Minnesota e-Health Initiative:
Roadmap and Preliminary Recommendations for Strategic Action

Report to the Minnesota Legislature

Minnesota Department of Health

January 2005

MINNESOTA MDH DEPARTMENT OF HEALTH

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Protecting, maintaining and improving the health of all Minnesotans

January 25, 2005

The attached report, "Minnesota e-Health Initiative: Roadmap and Preliminary Recommendations for Strategic Action," fulfills the directive in Laws of Minnesota 2004, chapter 288, article 7, section 7, to the Minnesota Department of Health (MDH) to address issues related to electronic health records.

In September 2004, we convened the Minnesota e-Health Initiative Steering Committee. This committee is a public/private collaboration with representatives from hospitals, health plans, physicians, nurses, other healthcare providers, academic institutions, state government purchasers, local and state public health agencies, citizens, and others with expert knowledge of health information technology and electronic health record systems.

The Minnesota e-Health Initiative vision is to accelerate the use of Health Information Technology to improve healthcare quality, increase patient safety, reduce healthcare costs and enable individuals and communities to make the best possible health decisions.

This vision encompasses a comprehensive Minnesota health information infrastructure, including clinical, population, personal, and research dimensions. The population health dimension is demonstrated by this committee's close coordination with the Minnesota Public Health Information Network (MN-PHIN) project. MN-PHIN is planning a statewide public health data management system to respond to community health threats and protect the public from preventable diseases.

The roadmap and preliminary recommendations identify many challenges, gaps, and opportunities for Minnesota. We are very encouraged by the enthusiasm and commitment of the partners to address complex and important issues that will put our state on course to truly improve the health of all Minnesotans while reducing healthcare costs. The steering committee continues its work to address several critical issues of finance, governance, and technical standards and will report its findings at a statewide summit in June 2005.

Please direct your questions about this report to Marty LaVenture at (612) 676-5017.

Sincerely,

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Minnesota e-Health Initiative: Roadmap and Preliminary Recommendations for Strategic Action January 2005

Table of Contents

Executive Summary

This report is a call to action to accelerate the adoption and use of Health Information Technology (HIT) across Minnesota in order to improve healthcare quality, increase patient safety, reduce healthcare costs and enable individuals and communities to make the best possible health decisions. A coordinated and concentrated effort involving commitment by public and private partners is essential to achieve success.

Research shows that the use of the Electronic Health Record (EHR) and other Health Information Technology (HIT) holds great promise for helping address healthcare and public health challenges and can benefit patients, physicians, providers, payers, public health, and the community—and has great potential for obtaining efficiencies in the system.

The sheer complexity of delivering and paying for healthcare creates difficult challenges to adopt information technology and electronic connectivity. This has led to the situation where health and healthcare systems are behind other sectors of the economy when using advances afforded by information technology to achieve improvements in efficiencies and quality. Hospitals, clinics, nursing homes, pharmacies, health providers and local public health agencies face many issues including financing, policy, education, training, and organizational and day-to-day work process changes.

In Minnesota today, only a fraction of clinical health and healthcare data is accessed and transferred digitally. An estimated 5-15% of Minnesota primary care clinics have electronic health records and few systems exchange clinical data electronically on a real time basis. As a result, the information needed to support patient care and public health is not available when and where it is needed to support clinical decision-making, patients, and public health. The absence of readily available, comprehensive, patient-centric health information and secure on-line access to clinical knowledge negatively affects healthcare at every level. The need is especially apparent in the rural areas and in smaller clinic settings. It particularly affects patients and clients who are seen at multiple care settings.

Minnesota has the opportunity to rapidly address these challenges by building upon its base of experienced and knowledgeable individuals and organizations. Collaboration is key to rapid progress and Minnesota has a strong history of effective public/private partnership.

Recommendations for Action - to Achieve in One Year

The Minnesota e-Health Initiative Steering Committee is made up of 24 high-ranking leaders and experts representing major healthcare organizations, providers, local public health departments, healthcare buyers and payers, consumers, health informatics and other experts.

The Minnesota e-Health Initiative Steering Committee adopted the four national goals from the "Framework for Strategic Action" (DHHS – July 2004) [1] as a starting point. Building on these existing goals, the committee identified 12 goal-specific recommendations (three for each goal) and six crosscutting recommendations. The committee proposes these recommendations be Minnesota's next steps to be addressed in the coming year.

Preliminary Recommendations – To be implemented in the coming year

Goal 1: Inform Clinical Practice

1) Assess the current use and adoption readiness for health information technology.
2) Promote HIT adoption by identifying/addressing true barriers and analyzing Value of Investment (VOI).
3) Develop targeted incentives that get buy-in and promote interoperability.

Goal 2: Interconnect Clinicians

1) Ensure secure methods to uniquely identify an individual.
2) Define data and information for electronic interoperability.
3) Interconnect with sources of health and healthcare data (such as pharmacy, immunizations, etc.).

Goal 3: Personalize Care

1) Develop principles for consumer rights.
2) Address privacy and security concerns.
3) Educate and inform consumers about opportunities and benefits of health information technology.

Goal 4: Improve Population / Public Health

1) Adopt data and technical standards and technical architecture.
2) Expand use of local population data to support good policy development, decision-making, and planning.
3) Establish governance for public and private data exchange.

Crosscutting Recommendations - across all four goals

Several themes emerged in the discussions that crossed multiple goals, were significant issues in the discussion and had opportunities for action in the first year. Six recommendations (a-f) were synthesized from the discussions and apply across the four goals.

a. Analyze Value of Investment and develop principles for financing.
b. Establish governance structure for sharing data.
c. Establish a statewide process for adopting and promoting national standards for data and interoperability.
d. Implement ongoing communications/education programs.
e. Establish policies and practices to ensure protection of confidentiality and security.
f. Endorse MDH's continued leadership role in guiding e-Health development.

Next Steps

The Committee is committed to move forward with a sense of urgency and commitment to advance recommendations in early 2005 on several key crosscutting and fundamental issues: Financial Incentives, Governance Models, Technical Standards, as well as a planning workgroup for a statewide Health Information Technology Summit in June 2005. Legislation is also being considered to formalize the statewide Minnesota e-Health Initiative Steering Committee and process.

Minnesota e-Health Initiative: Roadmap and Preliminary Recommendations for Strategic Action January 2005

Introduction

Minnesota has a strong history of quality, leadership, and innovation in health and healthcare that improves the health of individuals and the community. Our tradition of collaboration between health stakeholders is unique and allows Minnesota to effectively blend the responsibilities of medical approach (which treats people one at a time), public health (which is responsible for overall community health), and personal health. To effectively and efficiently do their work, health and healthcare professionals, state and local public health officials, policymakers, and other health partners, need timely, accurate, and reliable information about the people they serve. Consumers also need to understand and access their personalized health information to actively manage their own health and make better-informed healthcare decisions.

Lack of information negatively affects healthcare at every level. Currently, most healthcare records are paper-based. It is expensive and slow to move these records around, and difficult, if not impossible, to locate them when a patient goes to many different places for healthcare. So, when information is needed to support patients, it is often not available or cannot be accessed and synthesized in a timely fashion. Most importantly, consumers and their health are affected negatively. They are impacted by safety and poor quality, as well as limited access to clear and concise summaries of medications, tests performed, procedures completed, and prevention recommendations.

Reports from the Institute of Medicine (IOM – 2002, 2004) and other national studies provide clear evidence that health information technology (HIT), such as electronic health records (EHR), e-prescribing, and personal health records, plays a critical role in delivering the information needed to address the challenges our healthcare system faces. These tools will help improve the quality, safety, and efficiency of our nation's health and healthcare system with potentially significant annual cost savings.

National and state leaders recognize the promise that electronic connectivity holds, but also see there are barriers to the adoption of health information technology, including those related to leadership, financing, standards, and organizational change.

This report is a call to action. It highlights the health information challenges facing healthcare and public health today as well as the opportunities that the current environment presents for addressing these challenges. This vision for a Minnesota e-Health system and preliminary Recommendations for Strategic Action were developed by the Minnesota e-Health Initiative Steering Committee. This committee represents the public and private viewpoint, with members from rural and urban healthcare providers, payers, purchasers, academic institutions, nursing homes, local public health departments, consumers, government agencies, and health informatics experts. See the list of committee members in Attachment A.

Health Information Challenges[1]

Health professionals in Minnesota have a long history of using health information and health information technology as tools to support clinical practice and address everyday and emerging public health challenges. Over the past several years, however, members of this committee and others have documented the limitations and gaps of Minnesota's health systems in addressing the state's health concerns and challenges. We have to become more efficient and effective, and information technology can play a critical role in addressing these challenges.

Representing approximately 14 percent of the nation's gross domestic product or $1.4 trillion annually, the United States healthcare system is highly fragmented. In an information age when vital data can be transferred electronically at the speed of light, only a fraction of healthcare data is accessed and transferred digitally. Each public and private healthcare entity —clinicians, hospitals, insurers, and researchers—gathers and holds its own information in a variety of formats (most often on paper) which, in most cases, are not connected or even connectable. More than 90 percent of an estimated 30 billion healthcare transactions are still conducted by phone, fax, or mail every year. [2]

Clinicians are sometimes forced to approach patient care with incomplete information about a patient and without access to the multitude of clinical decision support guidelines that are available to help them. The volume and complexity of these guidelines are growing so fast that they cannot be used effectively without information technology. Research shows that physicians spend an estimated 20% to 30% of their time searching and organizing information. In fact, in a study of completeness of patient information, physicians could not find all the relevant information they needed in a paper-based medical record 81 percent of the time. The entire record was unavailable 5 percent of the time. [3]

As a result, there are delays in treatment and an increased risk of medication errors. Clinicians may unnecessarily repeat tests, call for unnecessary hospital stays, or advise ineffective (or sometimes dangerous) treatments. In addition, researchers and public health officials do not have ready access to aggregated data to track diseases or measure the effectiveness of treatments.

Consumers need to understand and access their personalized health information to actively manage their own health and make better-informed healthcare decisions. Yet, patients cannot easily view their own health records or transfer their own health information from clinician to clinician.

Businesses need to measure the effectiveness of clinicians and health systems to deliver safe, quality care in order to do a good job of purchasing healthcare coverage for employees

Patient Safety. Medical errors (known as "adverse events") occur in nearly one out of every four hospitalizations [4], killing an estimated 44,000 to 98,000 people each year in the U.S., according to an Institute of Medicine (IOM) report. Studies show that adverse drug events occur in 5 to 18

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[1] Adapted in part from statement of Janet Marchibroda, chief executive officer, ehealth initiative,testimony before the Subcommittee on Health of the House Committee on Ways and Means, June 17, 2004

percent of ambulatory patients as well [5]. A 2001 Robert Wood Johnson survey shows that 95 percent of physicians, 89 percent of nurses, and 82 percent of healthcare executives said that they have witnessed serious medical errors. HIT can play a great role in reducing these events. Consumer surveys show safety in healthcare is an issue of serious consumer concern.

Quality Improvement. There are vast opportunities for improvement in the quality of care that is delivered to Americans. A June 26, 2003, report in the *New England Journal of Medicine* revealed that American adults, on average, receive only a little more than half (54.9 percent) of the healthcare measures recommended for their conditions— and the lead author pointed to the need for "a major overhaul of our current health information systems" as a key step to fix the problem.[6]

Public Health and Community Preparedness and Response. Public health officials' need for rapid access to critical information – lab results, disease reports, birth and death certificates, disease information, preparedness data and knowledge sources – has never been greater. Terrorist acts against our country, anthrax incidents, and SARS and West Nile outbreaks have turned the spotlight on the huge deficit in information system capacity (including the limited ability to communicate across systems) that currently exists in most public health departments. These recent events underscore the urgent need for public health, healthcare, and the public to share comprehensive, timely, accurate information. Officials rely on technology to quickly gather information, send it where it is needed, and store it securely. A rapid, informed response using data is essential to controlling epidemics and dispelling worries.

Uneven Deployment And Few Interoperable Systems. Minnesota has many small and medium-sized health systems, clinics, and nursing homes that do not have the financial resources and expertise to invest in and use EHR. While several large health systems are successfully deploying EHR within their own organizations, they still cannot regularly exchange electronic information with other groups, sometimes even within their own organization. Ultimately, consumers and communities endure the consequences.

"Within ten years, every American must have a personal electronic health record"

President George W. Bush
April 26, 2004

The Role of Information Technology in Addressing Healthcare Challenges[2]

According to the Institute of Medicine (IOM) report, *Crossing the Quality Chasm*, "If we want safer, higher quality care, we will need to have redesigned systems of care, including the use of information technology to support clinical and administrative processes…the current care systems cannot do the job. Trying harder will not work. Changing systems of care will."

There is now clear and compelling evidence that information technology will indeed help to improve the quality, safety and efficiency of our nation's healthcare system. A recent study indicates that standardized healthcare information exchange among healthcare IT systems would deliver national savings of $86.8 billion annually after full implementation and would result in significant direct financial benefits for providers and other stakeholders.

According to a report from the Center for Information Technology Leadership (CITL), 100 percent deployment of one kind of health information technology called Computerized Provider Order Entry (CPOE) can save an estimated $44 billion annually in reduced medication, radiology, laboratory, and hospitalization expenditures. According to CITL, more than two million adverse drug events and 190,000 hospitalizations per year can be prevented using CPOE.[7] Further, evidence from Brigham & Women's Hospital concluded that CPOE use reduced error rates in that facility by 55 percent. [8] A recent study of intensive care patients by Kaiser Permanente found that, when physicians used a CPOE system, incidents of allergic drug reactions and excessive drug dosages dropped by 70 percent. [9]

[2] Adapted in part from statement of Janet Marchibroda, chief executive officer, ehealth initiative,testimony before the Subcommittee on Health of the House Committee on Ways and Means, June 17, 2004

National Context

Major national initiatives are underway to implement advanced EHR, e-prescribing, and other HIT to improve overall safety, quality and effectiveness of health and healthcare. This section describes several key examples of these initiatives.

National Committee on Vital and Health Statistics

The National Committee on Vital and Health Statistics (NCVHS) was established by Congress to serve as an advisory body to the Department of Health and Human Services (DHHS) on health data, statistics, and national health information policy. NCVHS performs the vital role of reviewing and recommending approval of health-related data standards to DHHS. Throughout this process, NCVHS solicits advice from a broad spectrum of public and private-sector stakeholders, as well as leading organizations actively involved in efforts to standardize health information. For information, see: http://www.ncvhs.hhs.gov/

National Health Information Infrastructure (NHII) initiative by Department of Health and Human Services

The conceptual framework and initial work done by the National Health Information Infrastructure (NHII) has set the groundwork for subsequent efforts at local and national levels. The NHII proposes a network of interoperable systems covering key health information areas: clinical, personal, research and public health. For information, see: http://aspe.hhs.gov/sp/nhii/index.html

Office of the National Coordinator for Health Information Technology

The Office of the National Coordinator for Health Information Technology (ONCHIT), created in 2004, facilitates the effective use of information technology to improve the quality, efficiency, and safety of healthcare for all Americans. ONCHIT collaborates with the public, private, and non-profit sectors to meet President Bush's goal of the widespread adoption of interoperable electronic health records within ten years. For information, see: http://www.hhs.gov/healthit/mission.html#

In July 2004, Dr. David Brailer, current director of ONCHIT, published the milestone document, "Framework For Strategic Action," [1] containing four goals and 12 strategies for action. This report, "Minnesota e-Health Initiative: Roadmap and Preliminary Recommendations for Strategic Action," builds on the national framework and addresses issues particular to the Minnesota context.

National Goals for Strategic Action

1. *Inform Clinical Practice*
2. *Interconnect Clinicians*
3. *Personalize Care*
4. *Improve Population Health*

- Framework for Strategic Action
Dr. David Brailer, HHS - July 2004.

The Consolidated Health Informatics (CHI) Initiative

The Consolidated Health Informatics Initiative establishes a portfolio of existing clinical vocabularies and messaging standards that enable federal agencies to build interoperable health data systems that "speak the same language" and share that information without the high cost of translation or data re-entry. Federal agencies pursue projects meeting their individual business needs aimed at initiatives such as sharing electronic medical records and electronic patient identification. CHI standards will work in conjunction with the Health Insurance Portability and

Accountability Act (HIPAA) transaction records and code sets, and HIPAA security and privacy provisions.

About 20 federal department/agencies including Center for Medicare and Medicaid services (CMS), Centers for Disease Control and Prevention (CDC), Veterans Administration (VA), Department of Defense (DOD), National Library of Medicine (NLM), and the Food and Drug Administration (FDA), are active in the CHI governance process. Through the CHI governance process, all federal agencies will incorporate the adopted standards into their individual agency health data enterprise architecture used to build all new systems or modify existing ones. There is a CHI Council that leads the work. The CHI conducts outreach to the private sector through the National Committee on Vital and Health Statistics; records and schedules are available at www.ncvhs.hhs.gov.

Public Health Information Network (PHIN) Initiative by CDC

The Centers for Disease Control and Prevention (CDC) is developing the Public Health Information Network (PHIN). This network is described as "a framework for crosscutting and unifying data streams for the early detection of public health issues and emergencies" For information, see: http://www.cdc.gov/phin/

Key to PHIN is development and adoption of defined data and vocabulary standards and strong collaborative relationships. The focus for each is:

- **Detection and Monitoring**
  Focus: Disease and threat surveillance, national health status indicators
- **Data Analysis**
  Focus: Facilitates real-time evaluation of live data feeds, turning data into information for people at all levels of public health.
- **Information Resources and Knowledge Management**
  Focus: Providing intuitive access to reference materials, integrated distance learning content and decision support
- **Alerting and Communications**
  Focus: Enabling emergency alerting, routine professional discussions, and collaborative activities
- **Response**
  Focus: Management support of recommendations, prophylaxis, vaccination, etc.

Doctors' Office Quality - Information Technology (DOQ-IT) - CMS

The Centers for Medicare and Medicaid Services (CMS) is supporting the Doctors' Office Quality Information Technology (DOQ-IT) project to promote the adoption of Electronic Health Record (EHR) systems and information technology (IT) in small-to-medium sized physician offices with a vision of enhancing access to patient information, decision support, and reference data, as well as improving patient-clinician communications.

The DOQ-IT project offers an integrated approach to improving care for Medicare beneficiaries in the areas of diabetes, heart failure, coronary artery disease, hypertension, osteoarthritis, and preventive care. DOQ-IT does not endorse any particular vendor product or service. For more information, see: http://www.doqit.org/doqit/jsp/index.jsp. In Minnesota, Stratis Health is the local contact for DOQ-IT projects.

Foundation for the National e-Health Initiative

The Foundation for the e-Health Initiative, was created to serve as a national forum for the discussion of the policy issues relevant to the application of technology to support health and to articulate and execute a vision of a better healthcare system enabled by technology, to improve the quality, safety, and efficiency of healthcare, as well as consumers' experiences with managing their health. For more information, see: http://www.ehealthinitiative.org/about/foundation.mspx

Connecting for Health Initiative – The Markle Foundation

Connecting for Health is a collaborative of more than 100 participants from both the public and private sectors focused on addressing the policy, technical, and legal barriers to establishing an interconnected health information infrastructure and to promote its potential benefits. Connecting for Health has demonstrated that blending together the knowledge and experience of public and private sectors can provide a formula for progress, not paralysis. Over the past year and a half, the group drove consensus on the adoption of an initial set of data standards, developed case studies on privacy and security and helped define the electronic personal health record (PHR).

In January 2004, Connecting for Health announced the continuation of its effort to promote a Roadmap or "shared path" that lays out near-term actions to achieving electronic connectivity.

In addition, four new working groups will make recommendations and prepare tools kits in areas such as the business and organizational aspects of health information exchange. For more information, see: http://www.connectingforhealth.org/aboutus/phase1.html

Professional Organizations

Various national organizations provide leadership and support for e-Health.

- **The America Medical Informatics Association (AMIA)** is a nonprofit membership organization of individuals, institutions, and corporations dedicated to developing and using information technologies to improve healthcare. The 3,200 members of AMIA include physicians, nurses, computer and information scientists, biomedical engineers, medical librarians, and academic researchers, and educators. For more information, see: http://www.amia.org/about/fabout.htm

- **Healthcare Information and Management Systems Society (HIMSS)** is the healthcare industry's membership organization exclusively focused on providing leadership for the optimal use of healthcare information technology and management systems for the betterment of human health. HIMSS represents more than 15,000 individual members and some 220 member corporations that employ more than 1 million people. HIMSS frames and leads healthcare public policy and industry practices through its advocacy, educational, and professional development initiatives designed to promote information and management systems' contributions to ensure quality patient care. The HIMSS vision is advancing the best use of information and management systems for the betterment of healthcare. The HIMSS mission is to lead change in the healthcare information and management systems field through knowledge sharing, advocacy, collaboration, innovation, and community affiliations. For more information, see: http://www.himss.org

- **The Public Health Data Standards Consortium (PHDSC)** is a voluntary confederation of federal, state and local health agencies; national and local professional associations; public and private sector organizations; and individuals. The overall goal of the confederation is to develop, promote, and implement data standards for population health practice and research. In 1998, members of this confederation first recognized a need for an organized common voice from public health in the national healthcare standardization efforts. To become this voice, the Consortium became a not-for-profit organization in July 2003. For more information, see: http://phdatastandards.info/

The State of Health Information Technology in Minnesota

In Minnesota, a huge gap exists between the great need for rapid and reliable access to information and the current ability to provide it:

- Large variation in use of HIT exists across facilities and by clinicians. Some large health systems are investing heavily (with comprehensive planning and implementation efforts underway) and many others have not yet conducted a readiness assessment. Informatics education and training for physicians, nurses, and other providers needed for adapting to HIT use is often limited and narrow in focus. In Minnesota facilities using HIT, the use of electronic exchange outside the organization is very limited.

- Rapid problem detection, communication and response to any event with public health consequences is essential today. Minnesota's local and state public health data systems cannot meet this challenge. We lag behind many other states that have invested significant resources in updating their public health information systems. Minnesota has an opportunity to catch up. In Fall 2004, the Minnesota Public Health Information Network (MN-PHIN) took initial steps towards planning a statewide public health information management system to respond to community health threats and protect the public from preventable diseases. See the 2005 Report to the Minnesota Legislature entitled, *Minnesota Public Health Information Network (MN-PHIN): Roadmap and Recommendations for Strategic Action.*

- Consumers and patients rarely have electronic access to information or benefit from the portability of a Personal Health Record (PHR). The affect of not having this critical information can lead to medical errors. The problem is most apparent in transitions of care (for example, moving from a nursing home to a hospital and back again) and in emergency situations. For example, if a Minnesotan on vacation shows up in an urgent care or emergency department outside their usual health system, they, their family, and the ER physician are often required to make life and death decisions without access to vital information such as medical history, medications lists, or test results. They may need to waste significant time and resources repeating tests or assembling paper reports from various locations.

Comprehensive data on HIT use in Minnesota is limited. Table 1 shows estimates of current HIT use in two key areas by different types of facilities and by physicians and nurses. A comprehensive assessment of HIT in Minnesota is needed and improved metrics and mechanisms for measurement are needed to monitor progress.

Table 1: Estimated use of selected HIT in Minnesota, 2004 by Type of Facility/Provider*

Type of Facility/Providers	Number	Estimated use of HIT (EHR and e-prescribing)*	Gap / Comment
Hospitals - Acute Care	137	Most highly automated, but systems often not interoperable and do not interconnect	Rural and smaller facilities Use of standards for interoperability and interconnectivity

Type of Facility/Providers	Number	Estimated use of HIT (EHR and e-prescribing)*	Gap / Comment
Clinics - primary care	~700	Estimated 5-15%	Small & rural clinics need significant help to implement EHR and e-prescribing.
Long term care facilities - Nursing Homes	402	~ 2% - 4% from national estimates Broad experience with Minimum Data Set (MDS) use	Few systems have clinical EHR and little interoperability and interconnectivity.
Emergency Departments	129	~ 10-12% Improving access within same health system. ~ 1%-3% - Rare to connect across health systems or clinics	Most still need timely access to history, medications, tests and other critical information.
Local Public Health Departments	91	Most local health departments use one of three systems but the data sets are not standardized and the systems are not interoperable within departments and between state and other local departments.	All local departments need to upgrade systems to current standards to achieve interoperability. Limited access to community-specific population information to support community policy decisions
Pharmacies	1502	Most are linked electronically with pharmacy claims and pharmacy benefit managers. Few are linked to allow e-prescribing by physicians needed for consumer safety.	Most need to add e-prescribing connections for physicians. Limited interoperability.
Clinical Laboratories	67	Often automated but only ~ 3-5% able to use current standards for electronic exchange	Improve interoperability and exchange using HL7, LOINC, SNOMED and other standards
Home Care and Home Health Agencies	1254	Estimated 25 – 30% use advanced EHR.	Varies by agency. None or limited interoperability between most systems and partners.
Health systems	30	Some have significant investment in operational EHRs. ~ 3-5 have strategic planning investments underway for cross system interoperability.	Interoperability very limited for exchanging information. Cross system governance structure and policies not well developed. Few long term financial models.
Tele-medicine sites	~ 30-60	~ 10 – 15 % Dependent on timely access to patient data at remote sites often across institutional boundaries	Need improved interoperability for patient information.
Use by Physicians	~ 16,000	~ 5% - 10% using EHR or e-prescribing. Significant process and culture change adjustment required. Must	Large gap for easy-to-use and interoperable systems, financial models and limited training and support. Gap

Type of Facility/Providers	Number	Estimated use of HIT (EHR and e-prescribing)*	Gap / Comment
		learn different systems across facilities.	between technical capability and actual skilled use.
Use by Registered Nurses (RN)	~ 68,000	~ < 12,000. Varies consider-ably by facility and access to EHR Significant process and culture shift required for adoption.	Limited informatics training opportunities for nursing. Limited evaluation and research on adoption of best practices
Use by consumers/patients	~ 5 Million	<0.2% have secure electronic access to their own personal health record such as a list of medications, lab tests, clinical procedures and preventive recommendations	Limited PHR services are currently offered. Portability of PHR is rare. Consumer education and training on the value of PHR is needed. Need to adopt standards and policy for use.
*** Estimates are based on limited local data and some national estimates for each category. A comprehensive assessment in Minnesota is needed to refine these estimates and measure progress.**			

Overall, in Minnesota HIT adoption rates are reportedly improving but continue to be low. Gaps in HIT use by facility and provider remain high. Minnesota is believed to be similar to national data where more than 90 percent of health transactions each year are conducted by phone, fax or mail.[2] Forty percent of surveyed healthcare organizations planned to spend 1.5 percent or less of their total operating budgets last year on IT, and 36 percent set spending at 2 to 4 percent. [10] This compares to an average IT investment of 8.5 percent in other industries.[11]

It appears that the organizations and individuals who are taking the lead in the adoption of information technology believe that healthcare information technology can save money and improve healthcare quality, safety, and efficiency as well as those who have been able to offset those investments through grant programs. Slower adopters are those who have had limited access to capital, and those who have not had ongoing financial incentives to support their adoption.

On the individual practitioner level, only five to ten percent of physicians are estimated to use electronic medical records in their practices. And in the electronic prescribing area — some research shows that less than 5 percent of U.S. physicians currently "write" prescriptions electronically.[12] At the facility level, while 13 to 15 percent of hospitals have implemented some form of computerized medication order entry, physicians in these facilities enter less than 25 percent of their orders using the system.[13]

From a physician standpoint there is approximately a 5-10% penetration into physician groups of all sizes with the actual number probably closer to 5% according to MMIC Technology Solutions. The penetration is greatest amongst large physician groups such as Mayo, Park Nicollet, Fairview and Health Partners. Individual moderately-sized groups such as Pediatric and Young Adult Medicine, Dakota Pediatrics, Minnesota Gastroenterology and Family Practice Clinics such as in Blue Earth and Willmar, have instituted an EHR, but only a small number of small groups or individual physicians have installed EHR systems.

Individual physicians over this past year are much more aware of the emerging effort for use of EHR. The high costs of the EHR systems with no reliable assurance of a return on investment have made the implementation very slow. In addition, many are not willing to invest now because they are waiting to see if financial incentives will be forthcoming. Improvements still have to be made in the software with specialty-specific templates available to make the systems practical. It is also possible to pick a software application that would not be supported in the future, making the investment a significant loss. The first-time changes to workflow and complexities of decisions with selecting data templates are time-consuming and challenging. Education of physicians and other staff is crucial but current programs are sparse.

Large hospital systems have, to a great extent, invested heavily in HIT (including HealthEast, Allina, HealthPartners, Children's Hospitals and Clinics, and the Fairview System). These systems have used different commercial software applications such as the Cerner system used by Children's and the Epic system used by Fairview. Some of the systems allow connectivity to physicians at home such as the Allina System and HealthEast. These allow physician access to inpatient lists, lab and X-ray results, and allow completion of medical record deficiencies. One or two pilot projects are allowing consumer access to personal health records.

However, these systems have not yet made the significant investment needed to address the collaborative policy and technology issues to achieve cross-system interoperability. There is little integration of hospital information such as X-Ray reports, laboratory results, discharge summaries or emergency room visits with the EHRs in physician offices, although several systems (Park Nicollet, HealthPartners, Allina, Mayo, Duluth Clinic) are looking to accomplish full integration of inpatient and outpatient health information. Pharmacies will accept faxed medication refills but will not accept electronically-signed prescriptions.

Minnesota needs to encourage the development of open, clinical interoperable telehealth networks. Telehealth and telemedicine systems provide access to care when the patient/client and the provider are separated by difficult-to-overcome geographic barriers. They are especially effective when medical resources are scarce. They are best provided by open networks where patients can connect with available healthcare professionals regardless of geographic location. Since telecommunications services are the foundation of telehealth services, their availability to all of Minnesota's citizens and medical care institutions is critical and there is a need to develop policies to insure equitable availability throughout the state. Such equitable availability would assist in promoting open networks by lowering the costs of entry for all parties into a telehealth network.

While technical-level interoperability of telehealth systems exists today because of well-defined and universally-implemented videoconferencing standards such as H.323, clinical interoperability is dependent on the availability of patient data located at a remote site such as a hospital, clinic, or other care facility to the provider of healthcare services located at another, geographically distant site. This implies that interoperable, sharable EHRs are necessary to support and enhance the utility and effectiveness of telehealth systems that provide patient care. Similarly, the existence of such EHRs would encourage the development of open telehealth networks by obviating the natural restrictions on access imposed by proprietary information systems of individual institutions or provider groups.

Minnesota Challenges and Gaps to Information Technology Adoption

Input from Minnesota e-Health Steering Committee members, interested participants and reports from stakeholders across the healthcare system, identified challenges and barriers to adoption of HIT in Minnesota (see Attachment C). Key challenges to adoption include:

1. *Lack of Standards and Interoperable Systems*. The lack of interoperable systems and data standards has often been cited as a key barrier to adoption. According to a 2002 survey conducted by the Medical Records Institute, clinicians across a variety of settings identified "difficulty in finding an electronic medical record solution that is not fragmented over several vendors or IT platforms" as a top barrier.[14] While some gains could be achieved through the adoption of electronic health records across the healthcare system, the real value—particularly within clinician offices—expressed in terms of quality, safety, and efficiency will only be achieved if such systems are interoperable and electronic connectivity is achieved, so that clinicians have key information (such as that related to laboratory tests and prescriptions) when and where it is needed: at the point of care.

   Minnesota has the opportunity to build on the work done by national groups such as Consolidated Health Informatics Initiative and the National Committee on Vital and Health Statistics and many others by establishing a statewide schedule and a coordinated process for adopting and implementing standards. Using a collaborative effort to develop and share implementation can accelerate guides and other tools essential to implementation of standards.

2. *Lack of Funding and Misalignment of Incentives.* Practicing clinicians, hospitals and other healthcare providers often cite the lack of upfront funding and business models to support ongoing usage as key barriers to adoption. In addition, emerging research indicates that there is a misalignment between those who pay for the implementation and ongoing usage of information technology and those who benefit from its use. Under the current healthcare system, benefits related to the gains in quality, safety, and efficiency are spread across all stakeholders, while the real costs are borne by only a few. Incentives must be realigned to facilitate the exchange and sharing of data and information across and between organizations, institutions, providers, and payers. In a survey of provider CEOs, 23 percent cited lack of financial support as a barrier, while 17 percent cited the need to provide quantifiable benefits or return on investment as the greatest barrier.[15] A recent survey of 5,000 family physicians conducted by the American Academy of Family Physicians found that 60.5 percent cited affordability as a barrier to adopting electronic medical records.

   In Minnesota an opportunity exists to identify particular economic models and financial value-added contributions for HIT. Initial, implementation, and ongoing maintenance incentives need to be included.

3. *Need for Leadership*. A recent survey of 5,000 family physicians conducted by the American Academy of Family Physicians found that 54.2 percent cited worries about slower workflow or lower productivity.[16] This has been reinforced through discussions with steering committee members and other practicing clinicians across the state. In order to drive transformational change, leadership is needed from both the public sector—at the federal, state and local levels—and every segment of the private sector—including clinicians, hospitals, laboratories, payers,

employers and other healthcare purchasers, manufacturers of pharmaceutical and medical devices, public health agencies, and those who build and implement information technology.

Nationally, A number of key actions taken by both the public and private sectors have signaled a significant increase in the level of leadership around healthcare information technology issues.

A number of initiatives have emerged—primarily in the private sector—to address organizational change issues and facilitate the migration towards an interoperable, electronic healthcare system. Successful adoption of an electronic application depends upon the ease and speed with which the clinician can use it, as much as the value that it provides for quality, safety, and cost. It is affected by a number of factors including how well the system supports the specific workflows present within a clinician's office, and the specific features that the system provides to improve speed and efficiency. While the effective implementation of information technology ultimately improves outcomes and results in efficiency gains, migrating to a new system takes time and resources.

In Minnesota, we can build on the national effort and provide statewide leadership by public and private leaders to successfully drive this organizational change. We must recognize and support providers, facilities, and agencies through this transition with help from education and tool kits for organizational change.

Minnesota Strengths that Help Meet the Challenges to Health Information Technology Adoption

Minnesota has the key ingredients for success:

- a strong history of effective public/private collaboration;
- outstanding medical, technical, informatics and public health professionals with advanced knowledge and nationally-recognized expertise;
- a capacity for innovation and creative solutions;
- strong institutions with respected and capable leaders;
- emerging success stories that provide a foundation for growth;
- an outstanding education system than can meet educational and training needs;
- an emerging statewide coalition to provide leadership, vision, and a roadmap for accelerated success; and
- policymakers becoming increasingly aware of challenges, issues, and financial and other opportunities.

With these essential ingredients, Minnesota is poised to follow a successful recipe for statewide action.

Health Information Technology in Other States: How Minnesota Compares

Minnesota is not alone in facing these challenges. Numerous states are already investing in comprehensive, integrated statewide health information systems that meet the needs of consumers, providers, and healthcare systems as well as state and local public health needs for timely, accurate, and secure information. These programs are also investing in the organizational changes needed to ensure success and financial sustainability.

Indiana Health Information Exchange, Central Indiana Healthcare Collaboration, Indianapolis, Indiana

Up and running for more than seven years, the Indianapolis Network for Patient Care (INPC) is a successful model of a citywide electronic health information exchange established by Indiana University's Regenstrief Institute. The Indiana Health Information Exchange (IHIE), a newly-formed nonprofit, plans to expand this data-sharing network to participating providers, hospitals, public health organizations, and other healthcare entities throughout the entire state of Indiana. By the end of 2005, every provider in central Indiana will be able to securely transmit patients' lab results and other clinical messages, regardless of which hospital or lab their patients visit. The system also automatically reviews laboratory information for reportable communicable diseases. Early reports suggest this system can warn state and county health departments of new outbreaks faster and more completely at very low marginal cost.

The IHIE is a non-profit venture backed by a collaboration of Indiana healthcare institutions. Over the next five years, Indiana will receive $10.8 million, of which $9.3 million was awarded to the Indiana University School of Medicine, from a new federal program to promote the use of information technology in healthcare. As the network gains users and becomes increasingly ingrained in the health delivery system, IHIE will serve as a public entity. For more information, see: http://informatics.regenstrief.org/what/?section=inpc

In contrast, Minnesota has limited experience with community-based exchanges. Winona has a pilot community-wide connectivity experiment called the Winona Health Online (WHO), which involves local integration of a single delivery system, one community hospital, three physician practices, and pharmaceutical care, as well as a web-based personal health record that can be accessed by Winona citizens. Future plans include computerized physician order entry and full medication integration. However, there are no plans to expand this project further. For more information, see: http://www.cerner.com/uploadedFiles/1400_04_Winona_LR.pdf

In Minnesota, only a few laboratories are electronically reporting communicable disease results and often must rely on phone call, fax or mail for reporting communicable diseases.

MA-SHARE MedsInfo e-Prescribing Initiative, Waltham, Massachusetts
Massachusetts Simplifying Healthcare Among Regional Entities (MA-SHARE) is a regional collaborative initiative. Its projects promote healthcare data connectivity across communities and enterprises in order to make accurate clinical health information available wherever needed in an efficient, cost-effective, and safe manner. MA-SHARE's anchor project is MedsInfo-ED, a patient safety initiative to automatically communicate a more complete and accurate medication history to emergency departments. The project's goals include:

- more complete and accurate medication orders for patients admitted;
- decreased "errors" in diagnosis and treatment;
- improved outcomes and lowered costs of care;
- a master patient index that will match patients to available clinical data sources;
- distribution of clinical data streams (medications, lab tests, x-rays);
- community standards for privacy and security; and
- organization of all services/technologies common to the success of most clinical connectivity initiatives.

MA-SHARE began formal operations in May 2003, with a $50 million financial support as a cornerstone grant from Blue Cross and Blue Shield of Massachusetts and additional support from several other health plans. For more information, see: http://www.mahealthdata.org/ma-share/projects/medsinfo.html

In contrast, Minnesota emergency departments must rely on the memory of patients or their family members for medication information. If the patient or family members can produce a list of medications, often only drug names (not dose or regimen) are available. No state funding or non-governmental organization foundation grants have been available in Minnesota at this time.

Santa Barbara County Care Data Exchange, Santa Barbara, California
More than 75 percent of leading healthcare providers (hospitals, medical groups, clinics, payers and laboratories) in Santa Barbara County, California, exchange information at the point of care using a central, peer-to-peer networking system that operates much like the online music sharing service Napster. The system allows authorized users, including patients, to access clinical records such as lab results, radiology images, transcription reports, clinical notes and medical, hospital, and pharmacy information from claims. Soon, the system will add access to data from local retail pharmacies.

The project began in 1998 with a $10 million grant from the California HealthCare Foundation. Project officials in Santa Barbara are considering a number of funding models for the exchange. In the beginning of 2004, the Santa Barbara County Care Data Exchange transitioned from a jointly-funded demonstration project to an independent, not-for-profit corporation. Philanthropic grants will continue to fund the exchange this year. The corporation received a grant from the California HealthCare Foundation. The corporation also has recently received national e-Health Initiative and federal AHRQ grants. For more information, see:
http://www.carescience.com/healthcare_providers/cde/care_data_exchange_santabarbara_cde.shtml

In contrast, in Minnesota, three initiatives have received one-year grants from the federal AHRQ for approximately $200,000 each to begin planning for community exchange. The projects are:

- A Community-shared Clinical Abstract to Improve Care involving Allina, Fairview and HealthPartners;
- The HIT Strategic Plan of SW Minnesota Health Providers: 28 providers in southwest Minnesota; and
- A HIT Based Regional Medication Management Pharmacy System: Designed to improve pharmacy services in ten rural hospitals in northeast Minnesota.

For more information, see: http://www.health.state.mn.us/e-health/HITprojects.pdf.

Southwest Tennessee Volunteer e-Health Initiative
The "Volunteer e-Health Initiative" is a new project that will electronically link hospitals, doctors, clinics, and other healthcare stakeholders in a three-county area in southwest Tennessee. The project, which now includes all residents in the area, grew from long-term efforts to reform TennCare, Tennessee's state health insurance program. The system will focus on creating a medical record for each patient to be accessed wherever they seek care, and share the latest care guidelines between physicians. Part of the planning will focus on creating a medical record for each patient to be accessed wherever they seek care, and as well as providing access to relevant, evidence-based information to physicians at the point of care.

The state of Tennessee allocated up to $10 million dollars to fund the initial phase of the program during the next five years. The state, in partnership with Vanderbilt University Medical Center, will manage Volunteer e-Health. For more information, see: http://www.volunteer-ehealth.org/

In contrast, Minnesota has not yet determined a model for governance for an entity to manage such health information exchange.

Wisconsin Health Information Exchange Project
The Wisconsin Health Information Exchange Project (WHIE) is a regional collaborative effort involving health agencies in nine southeastern counties to facilitate information access for emergency, public health, and routine clinical tasks. WHIE leverages existing public health and clinical information delivery networks into a seamless, unified system. Patients, clinicians, payers, and the public health community can use a single secure log-on to access information about immunizations, disease registries, case management, public health surveillance, situational alerts and advice (such as outbreaks) and health-care capacity (for example, Emergency Department receiving status). If the regional model is successful, WHIE will be expanded statewide. The secure network and governance structure will be created with this expansion in mind and to ensure that more clinical information (lab results, prescriptions) can be securely exchanged between health professionals and patients in all settings.

WHIE received a $100,000 matching grant from the Foundation for e-Health Initiative, Connecting Communities for Health Program. The Milwaukee project will have to raise another $100,000,

excluding federal money, to receive the one-year grant. For more information, see: http://ccbh.ehealthinitiative.org/Awardee_WHIE.mspx

In contrast, Minnesota has the potential for several regional projects but they have not yet been funded. Strong public/private relationships exist at the state and local levels but planning and details are just getting underway through such initiatives as the Minnesota e-Health Initiative. Several of these planning efforts are building on the successful collaborative relationships established during the implementation of the HIPAA practices.

Inland Northwest Health Services (INHS), Spokane, Washington
Inland Northwest Health Services (INHS) is a non-profit corporation formed with the intent and purpose of bringing high quality, cost effective healthcare to Spokane and the region through innovative and successful collaborations of healthcare services. **INHS** oversees a variety of healthcare companies and services including information resource management services.

Information resource management (IRM) is the information technology division of INHS that provides integrated information systems to Spokane hospitals, physician offices, and the regional healthcare community. Through IRM, regional hospitals are able to share patient information between hospitals and physicians while maintaining secure access to individual patient information. Currently, there are 31 hospitals connected in this manner by the Meditech Hospital Information System. This unique network enables physicians to share clinical information that directly furthers the communities' overall healthcare and improves patient outcomes. IRM is continually implementing new technology, such as electronic clinical documentation at the bedside and radiology image distribution. Using advanced Internet technologies; IRM provides online insurance eligibility, patient registration, and appointment scheduling. IRM is committed to providing leading edge technology and services that deliver rapid access to patient information enabling clinicians to improve outcomes and lower healthcare costs throughout the region. For more information, see: http://www.inhs.org/newsite/homepage/html/inhshome.html

In contrast, Minnesota has few cross system collaborations for information systems. One successful example is Sisu Medical Systems in Northeastern Minnesota. This nonprofit corporation grew out of a consortium of medical centers. By working together to share IT resources, the coalition is able to leverage the strength of the people, ask questions, and put dollars together to get a robust healthcare information system. For example, working collaboratively, these facilities are able to purchase and implement robust Meditech software at significantly reduced cost. Individually, they could not have afforded this system. For more information, see: http://www.sisunet.org/

Delaware Health Information Network (DHIN)
The Delaware Health Information Network (DHIN) was created in July 1997 as a public instrument of the state to advance the creation of a statewide health information and electronic data interchange network for public and private use. It functions under the direction and control of the Delaware Healthcare Commission. It addresses Delaware's needs for timely, reliable and relevant healthcare information with the mission to "facilitate the design and implementation of an integrated, statewide health data system to support the information needs of consumers, health plans, policymakers, providers, purchasers and research to improve the quality and efficiency of healthcare services in

Delaware." Recently Delaware received a $6 million grant to support interoperable systems based in part on having the core governance infrastructure in place. For more information, see: http://www.state.de.us/dhcc/rfp/rfps/rfp-dhin03.pdf

In contrast, Minnesota does not yet have this infrastructure or governance authority in place and missed an opportunity to apply for a $5 million federal grant in June of 2004. The results of the collaborative work of the Minnesota e-Health Initiative Steering Committee will position Minnesota to be eligible for future federal funding opportunities.

PA-NEDDS, Pennsylvania

In Pennsylvania**,** PA-NEDSS, a statewide electronic disease reporting application, establishes a near real-time, secure communication link between laboratories, hospitals, medical practices, local public health departments, and the state department of health. PA-NEDSS seeks to improve the timeliness and accuracy of disease reporting and expand public health infrastructure to improve response to possible bioterrorism attacks. Over 2,000 public health and medical professionals currently access PA-NEDSS securely. Pennsylvania invested more than $20 million dollars for the PA-NEDSS system to support communities statewide.

Other states, such as Utah, Florida, California, North and South Dakota, have invested significant resources to implement similar systems. In 2004, Pennsylvania, South Dakota and Utah, received National Awards of Excellence from the Healthcare Information Management Systems Society (HIMSS) including recognition for their high degree of public/private integration and collaboration.

In contrast, Minnesota's disease surveillance systems are not currently interconnected and no funding for a statewide system currently exists. Local health departments are unable to access case management information, which leads to inefficiencies and can ultimately delay response time to preventable disease outbreaks and other threats.

Health Information Opportunities

A National Movement

The limitations of Minnesota's health information systems are typical. They illustrate why there is growing momentum at federal, state, and local levels to adopt crosscutting and unifying initiatives to improve health information system interconnections and technical and organizational infrastructure. Some initiatives are targeted to improving healthcare quality, and others to improving public health. Still others recognize that collaboration between the public and private sectors is fundamental to meeting the nation's health needs.

Sponsors of health information systems infrastructure projects include federal and state agencies. The National Health Information Network (NHIN) initiative of the Department of Health and Human Services is the most encompassing of the federal initiatives. It proposes a network of interoperable systems covering clinical, personal, research, and public health information with the goal of improving the effectiveness, efficiency, safety, and overall quality of health and healthcare in the United States. An initial focus of the NHIN is the development of collaborations known as Regional Health Information Organizations (RHIOs). A number of RHIOs comprising healthcare organizations and partners, including public health, are forming around the country.

The Centers for Disease Control and Prevention (CDC) is developing the Public Health Information Network (PHIN), described as a "framework for crosscutting and unifying data streams for the early detection of public health issues and emergencies."

Funding Opportunities for Health Information Technology

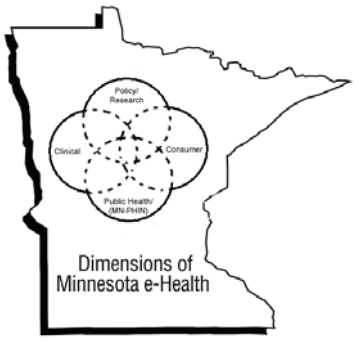
Federal and state government agencies, as well as private foundations, are funding health infrastructure initiatives that can help patients receive necessary and timely medical treatment, reduce medical errors, and enable public health officials to more quickly identify and respond to disease and other threats. As a result, states and private healthcare partners are moving quickly to compete for the swell of health information technology (HIT) funding.

- Congress and the Administration have demonstrated strong support for health information technology. Current FY 2004 budget approved by Congress and the proposed FY 2005 President's budget include $50 million and $100 million, respectively, for demonstration projects.

- While the majority of this funding is targeted to advancing HIT adoption among healthcare providers (individuals and organizations) and public health, more than 100 communities, hospitals, provider organizations, and delivery systems have received grants to plan for, purchase, and implement different information technologies. Five states have received grants to develop regional or state health information networks. Nine communities have received grants for electronic health information exchange projects.

- The Robert Wood Johnson Foundation is supporting collaborations among states to develop public health information infrastructure. Minnesota is one of 26 states participating in a collaboration to develop information infrastructure for public health laboratory information management systems.

Vision for Minnesota e-Health

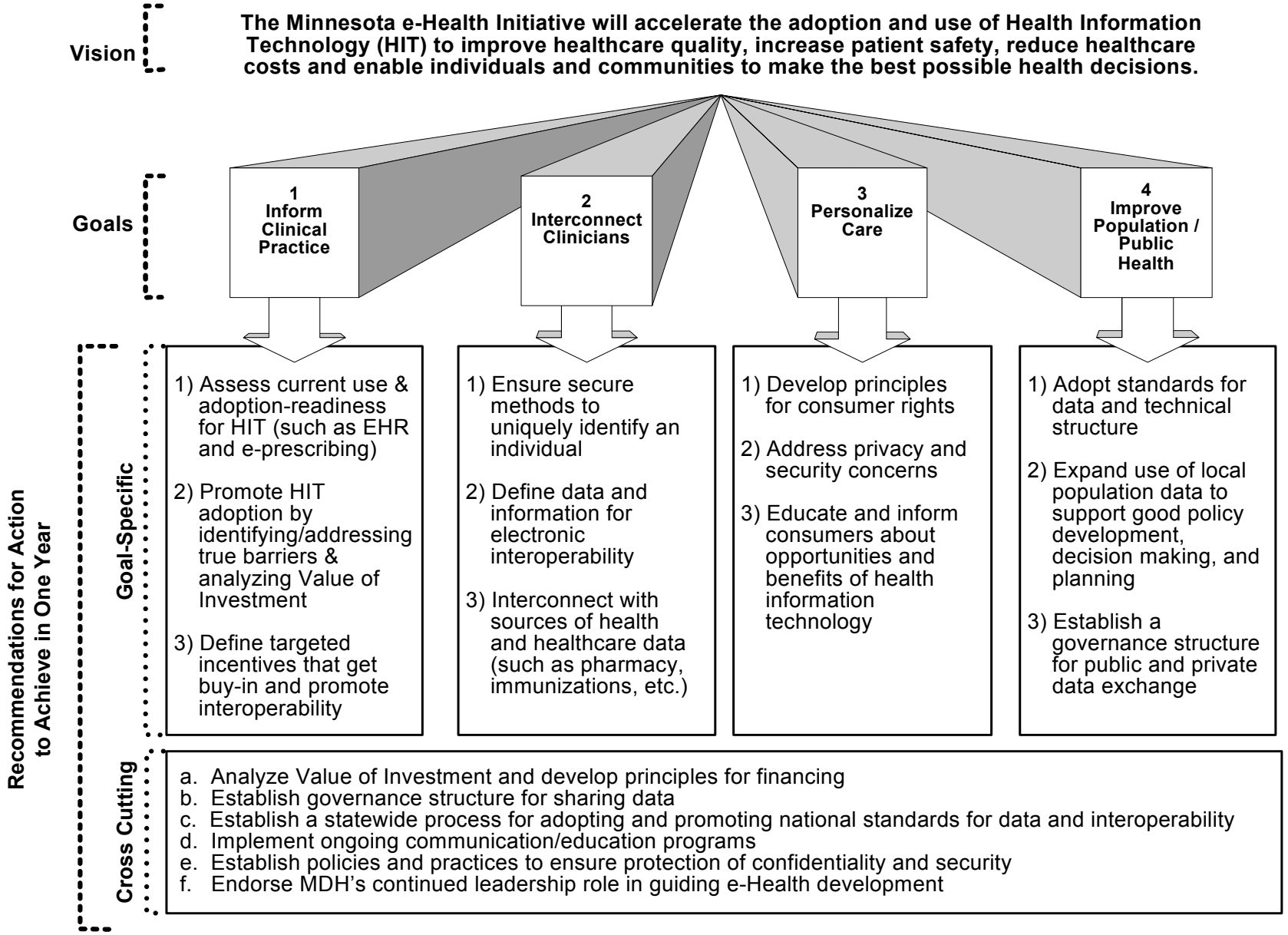


The Minnesota e-Health Initiative will accelerate the adoption and use of Health Information Technology to improve healthcare quality, increase patient safety, reduce healthcare costs and enable individuals and communities to make the best possible health decisions.

We will do this by:

- Connecting healthcare providers – clinicians and facilities – to assure continuity of care for every patient
- Using national standards to guide electronic data interoperability, quality measurement and community health improvement and reduce the risk of investment
- Empowering consumers to understand and access personalized health information to facilitate active management of their health
- Improving public health, primary prevention and enabling community preparedness
- Informing health research and policy development
- Leveraging existing information systems and incrementally adding improved ones
- Increasing adoption of health information technology and levels of informatics skills, knowledge and competencies
- Safeguarding privacy and confidentiality of information
- Maintaining outcomes that focus on the patient/person
- Contributing to the development of federal standards efforts

Minnesota e-Health Roadmap for Strategic Action



Preliminary Recommendations for Strategic Action

The *Minnesota e-Health Roadmap for Strategic Action* outlines the vision, four goals, and 18 recommendations for action in the first year. These recommendations for advancing e-Health in Minnesota are intended to promote a comprehensive approach to accelerating health information technology in Minnesota.

All were informed by input from steering committee members representing key health-related organizations, state and local government, providers, consumers, and experts in health information technology. By design, the vision is bold and the four goals are broad and ambitious. They are consistent with federal "Framework for Strategic Action," from the Office of the National Coordinator for Health Information Technology (ONCHIT). The following recommendations are the first steps in carrying out these goals.

Goal-Specific Recommendations - to achieve in one year

The four goals of Minnesota's *Roadmap for Strategic Action* are designed to improve the health of Minnesotans through strategic application and management of health information.

The committee identified recommendations for actions in the near term to address critical issues for each goal.

Goal 1: Inform Clinical Practice

Informing clinical practice is fundamental to improving health and making healthcare delivery more efficient. This goal centers largely on efforts to bring electronic health records (EHRs) directly into clinical practice at all settings in Minnesota. This will reduce medical errors and duplicative work, and enable clinicians to focus their efforts more directly on improved patient care. These include key issues of incentives, reducing risk of adoption, and assuring diffusion in rural and underserved communities.

First Year Recommendations for Goal 1

1. Assess the current use and adoption readiness for health information technology.

It is crucial to establish a baseline for Minnesota HIT activity. Standard tools and metrics for measuring HIT adoption should be developed and deployed to all partners including clinics, hospitals, nursing homes, pharmacies, public health departments, and other centers for care. The measurements should support a readiness tool that can proactively support the healthcare setting in determining where they are at and help define a path to next steps.

2. Promote HIT adoption by identifying/addressing true barriers and analyzing Value of Investment (VOI).

HIT adoption will be promoted by a complete understanding of its costs and benefits in economic as well as qualitative terms (the value that patients and society in general derive from improved health). In addition, it is crucial to identify and better understand the barriers in the context of various Minnesota healthcare settings so they can be more specifically addressed. Numerous barriers to implementation of EHR, e-prescribing, and other health information technology have been described. They include financial, process, procedural, organizational change, risk management, and technical issues. Statewide policy changes are needed to overcome many of these barriers. Specific policy changes should be identified to address all these barriers, but especially to encourage capital investment in information systems and to establish a sustainable funding and organizational commitment.

3. Develop targeted incentives that get buy-in and promote interoperability.

Incentives play an important catalyst role in spurring adoption of electronic health records. Implementation of EHR and other HIT must be accompanied by comprehensive support for organizational change, process change, administrative and technical support and education and skills training. It is essential that the incentives be positive by design. Evidence shows that simply giving clinicians free hardware and software is not enough to drive HIT adoption. Economic incentives are needed for initial investment, as well as up-front costs essential for HIT transition, and incentives that can address the ongoing financial needs for maintenance.

Goal 2: Interconnect Clinicians

It is essential to interconnect physicians, clinics, hospitals, nursing homes, public health departments and other key healthcare providers to allow information to be portable and to move with consumers from one point of care to another. This requires a statewide interoperable infrastructure to help clinicians get access to critical healthcare information when their clinical and/or treatment decisions are being made. This includes efforts to support regional collaboration, interconnections with the national infrastructure and coordination of state government programs. Nationally, these collaborations are referred to as regional health information organizations (RHIOs). These three recommendations (as well as crosscutting recommendation b.) refer to the key first steps that are crucial to establishing RHIOs in Minnesota.

First Year Recommendations for Goal 2

1. Ensure secure methods to uniquely identify an individual.

A key component to interconnecting clinicians is uniquely identifying individuals. Health information systems often use a master client index as an efficient technical solution that allows linking client records from disparate sources when authorized. Planning and design should begin

for a uniform and effective architecture that can achieve interconnectivity. The system design should ensure that it is easy to use, has strong security to maintain privacy, is in compliance with HIPAA and Minnesota data practices, is compatible with national standards, is reliable and accurate, and is financially viable and sustainable. This will allow information to follow clients from one point to another as needed for care. Planning should begin with interconnectivity for emergency departments statewide.

2. Define data and information for electronic interoperability.

An essential early step is to come to agreement on the specific data that needs to be shared electronically. Ongoing work in the state should be coordinated so that a statewide abstract standard can be utilized. The planning should consider a variety of vital information including: lists of problems and conditions, recent visit history, recent vital signs, list and types of recent procedures and assessments, allergies and adverse reactions, current medications, a focused subset of most recent lab values, last EKG, relevant radiographic images, and preventive health services such as immunizations.

3. Interconnect with sources of health and healthcare data (such as pharmacy, immunizations, etc.).

There are a number of existing sources of health information that are already person-based and likely have clinical and public health relevance. These should be identified, evaluated for usefulness and feasibility. Strategic and operational plans should be made to incorporate them into a Minnesota information-sharing network. Examples to consider include immunization and pharmacy information.

Goal 3: Personalize Care

Consumer-centric information and knowledge is essential to good decision-making and informed consumer choices. This goal encourages the use of personal health records and prevention information that support healthy behaviors.

First Year Recommendations for Goal 3

1. Develop principles for consumer rights.

It is important to involve consumers early in the process and develop a set of principles for consumer rights. These should be developed by stakeholders through a consumer-focused advisory group. These principles should include aspects of the rights, responsibilities, expectations, and benefits to sharing information.

2. Address privacy and security concerns.

Consumers should be a partner in the management of their own health. Expectations for communications and access in the era of electronic information should be clear. Security and privacy concerns should be identified and addressed. The HIPAA and the Minnesota privacy laws should be reviewed in the new context and plans and options for addressing the issues should be identified.

3. Educate and inform consumers about opportunities and benefits of health information technology.

Clear information and education materials for consumers on the benefits and opportunities of HIT should be developed. This should include issues about an individual's ownership and responsibility for their own information, how electronic health records can ensure strong data privacy, and about how personal health record tools can help them better manage their own care and health. Information about communicating electronically with personal physicians and use of the web for accurate information should be available. This should include use of open and clinically interoperable telehealth networks

Goal 4: Improve Population / Public Health

"Public Health is what we, as a society, do collectively to assure the conditions in which people can be healthy." (Institute of Medicine Report -1988). Population/public health improvement requires the collection of timely, accurate, and detailed information that enables assessment of community health, risk factors, research, and the reporting of critical findings back to public and private officials and the public in ways that are useful to decision-making.

Recent events have underscored the urgent need for public health, healthcare, and the public to have comprehensive, timely, accurate information, and to be able to share that information. Terrorist acts against the homeland, anthrax incidents, and SARS and West Nile outbreaks have turned the spotlight on the huge deficit in information system capacity and the limited ability to communicate across systems that currently exists in most state and local health departments.

Public health officials' need for rapid access to critical information – lab results, disease reports, birth certificates, disease surveillance data, preparedness data and knowledge sources – has never been greater. Officials rely on speedy technology to gather information, send it where it is needed, and store it securely. Rapid response using data is essential to controlling epidemics and dispelling worries.

First Year Recommendations for Goal 4

1. Adopt data and technical standards and technical architecture.

To ensure electronic exchange of vital information, it is essential to interconnect federal, state, and local public health departments with other key partners. This requires implementing compatible applications and an infrastructure based on common vocabulary and data standards to help exchange critical health information when vital individual or public health or prevention decisions are needed. A joint public/private workgroup should be established to review, select, adopt, and implement national standards as they relate to public health. This includes a process for monitoring national standards and providing feedback into the national standards development process. A technical architecture should be designed to unify and standardize electronic exchange of information with MDH, local public health departments, and other agencies. This should address the way information is exchanged today mostly by paper or in nonstandard ways, such as disease outbreak reports, disease surveillance, and others.

2. Expand use of local population data to support good policy development, decision-making, and planning.

Policymakers are important partners in protecting Minnesotans' health. Long-range planning for public health must forecast resource needs, maintain the public health infrastructure, and anticipate new health threats. More immediate issues involve identifying priorities and fashioning appropriate solutions. To make informed decisions about complex, critical population health issues, policymakers need access to reliable, understandable information about the health of the people they serve.

3. Establish governance for public and private data exchange.

An effective governance structure is crucial for guiding the development and operation of information systems. A joint collaborative governance structure/steering committee should be established to set direction and priorities, data exchange and operations. It is important to take into account stakeholder perspectives; to ensure performance; and to exercise stewardship over public resources. Good governance can also shape policies that facilitate information technology innovation and resourcefulness.

Crosscutting Recommendations – to achieve in one year

Several themes emerged in the discussions that crossed multiple goals, were significant issues in the discussion and had opportunities for action in the first year. Six recommendations (a-f) were synthesized from the discussion and apply across the four goals. These represent crosscutting themes of economics and financing, governance, communications/education, standards, privacy and security, and statewide leadership for continuing the Minnesota e-Health Initiative.

a. Analyze Value of Investment and develop principles for financing.

An effective financing and funding model is essential to moving the process ahead in Minnesota. Principles for financing should be developed, including elements such as:

- Financing is a major barrier, particularly for small/rural providers, and underserved communities;
- HIT requires a significant investment for providers, plans, and public health departments;
- HIT requires initial, implementation, and ongoing expenditures of time and money;
- Those who pay for HIT are often not the ones who directly benefit most from the technology investment. Those that benefit from the systems should contribute to the implementation and support.
- When public funds are used, they should be collected and distributed in a fair, equitable, and efficient manner. Public funds should:
    - Focus on investments for small, rural, and underserved communities.
    - Require financial commitment from recipient (matching grant, loans, etc.).
    - Encourage the implementation of systems that are interconnected with community.
    - Prioritize investments that have demonstrated impact on improvement of safety and quality.

b. Establish governance structure for sharing data.

An effective governance structure is crucial for guiding the development and operation of information systems. Plans for establishing the Minnesota approach to a regional health information infrastructure (RHIO) should be established. The Minnesota RHIO should involve a public/private collaborative governance structure, should be established to set direction and priorities for Minnesota e-Health; take into account stakeholder perspectives; ensure performance; and exercise stewardship over public resources. Good governance can also shape policies that facilitate information technology innovation and resourcefulness. Governance in this context includes the following activities:

- defining functional outcomes for Minnesota e-Health;
- creating accountability;
- setting priorities;

- making major policy decisions; and
- overseeing allocation of resources.

c. Establish a statewide process for adopting and promoting national standards for data and interoperability

A statewide coordinated effort should be established to review, select, adopt, and implement national standards. This includes a process for monitoring national standards and providing feedback into the national standards development process. This will be a key component of measuring progress towards interoperable health information systems. Minnesota should monitor the national standards activities and provide coordinated feedback as appropriate. In particular, attention should be focused on the Consolidated Health Informatics (CHI) initiative of the NCVHS, where federal agencies have agreed to endorse 20 sets of standards to make it easier for information to be shared across agencies and to serve as a model for the private sector. Additionally, Minnesota efforts should coordinate with the Public Health Information Network (PHIN) and the National Electronic Disease Surveillance System (NEDSS), under the leadership of the CDC.

d. Implement ongoing communications / education programs.

Health information technology is a relatively new and fast-changing field and the base of health informatics knowledge is growing rapidly. Effective communications strategies and education of health professionals, users, policymakers, agency directors and others in informatics and HIT competencies is a large and essential task. It is a key foundational ingredient in the recipe of success for HIT in Minnesota.

A statewide plan for improved information dissemination and for informatics education programs should be established. The plan should include an assessment of education needs as well as strategies for coordinated communication to address multiple learning styles and specific care delivery settings (perhaps using web sites, e-mail, video conferencing, and other electronic means).

An electronic tool kit for HIT should be created that includes: training opportunities, information for providers on evaluating needs, steps to determine HIT readiness, approaches to determining a business case, examples from different settings, and case studies/stories, the value and power of decision-support tools for clinical and prevention purposes, need for data standards, and the essentials of technology.

A statewide summit should be held to present the results of the Minnesota e-Health Initiative Workgroups and facilitate discussion of challenges, priorities, and strategic solutions. Education efforts should be leveraged through existing organizations such as Stratis Health, St. Scholastica, and others.

e. Establish policies and practices to ensure protection of confidentiality and security.

The success of e-Health depends on earning consumer confidence in technology's ability to ensure the privacy and integrity of their health information. Despite fears that it poses risks, HIT will, in many ways, provide more control over information and give stronger protection than paper-based medical records. Efforts to protect paper records come at the cost of portability.

Since the enactment of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), there has been heightened awareness by stakeholders of the need for strong privacy and security protections for identifiable health information. A variety of practices currently exist for the secure, authorized collection, access, and distribution of information. A process for harmonizing policy and practices across the health system should be established.

f. Endorse MDH's continued leadership role in guiding e-Health development.

The Minnesota e-Health Initiative Steering Committee is providing a useful and visible focal point for coordination and policy recommendations for HIT statewide. The Commissioner of Health should continue and, if possible, expand efforts to support the e-Health committee's work. The committee will:

- accelerate HIT by providing leadership for use and support for HIT statewide;
- coordinate and promote healthcare quality and safety initiatives;
- guide the pursuit of state and federal funding opportunities;
- sponsor and lead efforts for a statewide summit in 2005;
- identify key content and standards information; and
- establish metrics and measure the status of HIT in Minnesota and identify the prevention elements for collection.

Initial Conclusions

In conclusion, this report is a call for action in Minnesota. National and state leaders recognize the critical role that health information technology plays in providing the information needed to address the challenges our healthcare system faces. Evidence shows that health information technology will help improve the quality, safety, and efficiency of our state's healthcare system in addition to achieving significant savings annually. The mobilization of information across organizations can also serve to protect and improve public health: a seamless system for the communication of information and access to knowledge is essential for expanding abilities to detect and avert bio-terrorism and other health threats.

Many states and regions are significantly ahead of Minnesota in advancing HIT. However, our state does hold key ingredients for success: Minnesotans rank as some of the healthiest people in the country. We have an enviable uninsured rate. Our state is also home to internationally respected leadership and innovation in healthcare. We have a long history of effective public/private sector collaboration by outstanding professionals with knowledge and expertise. And we have emerging success stories that humanize our efforts. Clearly, we need to accelerate the process of HIT adoption statewide by addressing the recommendations in this report.

There are many barriers to the adoption of information technology and electronic connectivity, including those related to leadership, financing, standards and organizational change. It is imperative that Minnesota build upon the work underway today as well as the strong public/private partnerships that have emerged—to continue to drive the transformation of healthcare.

The Minnesota e-Health Initiative Steering Committee members are committed to take the necessary steps towards making the vision of an improved health and healthcare system enabled by information technology and electronic connectivity a reality in Minnesota.

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Attachments

A. Minnesota e-Health Initiative Steering Committee Members
B. Minnesota e-Health Initiative Steering Committee Background, Charge and Timeline
C. Committee Initial Work Products / Recommendations
    1. Minnesota Challenges and Opportunities for Action. - Committee work Product
    2. Minnesota e-Health Initiative Agency, Partner / Stakeholder Roles
    3. Draft Milestones and Timelines
D. Glossary of Selected Terms

Attachment A:
Minnesota e-Health Initiative Steering Committee Members

Mary Brainerd, Co-Chair
Health Partners
Co-Chair

Mary Wellik, Co-Chair
Olmsted County Public Health Services
Co-Chair

David Abelson, M.D.
Park Nicollet Health Services
Professionals with Expert Knowledge

John Balfanz, M.D.
Pediatric & Young Adult Medicine
Physicians

Frank Cerra, M.D.
U. of M. Academic Health Center
Academics and Research

Michelle Frey
Minnesota Pharmacists Association
Pharmacists

Ray Gensinger Jr. M.D.
Hennepin County Medical Center
Professionals with Expert Knowledge

John Gross
Minnesota Department of Commerce
Government

Marilyn Grover
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Minnesota Primary Care Association

Marcelline Harris,
Minnesota Nurses Association
Nurses

Deb Kempi
Chris Jensen Health & Rehabilitation Center
Long Term Care

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Minnesota Department of Health
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Rina McManus
Anoka County Public Health
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Donna Neal
AARP Minnesota
Consumers

Brian Osberg
Minnesota Department of Human Services
State Government Purchasers

Carolyn Pare
Buyers Healthcare Action Group
Purchasers of Healthcare

Kim Pederson
Allina Hospitals and Clinics
Large Hospitals

Colleen Reitan
Blue Cross Blue Shield Minnesota
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Patsy Riley
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Tom Major
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Attachment B:
Minnesota e-Health Initiative Steering Committee
Goal, Background, Charge and Timeline

September 2004

Minnesota e-Health Initiative Goal and Legislative Authorization

The goal of the Minnesota e-Health Initiative is to improve healthcare quality, increase patient safety, reduce healthcare costs, and improve public health by accelerating the use of Health Information Technology (HIT) in Minnesota. This initiative involves strengthening and expanding public and private stakeholder collaboration around HIT, identifying barriers to HIT and finding strategies to overcome the barriers. The initiative involves finding incentives and supporting greater dispersion of HIT knowledge especially for medium and smaller sized healthcare facilities. The Minnesota e-health initiative is one part of a comprehensive approach to improve health and healthcare quality, safety and reduce costs and improve public health.

During the 2004 legislative session, the legislature agreed that expanding the use of health information technology and specifically electronic health records (EHR) is a top health priority and asked MDH to convene a group to provide recommendations and advice on how best to accelerate progress in Minnesota. This effort will play a significant role in meeting that request.

Background:

Clear and compelling evidence shows that the effective implementation of health information technology and the mobilization of information in and across organizations results in significant improvements in healthcare quality, safety, and efficiency and can serve to protect and improve public health (National Institute of Medicine Reports, 2000, 2004).

In addition, recent studies indicate that standardized healthcare information exchange among healthcare IT systems would deliver national savings of $86.8 billion dollars annually after full implementation and would result in significant direct financial benefits for providers and other stakeholders (Center for Information Technology, Partners Healthcare, Harvard, 2004).

Nationally, only a fraction of healthcare data is accessed and transferred digitally today. As a result, the information that is needed to support patient care and public health is not available when it is needed and where it is needed to support patients, clinical decision-making and public health. The absence of readily available, comprehensive, patient-centric health information and ready access to clinical knowledge negatively affects healthcare at every level.

The electronic health record and related health information technology hold great promise for helping address healthcare and public health challenges. But there are many barriers to the adoption of health information technology and electronic connectivity, including those related to leadership, financing, standards and organizational change.

Steering Committee Charge

The Commissioner of Health is convening a Minnesota e-Health Initiative Steering Committee. The charge of this committee is to provide recommendations to the Commissioner of Health on:

1. Ways to accelerate the adoption of electronic health records systems and other relevant health information technology (HIT) in Minnesota; Specifically how Minnesota can advance the 4 goals and 12 strategies identified in the *framework for strategic action* (HHS July 2004)
2. The role for the MDH and the State Government in the development, financing, promotion, and implementation of electronic health records systems and HIT; and
3. The type of workgroups needed to make recommendations for implementing electronic health record systems. The workgroups will address at least the following issues:
    - Identify barriers to the adoption and implementation of electronic health record systems in Minnesota;
    - Identify core components of an electronic health record and standards for interoperability;
    - Assess the status of current implementation of electronic health records;
    - Assess the costs for primary and acute healthcare providers, including safety net clinics and hospitals, to implement electronic health records systems;
    - Identify partnership models and collaboration potential for implementing electronic health records systems;
    - Monitor the development of federal standards, coordinate input to the National Health Information Infrastructure Process, and ensure that Minnesota's recommendations are consistent with emerging federal standards;
    - Identify barriers and develop a plan to develop a standardized record system among public hospitals and clinics.

Product and Timeline

The steering committee will provide the Commissioner of Health with preliminary recommendations by December 20, 2004, and final recommendations by June 30, 2005. Proposed timeline:

- September, October, November and December 2004: Monthly steering committee meetings, each approximately 2-3 hours in length.
- December 20, 2004: Steering Committee makes preliminary recommendations.
- January – June 2005: Steering Committee monthly meetings held as needed.
- June 2005: Final Report is issued.

Steering Committee Members

The steering committee will consist of representatives of hospitals, health plans, physicians, nurses, other healthcare providers, academic institutions, state government purchasers, local and state public health agencies, citizens, and others with knowledge of health information technology and electronic health records systems. Co-chairs are Mary Wellik, Director, Olmsted County Department of Public Health, Mary Brainerd, CEO, Health Partners.

For More Information:

Contact Barb Wills (651-282-6373) or Marty LaVenture (612-676-5017)

Attachment C:
Minnesota e-Health Initiative Initial Work Activity
1. Goals, Strategies, Minnesota Challenges and Possible Recommendations for Action

National Goals & Strategies	Minnesota Challenges, Issues and Opportunities	Possible Recommendations for Action: Topics / Recommendation
Strategic Goal #1 Inform clinical Practice Strategy 1 – Incentivize EHR adoption Strategy 2 – Reduce Risk of EHR investment Strategy 3 – Promote EHR diffusion in rural and underserved areas	• Capital is an issue for many • Need a financial case (large upfront costs with benefits accruing to others) • Upfront cost for planning and implementation • Cost of maintaining multiple different applications with overlapping clients • HIT needs constant maintenance, but ongoing resources are not available. • Fiscal and organizational risk with complex EHR applications • Risk of being an "early adopter" for a private practice, community hospital or local health department • Limited capacity of healthcare organizations to organize regionally. • Few new resources are available specifically for these activities. • Making commercial applications choices for selection purchase – limited in some application areas • Limited data standards in use • Limited staff with informatics training and experience	**Measuring Progress – "*What gets measured, gets done"*** • MDH should establish a group to adopt standard metrics for EHR and HIT and work closely with stakeholders to assess the status of HIT adoption in Minnesota • MDH should conduct an inventory of NHII and HIT components including functionality and interoperability including LHII • A facility readiness profile should be developed and the assessment administered to all facilities statewide to ascertain health information exchange activity or readiness in Minnesota **Confidentiality, Ethics, Privacy and Access** • Establish uniform practices for authorized access by consumers and providers • Provide consumer education about rights and responsibilities • Involve consumers in development process for access to information

National Goals & Strategies	Minnesota Challenges, Issues and Opportunities	Possible Recommendations for Action: Topics / Recommendation
	• Limited technical infrastructure at the community level for operations • Limited support for integration of applications to provide a client centric approach to information • Leadership for strategic directions and change • Resources and support for strategic directions • Leadership commitment to organizational and system process change (difficult modifications of clinical workflow and decision-making processes) • Few trained for project management; support is limited. • Trained staff to support systematic and incremental process, especially as the complexity has increased Small hospitals need to communicate up and down the chain to different systems that are not standard	**Standards and Architecture issues**: • Monitor national standards for EHR and adopt an interoperable, standards-based Minnesota EHR, including standard definitions, vocabularies, work process functions • Develop basic components for the infrastructure including secure connectivity, reliable authentication, and a minimum suite of standards for information exchange **Expand Dispersion of Knowledge about HIT** • Establish mechanisms to disperse knowledge including lessons learned, best practices, checklists, case studies, • Expand Health Informatics leadership training • Implement the Informatics core competencies • Develop IT support mechanisms for clinicians
Strategic Goal #2 **Interconnect Clinicians** Strategy 1 – Foster regional Collaboration Strategy 2 – Develop a national health information network Strategy 3 - Coordinate federal health	• Electronic exchange of information requires new levels of collaboration and cross-agency agreements on policies and procedures • Training programs for implementing informatics competencies are absent or	**Standards and Architecture issues**: • MDH should identify/convene, a public private partnership focused on interoperability issues in Minnesota and the group should have appropriate authority, funding and support

National Goals & Strategies	Minnesota Challenges, Issues and Opportunities	Possible Recommendations for Action: Topics / Recommendation
information systems	sporadic • An increase in informatics skills at organizational and individual level is needed • Commercial software options vary significantly • Collaboration on common specifications is essential to improve options from vendors in this market. • Compliance with vocabulary and data standards from national HIT initiatives is expected. • Few of the hundreds of state and local agencies systems are compliant • Few if any of the data systems are compliant with the national standards for exchange of clinical data • Establishing local collaborative to form models for client indexes and other architectural issues • Adopt a definition for interoperability including semantic interoperability (ability to exchange information and to interpret what is exchanged) • Improve coordination across state and local systems • Establish working models for a "local health information infrastructure" Perceived legal barriers to sharing information among disparate organizations	• The interoperability group should monitor state and national efforts and set priorities for Minnesota. • Establish standard models for interoperability, standards and architectures • Establish policy and infrastructure to support security and privacy • Establish method for testing, support and maintenance of interoperability • Establish testing, monitoring and evaluation of pilot projects • Establish collaborative to form client index models & other architectural issues **<u>Resources and Education</u>** • Establish directory of experts and stakeholders • Provide education programs on standards and EHR Governance • Establish and evaluate models for shared governance **<u>Governance Models</u>** • Establish model governance templates **<u>Confidentiality, Ethics, Privacy and Access</u>** • Establish model policies for cross system access

National Goals & Strategies	Minnesota Challenges, Issues and Opportunities	Possible Recommendations for Action: Topics / Recommendation
		• Establish uniform practices for authorized access by consumers and providers Provide consumer education about rights and responsibilities
Strategic Goal #3 **Personalize Care** Strategy 1 – Encourage use of PHRs Strategy 2 – Enhance informed consumers Strategy 3 – Promote use of telehealth systems	• Difficulty with consolidating information for individuals • Lack of standard consumer portal for secure access to information • Lack of standard prevention algorithms for client reminders and recall • More personal decision support tools for consumers are needed • Need increased commercial tools for personal health records • Identify incentives to drive individual resources Need more collaborative efforts with providers to integrate prevention algorithms into decision support tools.	**Demonstration Projects** • Establish demonstration projects • Establish way to integrate public and private information **Standards and Architecture** • Adopt a Minnesota standard process for access and content for a PHR • Establish an approach for uniquely identifying a person • Identify techniques, standards, and policies to ensure data from PHR can be exchanged with other data sources. **Resources and Education** • Develop and employ a communications toolkit with a core set of messages that promote the benefits of electronic connectivity and encourage patients and consumers to access their own health information • Determine the value for patients of having access to health information. • Teach consumers to use their PHR
Strategic Goal #4	• Lack of applications that support	**Improve surveillance**

National Goals & Strategies	Minnesota Challenges, Issues and Opportunities	Possible Recommendations for Action: Topics / Recommendation
Improve Population Health Strategy 1 – unify the public health surveillance systems Strategy 2 – streamline quality and health status monitoring Strategy 3 – accelerate research and dissemination of evidence	community focused public health and prevention profiles • Lack of standards on data and systems to display community profiles • Few tools and limited data for access and manipulation of data for communities to access and current data is limited • No strategic plan for using geographic information systems (GIS) • Limited access by community partners for community profiles Few tools for specific assessment, analysis and dissemination of health information for populations	• Identify standard processes for uniform exchange of information and sending population level health alerts to EHR • Unify the reporting and feedback process at state and county for surveillance and monitoring **<u>Standards and Architecture</u>** • Identify core population health surveillance and map to the EHR **<u>Resources and Education</u>** Implement Public health Informatics competencies

2. Agency, Partner / Stakeholder/ Roles

Agency / Partner / Stakeholder	***Role(s)*** *Roles for planning, developing, financing, promotion, and implementation of EHR and advanced HIT*
1. Federal Government	• Establish office for the national coordinator for Health Information technology (Dr. David Brailer) • Establish funding through AHRQ • Coordinate standards through NCVHS and NLM and private partners • Establish office for NHII collaboration • Obtain commitment to plans from Key federal agencies
2. State Government (Including MDH, DHS, DOER, and Commerce)	**Minnesota Department of Health (MDH)** • Establish e-health initiative • Quality and safety initiatives • Pursue state and federal funding opportunities • Sponsor a statewide summit • Lead efforts to identify the key surveillance and reportable content standard information • Identify the prevention elements for collections **Department of Human Services (DHS)** • Establish purchasing incentive principles • Integrate incentives into purchasing • Provide leadership on financing issues • Participate in CMS Projects such as DOC-IT **Minnesota Department of Commerce**

3. Health Plans	• Provide models and recourses for early projects • Provide leadership on financing models • Provide models for incentives • Provide leadership in governance for RHIO
4. Academic Institutions	• Provide leadership, academic rigor for effort involving Education, Assessment and Evaluation • Sponsor. Offer training and other resources
5. Hospitals	• Provide leadership for Community collaboration and organizational transition • Provide leadership on adoption of standards for interoperability
6. Nursing Homes	• Provide leadership adopting model for EHR in Nursing homes • Provide community leadership in community connections
7. Local Public Health Agencies	• Provide community leadership in prevention practices • Provider community leadership in local assessments and community health profiles
8. Physicians	• Provide leadership, particularly through the Minnesota Medical Association, to get support and input in determining what should be included in the EHR and PHR • Partner with academic institutions to develop appropriate training • Work with other physicians to adopt EHR technology • Disseminate information

3. Draft Timeline & Key Milestones

Draft Milestones	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Achieve in One Year • Adopt a vision for Minnesota e-Health and preliminary Recommendations for Action including the roles for state government and partners • Submit the legislative report • Identify issues needing legislative action											
Goal 1: Inform Clinical Practice 1. Plan and design system for master client index. 2. Define targeted incentives that get buy-in and promote interoperability. 3. Assess the current use and adoption readiness for health information technology. **Goal 2: Interconnect Clinicians** 1. Plan and design system for master client index. 2. Define data and information for electronic exchange. 3. Interconnect with other sources of existing, relevant data.											

Draft Milestones	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Goal 3: Personalize Care 1. Develop principles for consumer rights. 2. Address privacy and security concerns. 3. Educate and inform consumers about opportunities and benefits of health information technology. **Goal 4: Improve Population/Public Health** 1. Adopt Standards and data and technical structure. 2. Expand use of local population data to support good policy development, decision making, and planning. 3. Establish a governance for public and private data exchange. **Overarching Recommendations** a. Develop principles for financing and funding health information technology. b. Establish governance											

Draft Milestones	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
structure for sharing data. c. Implement ongoing communications / education programs. d. Adopt data and interoperability standards. e. Establish policies and practices to ensure protection of confidentiality and security. f. Endorse MDH's continued leadership role in guiding e-Health development.											
Achieve in 5 Years • Establish working community models in urban and rural areas for RHIO/LHII											
Achieve in 10 Years • **Goal 1:** 90% of Minnesota Clinics, Hospitals, Long Term Care & Public Health using electronic Health Records (EHR)		**15%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**		
• **Goal 2:** Interconnect 90% of providers and facilities from Goal #1 as part of a RHIO/LHII			**15%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**	**80%**	**90%**
• **Goal 3:** Consumers have electronic access to				**5%**	**15%**	**30%**	**40%**	**50%**	**65%**	**80%**	**90%**

Draft Milestones	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
personalized information and knowledge											
• **Goal 4:** Population Health MN-PHIN is implemented				**5%**	**15%**	**30%**	**40%**	**50%**	**65%**	**80%**	**90%**

Attachment D:
Glossary of Selected Terms*

Computerized Provider Order Entry (CPOE) - A computer application that allows a physician's orders for diagnostic and treatment services (such as medications, laboratory, and other tests) to be entered electronically instead of being recorded on order sheets or prescription pads. The computer compares the order against standards for dosing, checks for allergies or interactions with other medications, and warns the physician about potential problems.

Consolidated Health Informatics (CHI) Initiative - One of the 24 Presidential e-Government initiatives with the goal of adopting vocabulary and messaging standards to facilitate communication of clinical information across the federal health enterprise. CHI now falls under FHA.

Decision-Support System (DSS) - Computer tools or applications to assist physicians in clinical decisions by providing evidence-based knowledge in the context of patient-specific data. Examples include drug interaction alerts at the time medication is prescribed and reminders for specific guideline-based interventions during the care of patients with chronic disease. Information should be presented in a patient-centric view of individual care and also in a population or aggregate view to support population management and quality improvement.

Electronic Health Record (EHR) - A real-time patient health record with access to evidence-based decision support tools that can be used to aid clinicians in decision-making. The EHR can automate and streamline a clinician's workflow, ensuring that all clinical information is communicated. It can also prevent delays in response that result in gaps in care. The EHR can also support the collection of data for uses other than clinical care, such as billing, quality management, outcome reporting, and public health disease surveillance and reporting.

Electronic Prescribing (eRx) - A type of computer technology whereby physicians use handheld or personal computer devices to review drug and formulary coverage and to transmit prescriptions to a printer or to a local pharmacy. E-prescribing software can be integrated into existing clinical information systems to allow physician access to patient-specific information to screen for drug interactions and allergies.

Enterprise Architecture - A strategic resource that aligns business and technology, leverages shared assets, builds internal and external partnerships, and optimizes the value of information technology services.

Federal Health Architecture (FHA) - A collaborative body composed of several federal departments and agencies, including the Department of Health and Human Services (HHS), the Department of Homeland Security (DHS), the Department of Veterans Affairs (VA), the Environmental Protection Agency (EPA), the United States Department of Agriculture (USDA), the Department of Defense (DoD), and the Department of Energy (DOE). FHA provides a framework for linking health business processes to technology solutions and standards, and for demonstrating how these solutions achieve improved health performance outcomes.

Health Information Technology (HIT) - The application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of healthcare information, data, and knowledge for communication and decision making.
Personal Health Record (PHR) - An electronic application through which individuals can maintain and manage their health information (and that of others for whom they are authorized) in a private, secure, and confidential environment.

Personal Health Record (PHR) – An electronic application through which individuals can maintain and manage their health information (and that of others for whom they are authorized) in a private, secure, and confidential environment.

* Adapted from http://www.os.dhhs.gov/healthit/glossary.html