

Creating a National Health Information Network: The Importance of Individual Provider Participation

Edward B. Ermini, MD

Paper kills when it is used to compose medical records, according to Newt Gingrich.¹ He is not alone in voicing that opinion. Powerful leaders including Hillary Rodham Clinton, Patrick J. Kennedy, William H. Frist, and President George W. Bush agree that the current paper charting system used by most medical offices is a problem that needs to be corrected. Our government is currently creating a National Health Information Network (NHIN) that will connect physicians, patients, labs, and hospitals securely and seamlessly. The NHIN will make it easier to evaluate and improve the quality of healthcare delivery systems. Patients will be able to view and supplement their medical record over the Internet and interact with components of the network. Clinicians will be able to manage disease more efficiently, resulting in fewer medical errors and mistakes. The success of this network will depend upon whether medical groups of eight or fewer providers participate, since these groups deliver the largest proportion of healthcare in the United States.

The concept of the “paperless office” has been discussed for more than 20 years, and it is an idea that has been slow to materialize. Many early adopters of electronic medical record (EMR) systems have had bad experiences. A combination of technology that was difficult to use and providers resistant to changing their ways has kept the digital office from reaching widespread use. Early EMR systems offered little in the way of compatibility with other systems, often relying on proprietary software that required frequent upgrades and revisions. It has been said that 50% of EMR installations have failed, and experts attribute those failures to a lack of planning, training, and ongoing support through the transition and afterward. Vendors were focused on sales, and physicians had unrealistic expectations about the ease of transition. The workflow changes that were needed in order for the systems to work were never implemented, leading to failure and lost revenue. Most providers now acknowledge that computerized medical records will play a role in the future, but many feel compelled to wait as long as possible to adopt them. There is

reluctance to put forth the money and effort now because more powerful systems and financial incentives will likely be available in the future.

Early adopters of EMR systems often saw computers as an efficient way to generate complete office notes that would meet the documentation criteria created by government regulations. Although many offices were able to store records electronically, notes had to be printed or faxed when other providers needed

“The success of this network will depend upon whether medical groups of eight or fewer providers participate, since these groups deliver the largest proportion of healthcare in the United States.”

information. Electronic communication between providers was hindered by proprietary software that was incompatible with programs developed by other vendors. With less than 20% of practices utilizing electronic records, it was unlikely that other offices would have the capability to accept digital data if it were made available.

Creating Data Transfer Standards

In order to achieve interconnectivity between physician offices, our government realized that data transfer standards were necessary. In other areas of commerce such as transportation, telecommunications, and banking, the government has set the national standards in order to let developers know how to design their products. The goal was to make medical records available to providers through processes similar to those used by

Edward B. Ermini, MD, is in the private practice of otolaryngology in Lumberton. He can be reached at eermini@carolina.net or 4303 Ludgate Street, Lumberton, NC 28358. Telephone: 910-738-4226.

banks to share account information for automatic teller machines.

Organizations like Health Level 7[®] (HL7) have been working for years on data transfer standards. Most vendors distributing sophisticated software packages use versions of these standards already. In 2004, Secretary of Health and Human Services Tommy Thompson announced the creation of the Office of the National Coordinator for Health Information Technology (ONCHIT), and named David J. Brailer, MD, PhD, to the position. The coordinator is responsible for promoting widespread use of the NHIN by 2010. One of Dr. Brailer's first tasks was to create the Commission for the Certification of Electronic Medical Record Systems. This summer, the first vendors will receive certification. Certification means that the system will be able to exchange data at a minimal level between other certified systems. It opens the way for a National Health Information Network.

The basic components of the Health Information Network will be the electronic health record (EHR) and the personal health record (PHR). The EHR will be created in provider offices or hospitals and will generate and store clinical encounter information. For the first time in history, patients will participate in the creation of their own medical records through the PHR. Elements of the PHR will be imported into the EHR during a clinical visit. The complete EHR will be portable and available through the National Health Information Network with necessary safeguards to protect patient privacy.

The NHIN will be composed of Local Health Information Networks (LHIN) and Regional Health Information Networks (RHIO) linked via the Internet (see Figure 1). Health information will not be stored in one massive central data storage area. Instead, a partnership between patients, hospitals, and providers will allow the National Health Information Network

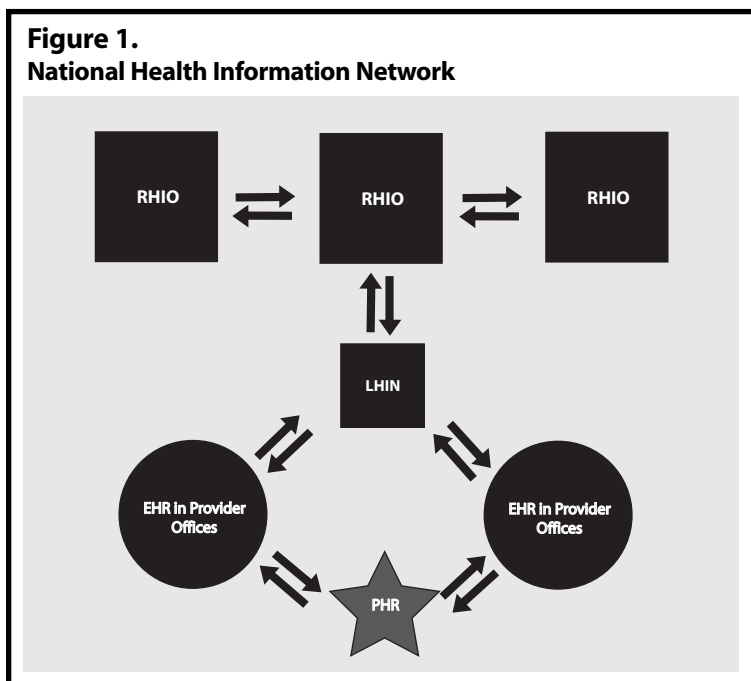
to exist. RHIOs are now emerging in several parts of the country as a way of promoting the development of LHINs. For example, a North Carolina RHIO is being proposed by the North Carolina Healthcare Information and Communications Alliance (NCHICA) and will likely stimulate health infrastructure development in our state.

The Advantages of a National Health Information Network

There are tremendous advantages for clinicians if a National Health Information Network is created. By using a certified EHR system, a healthcare provider should be able to obtain current medication lists, drug allergy information, demographics, labs, and x-rays instantly through the Internet. These data elements can then be automatically incorporated into an accurate medical record. After the office visit, prescriptions can be checked against formularies and then sent directly to pharmacies. Referring physicians will be able to check the progress of a patient's visit to a specialist without having to wait for the notes to be delivered. Records will be available instantaneously, and the faxing and copying that goes on now in most offices will become a thing of the past. The number of clean insurance claims should go up, and rejections by payers will become less common. When one considers the amount of time the average office spends tracking down labs and x-rays, checking insurance and demographic information, and creating a chart for a new patient, the advantages become apparent. Further financial benefits will come from reduced chart storage costs, payroll and transcription savings, and easier compliance with government regulations. Billing and scheduling components are also available in most commercial systems. Quality outcome measures will also be easier to evaluate with a computerized database. EHR systems will also help prevent medical errors by providing decision support capabilities that check for errors and remind clinicians to perform certain tasks. Links to libraries, disease registries, and "best practice" recommendations also will be available.

Conversion Challenges Faced by Clinicians

The backbone of the NHIN will be the private physicians in small medical groups. The migration from paper to electronic records for this group requires unique financial and technical challenges. Without access to large information technology (IT) budgets and network technical support, any system they adopt must be inexpensive, secure, and reliable. The conversion from paper to electronic medical records will take more than the purchase of hardware and software to be successful. Since most clinicians were trained at a time where computers were not an essential part of medical documentation, the advantages of office automation may not be recognized and appropriately exploited. Education,



technical assistance, and a change in the way clinicians organize their workflow will be important components of any successful effort to create a useful National Health Information Network.

It is unlikely that significant health information technology adoption will occur in small medical groups without some type of financial incentive. Current proposals to stimulate IT adoption include payments of three to six dollars per patient visit² and lower co-pays for patients visiting offices with electronic records systems. Less attractive incentives may come as reduced fees for those practices without computerized records. Market forces generated from patients, insurances companies, and industry are also expected to encourage IT adoption. One reason for these market forces is the amount of money the NHIN is expected to trim from the healthcare budget of the United States. It is estimated that a functioning network could save insurers \$112 billion per year in the ambulatory care setting alone.³

There are several ways of providing inexpensive systems to small clinician groups. The Application Service Provider (ASP) model allows clinicians to use a computer in their office to link to a large server hosted at a secure, remote location via the Internet. The ASP maintains the server, updates the programs, and maintains IT support in exchange for a low fee from the clinician. Groups needing more control than an ASP allows may opt for purchasing their own server and programs. This approach carries the responsibility and expense of providing upgrades, support, and security. Small groups usually lack the financial and technical resources to properly maintain this type of network. Larger groups of physicians or even clinician co-operative groups can band together to purchase "enterprise" versions of software that allow the organization to act as its own ASP. Legal counsel is recommended for these ventures since federal laws could be inadvertently violated if the network were used as a vehicle for creating referrals, price-fixing, or gaining financial advantage.

Options for Electronic Health Record Systems

Not all existing EHR systems are expensive. One of the best EHR systems, VistA, is available for a minimal charge from the government. With millions of taxpayer dollars, the VistA system was developed for the Veterans Administration (VA). In 2004, Secretary Thompson announced that it would be made available to the public.⁴ Current versions of VistA are written in a language called MUMPS, which is not widely used by programming specialists. The VA is upgrading the VistA system in stages. Groups like OpenVista™ have tried to convert VistA to a LINUX-based product in order to allow easier implementation by the medical community. The government is also creating a

version of the software called VistA-Office EHR, which will soon be available for private use. All of these are expected to be compatible with the NHIN. Also worth mentioning is *openEHR*[®], an international project under development by a team of volunteer programmers. If successful, it will provide a sophisticated software system accessible to any healthcare provider on earth.

Of course, the big question about all of these free systems is the level of support available. Sources for training and maintenance will have to be provided before any of these will attain widespread acceptance by small medical practices.

Patient Safety and Healthcare Quality

The report "*To Err is Human*"⁵ pointed out that there were frequent errors in hospitals causing adverse events. It also illustrated the need to have a reliable source of data for assessing performance in the medical community. Although

"It is estimated that a functioning network could save insurers \$112 billion per year in the ambulatory care setting alone."

the numbers so widely quoted from this report were obtained by extrapolating a relatively small number of actual hospital cases, it has produced many good ideas for quality improvement. The American Hospital Association and the American Medical Association have embraced the *100,000 Lives Campaign*⁶ recently launched by the Institute for Health Improvement. In North Carolina, the Medical Review of North Carolina, Area Health

Education Centers, North Carolina Medical Society, North Carolina Medical Board, North Carolina Institute of Medicine, and North Carolina Healthcare Information and Communications Alliance, Inc., as well as various specialty organizations are all instituting programs to improve quality through health information technology. Clearly, electronic health record systems figure to play prominently in future solutions for improving healthcare quality.

The development of the NHIN may be the most important breakthrough to affect the medical profession in decades, and it may occur with little physician input. Ironically, it is the reluctance of physicians to adopt information technology systems that is slowing the creation of the NHIN. At some point in the future, payers and patients will demand that physicians utilize the NHIN. There will be a "tipping point," where providers must link up to the network in order to stay competitive in their fields. When that occurs, the NHIN will become essential in the practice of medicine. **NCMedJ**

Acknowledgements: The author would like to thank W. Holt Anderson of NCHICA, Brad Walters, MD, and Cheryl Ermini, BSN, for their patience and help in preparing this article.

REFERENCES

- 1 Jones S. Hillary Clinton, Newt Gingrich team up on Medical Data Bill, CNSNews.com May 12, 2005.
- 2 Financial, legal, and organizational approaches to achieving electronic connectivity in health care. Connecting for Health, The Markle Foundation, New York, NY. October 2004:31. Available at: http://www.connectingforhealth.org/assets/reports/flo_sustain_healthcare_rpt.pdf. Accessed June 6, 2005.
- 3 Health Information Technology Leadership Panel Final Report. The Lewin Group 2005:9. Available at: <http://www.hhs.gov/healthit/HITFinalReport.pdf>. Accessed June 6, 2005.
- 4 Thompson TJ, Brailer DJ. The decade of health information technology: Delivering consumer-centric and information-rich health care, framework for strategic action. July 21, 2004:16. Available at: <http://www.hhs.gov/healthit/strategicfrmwk.html>. Accessed June 6, 2005.
- 5 Kohn LT, Corrigan JM, Donaldson MS, Eds. To Err Is Human: Building a Safer Health System. Institute of Medicine. Committee on Quality Health Care in America. National Academy Press, Washington, DC, 1999.
- 6 Institute for Health Improvement, 100,000 Lives Campaign. Available at: <http://www.ihl.org/IHI/Programs/Campaign/Campaign.htm>. Accessed June 6, 2005.

Additional Resources

North Carolina Healthcare Information and Communications Alliance, Inc.

<http://www.nchica.org/>

American Health Information Management Association

<http://www.ahima.org/>

American Medical Society

<http://www.ama-assn.org/>

North Carolina Medical Society

<http://www.ncmedsoc.org/>

American Academy of Family Physicians

<http://www.aafp.org/>

ModernPhysician.com

<http://modernphysician.com/>

Office of the National Coordinator for Health Information Technology

<http://www.hhs.gov/healthit/>

Connecting for HealthSM

<http://www.connectingforhealth.org/>

Healthcare Information Management Systems Society

<http://www.himss.org>

Health Level 7®

<http://www.hl7.org/>

openEHR®

<http://www.openehr.org>

OpenVista™

<http://www.pacifichui.org/openvista/>