

National Rural Health Association Issue Paper

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Rural Health Information Technology¹

Introduction and Background

Bruce Behringer, a past-president of the National Rural Health Association, labeled the twenty-first century the "e-Health revolution," based on what he sees as the growing emphasis on the use of electronic information and communications technology in health care. He cites as evidence reports from the Institute Of Medicine (2004), the United States Department of Health and Human Services (2003), as well as a flurry of bills in Congress. He also points to an increase in the number and nature of players and partners interested in Health Information Technology (HIT), and the new legislation and new money being directed toward HIT. Today HIT is receiving a full-court press by the Executive Branch of the Federal Government. Among the benefits anticipated from the adoption of HIT are the elimination of redundant care, avoidance of medical errors, increased access to information by consumers of care, and acceleration of knowledge diffusion into medical practices. With such fervor and such promise, what are HIT's implications for rural providers?

Answering this question requires an examination of the intersection of health information technology and rural health quality. This intersection is concisely detailed in two documents, the 2004 Institute of Medicine (IOM) report *Quality Through Collaboration: The Future of Rural Health* and the strategic framework developed by the Office of the National Coordinator for Health Information Technology (ONCHIT, 2004). The IOM report concludes that health

information technology should be a pivotal quality health care strategy for future rural improvement. After calling for a stronger health care quality improvement support structure to assist rural health systems and professionals, the report recognizes the importance of "...investing in an information and communications technology infrastructure." (IOM 2004) In 2003 the federal government established ONCHIT. The strategic framework prepared by ONCHIT envisions all health care providers becoming involved in a national network for sharing patient care data to (1) Inform clinical practice, (2) interconnect clinicians through regional collaborations, (3) personalize care, and (4) improve population health (Thompson & Brailer, 2004).

The dominant users of electronic information and communications technology are hospitals, starting with financial systems and moving toward electronic medical record and patient safety systems such as bar-coded medication verification and Internet-based error event reporting systems. Adoption of the electronic medical record (EMR) by physicians is increasing in urban areas, but is slower in rural communities. To accelerate physician adoption of EMRs, the Centers for Medicare and Medicaid Services (CMS) have added this as a task to the 8th scope-of-work for the nation's Quality Improvement Organizations (QIO). As an additional aid to physician adoption, the Veterans Administration's free EMR program, VISTA, is projected to be available to providers in 2006 through CMS.

Increasing the use of EMR systems is just one step toward increasing the function of electronic health information in health care. Mechanisms must also be created to support the electronic exchange of information between health care organizations. The Regional Health Information Organization (RHIO) is one such mechanism. RHIOs are being formed as a result of recommendations in the ONCHIT 2004 report "*The Decade of Health Information Technology*." Currently, these entities are described rather than prescribed, i.e., they lack any authorizing public legislation or financing. Regardless, payors, insurers, health systems and communities are organizing in anticipation of a future prescribed role. Many states have already begun the planning and funding processes necessary to support interoperable health information exchange systems intended to improve health care quality, reduce health care costs, and eliminate medical errors. The creation of a RHIO requires activities at the national and regional level to organize a health information exchange system (HIE).

RHIOs should not be confused with telehealth or telemedicine. It is envisioned that the RHIO's primary purpose is to facilitate the exchange of a patient's Protected Health Information (PHI) data between providers (e.g., among those sharing the care of a single patient, between hospital discharge planning and primary care providers). On the other hand, telehealth and telemedicine, respectively, provide education and services to rural health care organizations and residents. Health information technology for PHI exchange is a newer concept than telemedicine or telehealth.

Federal interventions in support of rural areas reflect the dual paths required to promote guided involvement and investment. The IOM (2004) provides a blueprint for attention and cooperation that recognizes the importance of HIT to rural health. The Agency for Healthcare Quality and Research subsequently set aside a significant portion of its \$50 million HIT grants portfolio for rural applications. Predating and possibly influencing the report and the funding are successful rural "early adopters" of HIT, including the Avera System in the Dakotas, the Rural Hospital Cooperative in Wisconsin, and Inland

Northwest Health Services in the Pacific Northwest, to name a few. What can we learn from these efforts to help us achieve the benefits associated with the use of HIT without making costly mistakes? How can we achieve the goal of interoperable EHRs within rural communities, let alone the nation?

Issues

Rural leaders must develop the rationale and benefits for engaging in HIT. What is the case for improving the quality of care by sharing a patient's PHI among providers in a rural community, or just as importantly, with other providers outside the rural community? Rural providers understand the frustration experienced by rural patients, the issues of inconvenient distances, redundant testing, and long waiting periods for test results. How will shared clinical information remedy this, and do the rural patient and provider benefit? A second case to be considered is the business environment – how is sharing data useful in reducing redundant testing, eliminating medical errors, and promoting the adoption of care guidelines. Will this make the whole rural health system more efficient for payers and patients?

The IOM 2004 and Medicare Payment Advisory Commission (MedPAC) March 2005 reports, as well as other current publications, highlight some of the problems with HIT. The HIT issues in rural health care are perhaps more challenging than in urban areas because of the relative scarcity of professional, technical and financial resources. These can be summarized in several broad categories: technology, privacy, skills, standards, and finance. If we are to reach the goal of free flowing information (including billing, demographic, and electronic medical records) among the many users, these challenges must be overcome.

Technology

Software: Technology becomes a challenge when the current software does not allow total connectivity among all providers. As an example, it is common for a small rural hospital to have, in addition to its acute services, a nursing facility, a home health agency, and perhaps other service outlets. It is difficult, if not impossible, to find software that allows

the necessary communication among the modules to fully support these services. This becomes even more problematic when the various services are provided by different entities, including individual physician practices, in the community. No single source of communication currently exists that allows for the free flow of information because of the different systems involved. While it is possible to create interfaces among disparate systems, such software development is costly and often beyond the financial and technical means of rural organizations. One promise of the proposed National Health Information Network (NHIN) will be to certify electronic health records products that are interoperable and can electronically share health information.

Standards

Because of the disparate information systems that are in use by different health care organizations (or within organizations), HIE will require the use of technology and data standards. Standards for electronic messaging assure that one information system can read messages that are generated by another information system. Standards for data assure that the contents of the electronic messages can be interpreted by the receiving information system. National data standards organizations are currently working with the US Department of Health and Human Services to identify and refine the standards that will be recommended for use in all health information systems. While standards hold out the hope for facilitating future HIE, the development of standards will raise problems for health care organizations.

Many current information systems are not capable of generating standard electronic messages. The majority of information systems do not contain data that is coded according to national standards. This means that health care organizations will have to upgrade or completely replace their current systems to meet any new standards requirements. Due to limited resources these technology upgrades will be particularly difficult for rural health care providers and organizations.

Rural health care organizations in general are far behind urban counterparts in technology investment. The hospital information systems that exist in many rural facilities are limited to basic financial functions, and do not support most electronic clinical transactions. Many of these facilities will have to make major investments to provide state-of-the-art patient care within their facilities, let alone participate in a sophisticated electronic HIE. An alternative to paying for software might be to develop open-source software solutions for rural facilities.

The cost of access to broadband connectivity also continues to be an enormous barrier to linking systems together with sufficient "pipes" for electronic data sharing.

Privacy & Data Security

Privacy is always an issue when dealing with PHI. Standards instituted by the Health Insurance Portability and Accountability Act (HIPAA) must be followed. In addition, new communication and legal challenges arising when PHI is shared among different organizations must be addressed. Even when communications technology exists to allow the free flow of information, the challenge remains as to who is entitled to the PHI and how and when they are entitled to it, and how the integrity of the information is maintained throughout the processes of viewing the data. An additional concern is who owns the information and what that ownership implies. Each participating organization must establish rules and processes to protect patients' PHI as well as the PHI that the staff may access from other health care organizations. Privacy is part of the broader issue of data security, how information is protected against "acts of god" and acts of man. This requires all participating organizations to establish common rules and processes to assure that no one organization will cause a breach of privacy that could impact the others and provide rules and processes for who can make changes to the data and the frequency with which data is backed up. All of the participating health care organizations will need to reach a level of collaboration and trust that may be unprecedented in some communities.

Skills

The skills of rural providers' employees, physicians and others in the continuum of community health care are generally not at a level necessary to support complex HIT. In many cases, the technology staff (the computer guru) in a small rural provider's office is the person who installed and supports the billing, payroll, or other automated systems. This person is generally not trained on HIT except as it directly relates to his or her daily functions. Beyond maintaining systems, the care provider may not be the person accessing the patient information. In reality, an office staff member may access the patient information on behalf of the care provider who may have fewer computer skills. To fully utilize the potential of future HIT, all rural health personnel will need comprehensive training with specialty training for those who will maintain the data systems themselves. In addition, the internal processes and culture within the provider's office will need to be overhauled in order to change from a "paper process" to a "digital process". Without this reengineering the overlay of HIT on an organization will be a recipe for disaster and inefficiency.

In addition, considerable thought and activity should be given to a technology training pipeline, e.g., partnering with educational institutions to assure that the professional talent needed in rural areas will be available in this new environment.

Finance

Finance is perhaps the overriding challenge. Rural hospitals often depend on the Critical Access Hospital designation and Universal Services Funds to maintain operations and access technology. In fact, these programs play a major role in financially sustaining hospitals in many rural communities. This tenuous existence doesn't allow for any kind of financial cushion to invest in technology. Current payment rates from governmental payers are insufficient to cover the costs associated with overcoming challenges of acquiring hardware and software, implementing community-based communications networks, and obtaining training and ongoing support. Grants and other external sources of funding

are limited and providers are unable to shoulder the financial burden alone. In addition, investments by providers are focused on their own organizations while the success of HIE requires an investment in the technology infrastructure of the community as well. Telecommunications networks must be established and routinely maintained and updated in order to support the increasing demands of the health care system. Rural communities do not have the tax base or other means to make the necessary investments in this infrastructure. Where should rural providers begin their investment in HIT? Are there "low hanging fruit" among HIT applications that are less expensive and/or have a greater impact on quality and efficiency?

Pay-for-performance is under serious discussion at the federal level as a tool for improving the quality of healthcare and spurring adoption of HIT. In its March 2005 Report to Congress, MedPAC recommended that "pay-for-performance programs should include measures of quality-enhancing activities supported by IT," as a back-door vehicle to accelerate the adoption of HIT by hospitals, home health agencies, and physicians.

Beyond the specific issues described above, physicians highlight some of the significant underlying cultural barriers to the adoption of HIT. According to Shortliffe (2005), there is poor appreciation by clinicians of the strategic value of information technology. Some clinicians see information technology as a threat to their patients' privacy, preferring the perceived superior security of paper-based records. Further, there are serious concerns about how technology can lead to the depersonalization of health care, with computers in the exam room adversely impacting the physician-patient relationship and distracting from the clinician's primary goals. Finally, some clinicians are reluctant to learn new skills that they see as tangential to the practice of medical care.

A final challenge that threatens the implementation of HIT is the lack of a business case for physicians. National economic models have demonstrated that the primary eco-

conomic benefits of HIT accrue to the payers in the health care system (insurers, government programs, employers) rather than to the health care providers themselves. While implementing HIT does lead to eventual cost savings for health care providers, as well as improvements in operational efficiency and patient care, physicians do not have a strong economic motivation for investing in this technology. When this knowledge is combined with information technology's history of failed, high profile projects across the country, it is understandable that physicians are hesitant to jump on the HIT "bandwagon." Even when failures in technology implementations can be blamed on installation process and resource constraints, the technology inevitably takes the blame.

Recommendations

The Commission on Systemic Interoperability (CSI) was authorized by the Medicare Modernization Act and established by the Secretary of Health and Human Services. The Commission was charged with developing a strategy to make healthcare information instantly accessible at all times, by consumers and their healthcare providers. The CSI recommendations are not specific to rural providers but are essential to advance adoption across providers regardless of geography. The NRHA supports the recommendations of the Commission (Appendix A).

The following recommendations were developed by the HIT workgroup of the National Rural Health Association and speak to the specific needs of rural providers:

- ***Implement technology and data standards in rural information systems*** – Congress should require vendors of information systems used in rural communities to incorporate national standards for HIE into their systems. This includes systems used in all settings – hospitals, nursing homes, pharmacies, EMS and home health. Information systems used in rural health care facilities are often purchased from smaller vendors, offering lower cost products; the government may need to pay special attention to these small vendors to make sure that they are standard compliant.

- ***Assure interoperability of disparate systems used within rural facilities*** – Rural facilities often purchase multiple information systems to carry out different functions (finance, scheduling, patient care, laboratory and pharmacy). Vendors need to assure interoperability with other necessary systems. Further, rural administrators need to be educated about the value of interoperable systems within their facilities, so that planned upgrades will support interoperability.

- ***Establish regional networks in rural areas*** -- Rural health care systems should collaborate in establishing regional networks that facilitate HIE. Network participants can agree to purchase the same electronic medical record systems, or agree on certain requirements for interoperability and then only purchase products that meet those requirements. This creates economies of scale for the rural system, and also makes it easier to develop local capacity to support the information systems. A critical element in establishing regional networks is the development of a common patient identifier for the region. This does not need to be a unique number for each patient, but can be a common algorithm that each health care organization uses to recognize the patient (i.e. a standard combination of letters and numbers from the first name, last name, birth date, Social Security number). Using a common patient recognition method supports sharing of data among organizations and reduces the errors in patient record matching.

- ***Assure that rural communities have the infrastructure necessary to support regional networks*** – Rural communities need the technology infrastructure to sustain secure health information exchange including high-speed wires that support transactions requiring high bandwidth (such as the digital transmission of radiology images) and connectivity among health care organizations, including physician offices, and the region's network. Simple access to the Internet is not sufficient for secure health care transactions, as additional safeguards must be taken to protect the information at the source, in transit, and at the destination. This includes encryption technology for creating electronic

messages, and also robust firewalls at the source and destination of the health information. A major piece of the infrastructure is also having communications redundancy capability. In addition, the technology infrastructure needs to support telehealth applications, as these are critical to rural health systems. For example, the infrastructure must be able to accommodate regional Picture Archiving and Communications Systems (PACS), streaming video, and telehealth educational programs that can be broadcast from anywhere in the country.

- ***Liberalize the Stark laws*** — See CSI Recommendation "Regulatory Reform." The issue of regulatory reform is not exclusively rural, however, the Stark Laws have a particularly chilling effect on rural hospitals, as they are often the largest employer in a rural community, in the strongest position to invest in HIT, and most likely to serve as the convener or hub for a rural network. As a result of these roles, rural hospitals are very likely to run into Stark laws relating to influencing doctor referrals.

- ***Establish the policy framework necessary to support health information exchange***—As part of the Regional Networks, rural health care organizations need to agree on common policies and procedures for granting access to protected health information, including common security measures that each participating organization will implement. These security processes should include implementation of the ability to capture and authenticate electronic signatures as such signatures are necessary for e-prescribing and other secure transactions.

- ***Create aids that will help rural health systems prepare for the increased use of technology*** – Rural health systems will benefit from aids, tailored to specific needs, that will help prepare for the implementation of HIE and electronic medical records. These can include training programs, planning templates, assessment tools of cultural readiness, and clinician mentoring on transitioning to health information exchanges.

- ***Create funding mechanisms to support infrastructure and health information technology in rural areas*** – Rural health facilities will need assistance in planning for, purchasing, and supporting HIT. The costs will be significant, and well beyond the means of most rural hospitals, physician offices, and other health care facilities. Existing funding mechanisms need to be enhanced and new ones created to make sure that the rural health care system does not fall further behind. Possibilities for funding include:

- ▶ Government and foundation grants to provide seed money for investment.

- ▶ Modifications by payers (both public and private) to reimbursement schedules to encourage use of HIT through pay for performance or other programs.

- ▶ Reorganization and consolidation of existing federal funding sources (USDA, Office for the Advancement of Telehealth, etc) and non-federal funding sources (Universal Services Fund) to make it easier for facilities to make major investments in technology.

- ▶ Technical assistance to rural facilities to help them refocus money being spent on information management (including management of paper records) so that they can invest in information technology.

- ***Create job training programs that will provide a skilled technology workforce in rural areas*** – Rural school systems, community colleges, and technical schools need additional funding to generate a healthcare workforce that is sufficiently trained in state-of-the-art technology. Training programs should also be tailored to enable the inclusion of current healthcare workers who will require enhanced skill sets to satisfy the new HIT.

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Ending The Document Game. Commission on Systemic Interoperability.

www.EndingTheDocumentGame.gov October 25, 2005.

APPENDIX A

Recommendations of the Commission on System Interoperability

October 25, 2005

To advance progress of the adoption of health information technology, the following actions should be taken:

- 1. Adoption Incentives.** The Department of Health and Human Services (HHS) should implement, or seek authorization from Congress as necessary to implement, financial and other incentives for participation in a standards-based healthcare information network. These incentives should be directed toward individuals and organizations including healthcare providers, medical institutions, purchasers, and health plans. Incentives should include broad-based approaches such as pay-for-performance, as well as targeted approaches that include grants directed at small, safety net, and financially challenged providers. These incentives should begin to be implemented within two years. Employers and other private sector healthcare payers who will benefit from the adoption of interoperable healthcare information systems should be encouraged to provide similar incentives.
- 2. Regulatory Reform.** The Secretary of HHS should act with urgency to revise or eliminate regulations that prevent healthcare entities, networks, hospitals, and clinicians from working together to create and adopt interoperable healthcare information systems, while promoting competition and maintaining reasonable protections against inurement and kickbacks. To ensure that healthcare providers can be confident in the legality of their actions, the Secretary should clearly state in the regulations those actions that are permissible and should direct the Centers for Medicare and Medicaid Services and the Office of the Inspector General to provide effective guidance to accelerate legally compliant

activities that advance adoption of healthcare information technology. This effort should begin with 42 U.S.C. 1395nn, known as the Physician Self-Referral or Stark Law, and 42 U.S.C. 1320a-7b, known as the Federal Anti-Kickback Law, and regulations issued pursuant to those laws.

- 3. Reporting on Adoption Gaps.** To ensure that the benefits of healthcare information technology are equally available to all the nation's citizens, HHS should monitor and annually issue a public report on gaps in the adoption and effective implementation of interoperable healthcare information technology systems across all sectors of the nation's health system. The report should specifically identify types of gaps and should propose public and private sector policies to address and close those gaps.
- 4. Workforce Needs and Impacts.** The Departments of Labor and Commerce, in concert with HHS, should identify and quantify deficiencies in healthcare workforce knowledge and skills that must be addressed in order to secure maximum benefit from healthcare information technology. The effects of healthcare information technology on the use of labor and the upward mobility of workers in the healthcare system should also be considered. Based on these findings, these Departments should create a plan to meet such workforce needs and better estimate the financial impact of workforce changes that occur as a result of effectively adopting healthcare information technology.
- 5. Public Awareness.** HHS should develop and execute a public awareness campaign that helps educate consumers, providers, and other interested constituencies of the benefits of using inter-

operable health information technology and the steps they can take to realize those benefits. HHS should implement the campaign in conjunction with the Department of Commerce and other government and private-sector organizations.

To advance progress of the interoperability of health information technology, the following actions should be taken:

- 1. Product Certification.** Purchasers of healthcare information technology products must have a reliable source of information about the interoperability, functionality, and security of these products; and vendors must be able to compete by differentiating their products beyond minimum standards. HHS should support a single, voluntary, private-public process to certify that products meet minimum standards. To ensure continual improvement in the products available to the healthcare community, the scope of certification activities should aggressively be expanded to include additional healthcare information technology products, and the minimum performance specifications should be augmented over time as technology and standards progress.
- 2. Data Standards.** HHS, advised by the American Health Information Community (AHIC) and in consultation with the National Committee for Vital and Health Statistics (NCVHS), should ensure broad acceptance, effective implementation, and ongoing maintenance of a complete set of interoperable, non-overlapping data standards that function to assure data in one part of the health system is, when authorized, available and meaningful across the complete range of clinical, administrative, payment system, public health, and research settings. Additionally, AHIC should build upon the Health Insurance Portability and Accountability Act of 1996 (HIPAA) to develop national standards for authentication, authorization, and security that will permit the necessary infrastructure

for consumers' confident adoption of healthcare information technology.

- 3. Standard Product Identifiers and Vocabulary.** Standardizing data at the point of its creation will greatly accelerate the creation of an interoperable healthcare information network. HHS should work with manufacturers of drugs, devices, and test kits to achieve standardized identifiers and vocabulary in labels and packaging, and in all data outputs of devices and test kits.
- 4. Drug Records.** Interoperable healthcare information technology will ensure that all providers have access, when authorized, to their patients' medication records and will establish a robust capability for post-marketing surveillance of drugs. AHIC should, in its early activities, take a phased approach to developing a fully interoperable drug record for every American by 2010.

To advance progress of the connectivity of health information technology, the following actions should be taken:

- 1. Patient Authentication Standard.** Correctly aggregating and exchanging information about a specific person is essential and requires a uniform mechanism for authenticating the patient's identity. Congress should authorize HHS to develop a national standard for determining patient authentication and identity.
- 2. Federal Privacy Standard.** Congress should authorize the Secretary of HHS to develop a uniform federal health information privacy standard for the nation, based on HIPAA and pre-empting state privacy laws, which anticipates and enables data interoperability across the nation.
- 3. Nationwide Health Information Network.** A national healthcare information network is part of the critical infrastructure of national security. Therefore, HHS and its relevant agencies should coordinate and seek Congressional

approval to coordinate, as necessary, with the Department of Homeland Security (DHS) and other cabinet Departments to ensure the nationwide health information network is created and receives funding commensurate with its contribution to the safety and security of the American public.

4. Criminal Sanctions for Privacy

Violations. To augment the protections provided by HIPAA, Congress should authorize federal criminal sanctions against individuals who intentionally access protected data without authorization.

5. Consumer Protections. Patients should be protected from the consequences of unauthorized access to or release of their healthcare information. Therefore HHS should study and recommend to Congress actions to prohibit discrimination based on data obtained in that way.

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