records technicians use computer technology. Health care informatics jobs are being created amid computer programmers who create health information data exchange software, bioethicists who contemplate which data should be made available to whom and bioinformatics professionals who determine in which form data should be stored and how the data are accessed. Although health care IT and its largest technological component, electronic health records (EHR), transcend formal classification, this quickly emerging field is expected to play a crucial role in transforming U.S. health care delivery.

The U.S. Department of Labor's Bureau of Labor Statistics estimates that most public health informatics specialists working for state and federal organizations make from $52,000 to $88,000 each year. However, specific job classifications for health informatics workers do not exist, which makes it difficult to track demand and growth for this new job sector.

Texas is home to some established health informatics consulting giants and other companies that create medical software. *Healthcare Informatics* magazine recently released its HCI 100 List of the largest companies in this field. Though the list is dominated by companies in the Atlanta, Boston and Chicago areas, several Texas companies were in the mix:

- **Perot Systems** of Plano placed sixth on the HCI 100 List with more than $1 billion in revenue and more than 10,000 employees. Perot Systems is a consulting giant in health care informatics that works with hospitals, doctors' offices, insurance companies and pharmacies with a specialty in business process improvement. Perot Systems merged with Dell Inc. in late 2009.

- **NEC Unified Solutions Inc.** of Irving placed 40th on the list. It offers software, tools and consulting to help medical centers convert paper records to electronic form and run wirelessly.

- **Perficient Inc.** of Austin, which offers consulting services, ranked 68th on the list.

- **Medical Present Value Inc. (MVP)** of Austin, a billing-software company, ranked 80th.

- **The Shams Group** of Coppell ranked 89th. The company offers consulting services and software for billing, medical records and business intelligence analysis.

- **ZeOmega** of Frisco took 100th place. The Dallas-area company offers patient care software and billing software.

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said Elmer Bernstam of the University of Texas School of Health Information
Sciences at Houston, which boasts the state's largest health informatics
training program with 100 students. These "true health informatics workers"
are those who can handle converting medical records, reengineering
business processes within medical offices and delving into data to perform
real analysis. Demand for these workers is outpacing supply.**

According to *Healthcare Informatics*, while companies in other industries are experiencing an economic recession, all of the Texas companies on the HCI 100 list saw their revenues grow between 2007 and 2009.

Recently, Round Rock computer maker Dell Inc. made a unique move into the health care IT market when it created a joint venture with eClinicalWorks, a Massachusetts-based maker of medical records software, and the Sam's Club retail store chain. Dell agreed to sell computers preloaded with eClinicalWorks medical records software inside Sam's Club stores. Dell's move provides a turnkey solution to small medical offices that may want to make the leap into electronic records. However, industry analysts question the usefulness of the preloaded computers. Though they offer a fairly easy entry point for doctors who want to automate, physicians lack the knowledge to modify the accompanying medical office business practices. This knowledge is critical because most doctors' offices in Texas are small practices with five or fewer physicians. Such small practices rarely have the economies of scale to afford an IT professional on staff to help integrate electronic medical records with modified work habits required by the new technology.

So What?

The federal government recently created the position of a National Coordinator for Health Information Technology. Among the first duties of this new federal position is to establish regional extension centers to help push the conversion to electronic medical records at the local level.

Texas will likely be home to least one regional extension center. These centers are federally funded nonprofit organizations and may be an extension of the existing federal Center for Medicare and Medicaid Services (CMS), which already funds an entity in each state called a Quality Improvement Organization (QIO). One of the functions of a QIO is to facilitate physician practice and hospital automation within the larger context of workflow redesign. A regional extension center will prove critical for electronic conversion in many rural hospitals across Texas. Many of these smaller facilities have expressed interest in implementing more technology but claim they are prohibited from doing so because of the high initial costs.

Texas QIO experts note that the task of implementing electronic health records falls mostly to office managers, receptionists and insurance clerks; it is tangential at best to most folks engaged in patient treatment. In fact, during several interviews with QIO staff, they indicated no new emerging or evolving occupations relating to health care IT, only new tasks that need to be mastered by persons running the administrative side of hospitals and ambulatory health care offices.

The 2009 federal legislation also calls for resources to establish a health IT

workforce, including education programs in medical informatics and health information management. Health care has unique workflows that require technologies and processes that cannot be easily translated from other industries. Health care professionals share computers in busy emergency rooms, intensive care units and other settings that use vast amounts of data that must be easily accessible and managed by systems and hardware that cannot fail. Patient care and viability require systems that are reliable, efficient, cost-effective and available around the clock.

What remains unclear, however, are the exact skills and expertise necessary for the health IT workforce — a subject regularly debated by experts at health IT events. Job growth in health care IT is likely to spur additional expansion in related industries, including the use of digital health information to advance medical research, drug discovery and evaluation of personal health records.

Further investment in health care IT will likely expand the use of telemedicine and telehealth, the need for home medical devices and broadband and related services. Hospitals and health systems are likely to accelerate innovation in radio frequency identification (RFID) tags on products, smart cards and sensors. Also, the need for supercomputing capacity fits industry cluster opportunities and priorities in Texas.

Bill Hersh, chair of the Department of Medical Informatics and Clinical Epidemiology at the Oregon Health and Science University's School of Medicine, predicts many health professionals will be looking to move into the growing IT field. He believes IT professionals from other industries also will be looking for work in the newly expanding health care IT arena. Unfortunately, from a Texas labor supply perspective, both of these fields already lack sufficiently skilled workers, creating an added challenge to educate a new group of cross-disciplinary workers.

According to Hersh, EHR implementation teams must include workers with expertise in the field of medical informatics, "also called biomedical informatics or health informatics . . . they're all the same to me." Hersh said, "These individuals bring expertise at the synergistic intersection of health care and IT." In addition to medical informatics specialists, a significant need exists "for pure IT skills, such as maintaining servers, installing and troubleshooting applications and training users," Hersh said.

Recently, Hersh authored a study in which he predicted at least 40,000 IT workers would be required just to help the nation's hospitals make the shift from paper to computerized recordkeeping. Because his research involved only hospitals, and did not include vendors, public health organizations or doctors' offices, the number of new IT workers required is likely to be significantly higher for the industry as a whole.

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Think Globally, Plan Regionally

Questions remain for the U.S. health care market. Congress and the health care industry are working through 2010 to determine what constitutes "meaningful use" of electronic medical records, so they can determine who qualifies for the federal stimulus money tied to creating those records. Meanwhile, the University of Texas at Austin and other universities are quickly setting up new three-month certificate programs to teach more medical workers about current trends in computerized records and practices.

Texas has more than 45,000 physicians who will need to decide which direction they want to go regarding electronic medical records. Will they decide to use the temporary services of an expensive national consultant or use a less expensive local contractor? Other options are to hire a health care informatics professional or even buy the equipment directly and let the existing staff figure out all the adjustments needed.

Worker preparation will be a key issue. The amount of education needed for different tiers of health informatics workers has yet to be established: the medical industry has created neither education standards nor employment standards for health informatics professionals. While the number of health informatics students at Texas universities currently measures in the dozens, it appears that Texas will soon need thousands of these workers at all skill levels.

The greatest demand will be for "true health informatics workers," said Elmer Bernstam of the University of Texas School of Health Information Sciences at Houston, which boasts the state's largest health informatics training program with 100 students. These "true health informatics workers" are those who can handle converting medical records, reengineering business processes within medical offices and delving into data to perform real analysis. Demand for these workers is outpacing supply. He points outs that his school is graduating up to 24 students a year, who are quickly snatched up by major hospitals, medical software firms and management consulting firms.

Physician practices and hospitals can get technology help by hiring a staff health care IT professional.

According to Texas Workforce Commission records, these workers are making $20 to $50 an hour — the range being tied to the size of the organization. These specialized workers perform a range of tasks: maintaining electronic records to helping improve the efficiencies within a doctor's office or hospital to helping physicians analyze records.

So what kind of training will the new health care informatics workers need? The answer is not yet clear. The trick is melding the worlds of medicine and computers, said Ligon of TMF Health Quality Institute in Austin.

Medicine is a hands-on business in which close interaction and communication is necessary among doctors, nurses and patients. Understanding the unique relationships, as well as the complicated business processes involved, is key for health care informatics professionals, Ligon said. Health care IT workers must be proficient in modern computing methods, have a good understanding of business processes and understand the mind-set, habits and language of medical professionals, Ligon said. Basically an ideal health care informatics professional is one part nurse, one part IT programmer and one part business consultant.

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Surprisingly only some colleges are starting to create such hybrid candidates. Some community colleges have added programs in medical billing coding and medical information systems administration. The University of North Texas and the University of Texas School for Health Information Sciences at Houston are offering health informatics degrees, particularly at the Master's level, for workers who understand aspects of computer science, the medical practice, the analysis, the ethics and the legal constraints of this new profession. More hybrid training programs are needed to supply the workers within medical establishments and even for third-party health care informatics service providers in Texas as this hybrid industry grows.