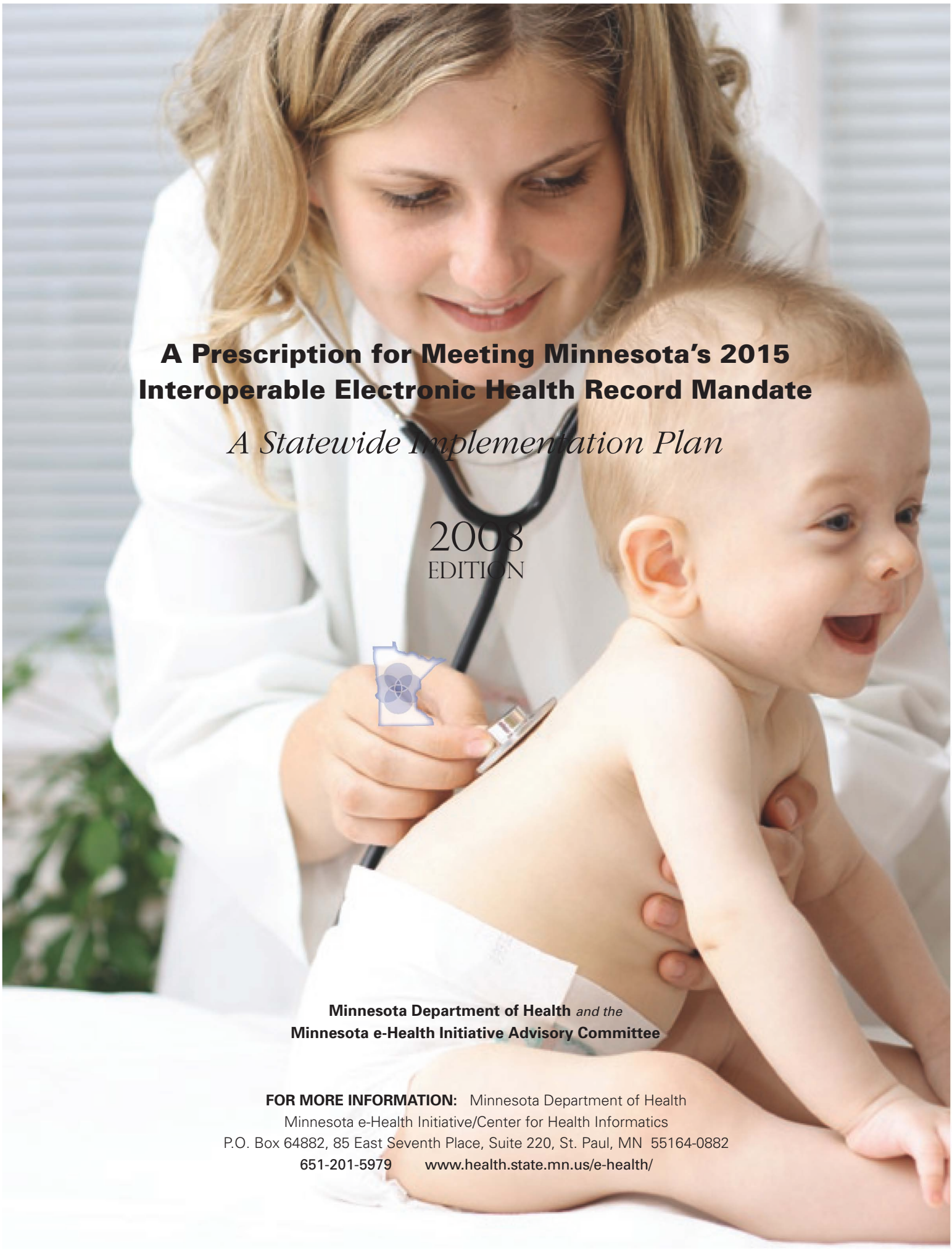

A Prescription for Meeting Minnesota's 2015 Interoperable Electronic Health Record Mandate

A Statewide Implementation Plan

2008
EDITION

Minnesota Department of Health *and the*
Minnesota e-Health Initiative Advisory Committee

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Acknowledgements

The Minnesota Department of Health thanks the many members of the Minnesota e-Health Initiative for their ideas, their expertise and their time in developing this statewide implementation plan for interoperable EHRs.

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PART IV

APPENDICES

GUIDES

Minnesota's Mandate for Interoperable EHRs by 2015

Minnesota Statutes 2007, Section 62J.495

"By January 1, 2015, all hospitals and health care providers must have in place an interoperable electronic health records system within their hospital system or clinical practice setting. The commissioner of health, in consultation with the [Minnesota e-Health Initiative] Advisory Committee, shall develop a statewide plan to meet this goal, including uniform standards to be used for the interoperable system for sharing and synchronizing patient data across systems. The standards must be compatible with federal efforts. The uniform standards must be developed by January 1, 2009..."

Definitions

Since a variety of terms are used to describe the use of electronic health records and other health information technologies, this report will use the broadest of those terms: *e-health*. As used in this report, e-health encompasses all types of health information technologies (including interoperable electronic health records, e-prescribing tools, telehealth, etc.) and electronic health information exchange (eHIE), and includes all settings in which health services are provided.

The term **"interoperable electronic health records system"** as used in the mandate is also defined broadly as including:

- Interoperable electronic health records (EHRs), including tools for e-prescribing, managing lab results and providing timely clinical decision support.
- Tools for enabling secure health information exchange across health care organizations.
- Personal health records (PHRs).
- Tools for aggregate analysis of clinical data needed to generate population health reports.

EHRs depend upon data from multiple sources such as laboratory and pharmacy information systems. These and other information systems will need to exchange information electronically with EHRs, both to ensure quality of care, and to meet their respective business needs into the future.

A Prescription for Meeting Minnesota's 2015 Interoperable Electronic Health Record Mandate

A Statewide Implementation Plan

2008 EDITION

Executive Summary

The adoption and effective use of electronic health information systems can play a significant role in transforming the health care system and in supporting healthier communities. New tools are bringing the power of information systems to the practice of health care and public health, improving both quality and safety.

Governor Pawlenty and the Minnesota Legislature recognize that more effective use of information—including the timely exchange of information—is needed to improve the quality and safety of care, as well as to help control costs.

Several significant statutory changes and mandates were enacted in the 2007 and 2008 Legislative sessions (see Minnesota Statutes, Section 62J.495-497):

- A mandate that all hospitals and health care providers have an interoperable electronic health record (EHR) system by 2015.
- A mandate that all EHRs acquired by health care providers must be certified by the national Certification Commission for Healthcare Information Technology (CCHIT) or its successor, if a certified EHR product for the provider's particular setting is available.
- A requirement to develop a statewide implementation plan to meet the 2015 interoperable EHR mandate.
- The requirement to establish uniform health data standards by 2009.
- A revision and recodification of the Minnesota Health Records Act (Minnesota Statutes 2007, Section 144.291-298) to update consent requirements for an electronic age.
- A requirement that all health care providers and payers establish and use an e-prescribing system by January 1, 2011.

These mandates apply to all providers who deliver health services in the state of Minnesota, as well as the settings in which they practice, ensuring that the benefits of e-health apply across the entire continuum of care.

These mandates apply to all providers who deliver health services in the state of Minnesota, as well as the settings in which they practice, ensuring that the benefits of e-health apply across the entire continuum of care.

This statewide implementation plan has several purposes:

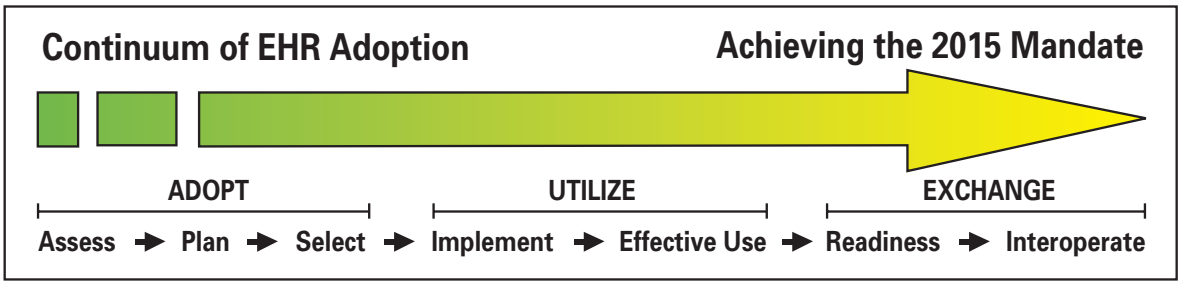
- To accelerate the adoption and effective use of interoperable EHRs in order to improve health and health care in Minnesota.
- To identify a model for achieving the 2015 interoperable EHR mandate.
- To provide practical guidance to providers and provider organizations on what they can do *now* to overcome barriers and accelerate progress in adopting interoperable EHRs. This includes ensuring their workforce has the skills necessary to use these technologies effectively.
- To provide links to tested planning and implementation tools.

The Minnesota e-Health Initiative has identified seven major steps in adopting, implementing and effectively using an interoperable EHR (see Figure 1). The seven steps can, in turn, be grouped into three major categories:

- **Adopt,** which includes the sequential steps of Assess, Plan and Select.
- **Utilize,** which involves implementing an EHR product and learning how to use it effectively.
- **Exchange,** which includes readiness to exchange electronically with other partners, and implementing regular, ongoing exchange between interoperable EHR systems.

Every health provider organization in Minnesota needs to be making progress through these seven steps of EHR adoption through effective use and exchange.

Figure 1. Minnesota Model for Adopting Interoperable Electronic Health Records



Guide 1, *Addressing Common Barriers to EHR Adoption—A Practical Guide,* found at the end of the full plan contains pragmatic guidance and resources for organizations to address some of the most commonly perceived barriers to EHR implementation. It is organized by the seven steps of the adoption continuum seen in Figure 1.

Guide 2, *Standards Recommended for Use in Minnesota,* identifies those health data standards that are recommended by the Minnesota e-Health Initiative for use by all health care providers and health care organizations. Implementing use of

these standards statewide is critical to achieving timely and accurate exchange of health information. As with the 2015 interoperable EHR mandate, these standards apply to all health care providers and their organizations.

New versions of this plan will be released periodically to both keep it current, and include emerging best practices that reflect statewide progress along the adoption continuum. The latest version of the statewide implementation plan can be found at: www.health.state.mn.us/ehealth.

Key messages pertaining to this plan and the 2015 interoperable EHR mandate are:

- All hospitals and health care providers are part of meeting the Minnesota e-Health vision and implementing the 2015 interoperable EHR mandate. For any setting, the concrete guidance in this plan can help organizations understand what they can and need to do *today*.
- Wherever a hospital or health care provider is on the adoption continuum, the goal remains the same: moving to the right from Adoption through Effective Use, to Interoperability by 2015.
- Those who have not yet begun to plan or select an interoperable EHR system must begin immediately, since it typically takes at least three years for a successful clinic implementation and longer for a hospital.
- There are many business and quality improvement reasons to implement an EHR now; the Minnesota mandate is simply one more.
- No organization has to do this alone—lessons learned from others are available through health professional associations and EHR/HIT consultants based in Minnesota and elsewhere.
- Some settings, such as long term care and public health which are highlighted in this plan, face particular challenges including publicly allocated funding and limited, if any, EHR products.

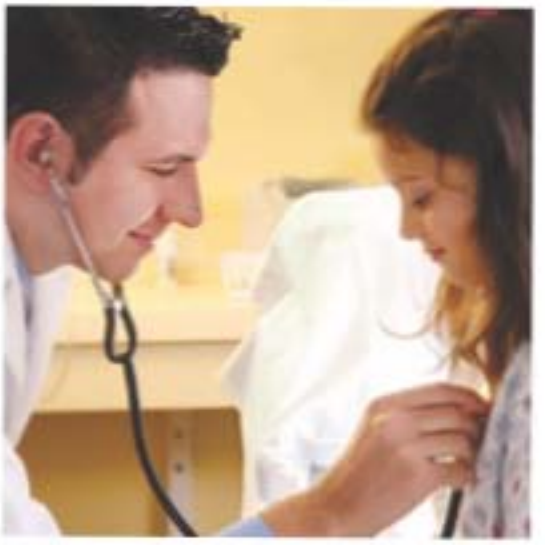
- Use this plan to help your board, organization or association members understand how they fit into the broader context of health care reform and health information technology.
- This is a shared vision and a shared responsibility across all individuals and organizations working to improve the health and health care of Minnesotans.

Who is this plan for?

- *All health professionals and organizations directly impacted by the mandate.*
- *Their professional and trade associations, which can help disseminate best practices for the adoption and effective use of EHRs.*
- *Policy makers interested in e-health and its contribution to health care transformation.*
- *Consumers interested in how health information technology is impacting the health and care of individuals and communities in Minnesota.*

The plan ends with recommendations to advance progress toward achieving the 2015 interoperable EHR mandate. The recommendations are for:

- State policymakers
- Health care plans and purchasers
- Health care providers and organizations
- Professional and trade associations
- Settings of special interest for this 2008 statewide implementation plan
    - Long term care
    - Public health



"We are fortunate in Minnesota that so many people and organizations are willing to work together to implement electronic health records in a thoughtful, coordinated way.

The collective energy and wisdom of so many is helping to ensure we see real improvements in the quality and safety of care, and in the health of our families and communities."

SANNE MAGNAN, MD,
MINNESOTA COMMISSIONER OF HEALTH,
MINNESOTA 2008 E-HEALTH
SUMMIT PRESS RELEASE

In Part I

e-Health and the Transformation of Health and Health Care

Part I

e-Health and the Transformation of Health and Health Care

INTRODUCTION

Like many states, Minnesota is working to "improve [the] affordability, access and quality of health care, and the health status of Minnesotans."[1] Among the overall strategies for achieving these ambitious goals is the adoption and effective use of interoperable electronic health record systems and other health information technologies.

The adoption and effective use of these systems and technologies can play a significant role in transforming the health care system and in supporting healthier communities. Electronic health records (EHRs) are rapidly evolving and becoming more standardized to better meet the needs of clinicians and consumers. Tools such as computer-assisted physician order entry, e-prescribing and clinical decision support systems are bringing the power of information technology to the practice of medicine and public health, improving both quality and safety.

Governor Pawlenty and the Minnesota Legislature recognize the critical role e-health can play in supporting health care transformation. They understand that more effective use of information—including the timely exchange of information—will be needed to improve the quality and safety of care, access, and to help control costs.

1 From the charge to the Minnesota Health Care Transformation Task Force, 2007.

Several significant statutory changes and mandates were enacted in the 2007 and 2008 legislative sessions:

- A mandate that all hospitals and health care providers have interoperable EHRs by 2015.
- A mandate that all EHRs acquired by health care providers must be certified by the national Certification Commission for Healthcare Information Technology (CCHIT) or its successor, if a certified EHR product for the provider's particular setting is available.
- A requirement to develop a statewide plan to meet the 2015 interoperable EHR mandate.
- A requirement to establish uniform health data standards by 2009.
- A revision and recodification of the Minnesota Health Records Act to update consent requirements for an electronic age.
- A requirement that all health care providers and payers establish and use an e-prescribing system by January 1, 2011.

MINNESOTA'S 2015 INTEROPERABLE EHR MANDATE

The interoperable EHR mandate requires all hospitals and health care providers to have "an interoperable electronic health records system within their hospital system or clinical practice setting" by the year 2015 (Minnesota Statutes, section 62J.495).

The mandate applies to all providers who deliver health services in the state of Minnesota (see Appendix B). This mandate ensures that the benefits of e-health apply across the entire continuum of care, from cradle to grave, from primary to specialty care, public to private, and from traditional to alternative practitioners.

There is a compelling need for all *providers to be making progress towards meeting the mandate, starting* now *if they haven't yet begun,* because:

- It can take years to plan and implement an interoperable EHR system succesfully.
- The sooner EHRs are implemented and used effectively, the sooner the expected improvements in quality and safety can occur for providers and patients.
- Appropriate EHR products may not yet exist for every provider type/ care delivery setting, which means those providers must begin by defining their business and clinical requirements for an EHR.
- The value of interoperable EHRs increases exponentially as they are adopted by increasing numbers of providers across the continuum of care. In other words, the value of an interoperable EHR for any given provider depends in part on other providers in the community also having an interoperable EHR system.

EHRs depend upon data from multiple sources such as laboratory and pharmacy information systems. These and other information systems will

need to exchange information electronically with EHRs, both to ensure quality of care and to meet their respective business needs in the future.

STATEWIDE IMPLEMENTATION PLAN FOR MEETING THE 2015 INTEROPERABLE EHR MANDATE

This statewide implementation plan has several purposes:

- To accelerate adoption and effective use of interoperable EHR systems in order to improve health and health care in Minnesota.
- To identify a model for achieving the 2015 interoperable EHR mandate.
- To provide practical guidance to providers and provider organizations on what they can do *now* to overcome barriers and accelerate progress in adopting interoperable EHRs. This includes ensuring their workforce has the skills necessary to use these technologies effectively.
- To provide links to tested planning and implementation tools.

This statewide plan is collaborative in nature, providing concrete guidance on how sectors can work together to jointly ensure that safe, informed and quality health care can be practiced in all settings, large and small, so that all Minnesotans benefit from the transformation of health and health care.

Achieving the Minnesota e-health vision and the interoperable EHR mandate is a shared responsibility. This first version of the statewide plan provides a path for how we begin to carry out that shared responsibility in a coordinated, systematic and thoughtful way.

THE MINNESOTA E-HEALTH INITIATIVE

Developing and working to achieve this statewide plan is under the direction of the Minnesota e-Health Initiative. It is the primary mechanism for the health and health care community to gather and coordinate HIT-related activities in Minnesota. This public-private collaboration reflects the health community's strong commitment to pursue e-health goals in a coordinated, systematic, thoughtful and focused way.

The vision of the Minnesota e-Health Initiative is to

"… accelerate the adoption and effective use of health information technology to improve health care quality, increase patient safety, reduce health care costs and enable individuals and communities to make the best possible health decisions."

Established in 2004, the Initiative encompasses four overlapping domains:

- Clinical
- Consumer
- Public Health
- Policy/Research

The area of overlap relies on exchange of information, a major contribution of e-health.

The Initiative is guided by a 26-member public-private advisory committee representing consumers, the health care delivery community, purchasers, public health, government and others[2]. Dozens of other volunteers serve on workgroups, including:

- **Statewide Implementation Plan:** To develop an actionable plan for accelerating adoption of EHRs and related HIT, in particular to meet the 2015 interoperable EHR mandate.
- **Standards:** To build on national efforts for establishing standards, including data standards to ensure interoperability and functional standards for EHRs.
- **Privacy and Security:** To ensure that use of HIT incorporates and supports the privacy provisions of the Minnesota Health Records Act; to participate in the national Health Information Security and Privacy Collaborative (HISPC) to address inter-state exchange issues.
- **Population Health and Public Health Information Systems:** To identify how interoperable EHRs can improve the quality of care and the health of populations and communities; to ensure public health information systems are modernized to be more standards-based and interoperable.
- **Communications, Education and Collaboration:** To bring professional and trade associations, academic institutions and others together to both inform providers about the 2015 interoperable EHR mandate, and to ensure that the current and future workforce has the knowledge and skills needed to use HIT effectively.

Dozens of health care and government leaders offer their time to the Minnesota e-Health Initiative. The Minnesota Department of Health's Center for Health Informatics provides staffing for this effort.

The Commissioner of Health and the Minnesota Department of Health (MDH) have primary responsibility for ensuring that e-Health priorities and activities lead to improved health outcomes for Minnesotans, and that legislative mandates are achieved. The roles for MDH include:

- Convene, assemble and support industry experts in making sound policy recommendations.
- Assess and monitor progress toward achieving the mandates and outcomes desired by the Legislature and the Governor across sectors and across the state.
- Ensure the adoption of interoperable EHRs is leading to real improvements in quality and in population health.
- Share informational, financial, best practices, and other resources to support progress toward statewide e-health goals.

[2] See www.health.state.mn.us/ehealth for the current membership and the sectors and organizations they represent.

BACKGROUND ON THE MANDATE AND MINNESOTA E-HEALTH: THE ROLE OF HEALTH INFORMATION TECHNOLOGY IN HEALTH CARE TRANSFORMATION

It is a national priority to determine how to achieve better health outcomes for the population while controlling the unsustainable growth in health care costs. It is widely believed that the adoption and effective use of health information technology will contribute to comprehensive solutions to these complex problems.

Expected benefits of e-health:

- **Improved quality and safety, reduced costs, and improved population health.**
- **Empowered individuals who effectively use information to better manage their health and to participate in their health care.**

The health care industry is the last major sector of the economy to embrace information technology to improve efficiency and achieve better outcomes. While today's diagnostic and treatment technologies border on the miraculous, patient information has, until recently, been maintained in paper charts and transmitted by fax and postal mail.

However, an interoperable EHR system is about much more than simply capturing and documenting information, and more than an electronic version of the old paper chart. Some of the benefits of an interoperable EHR are detailed in the section below.

Value of Interoperable EHRs—Quality of Care and Patient Safety

Effective use of the growing array of EHRs and other health information technologies in health care enables clinicians to:

- Improve quality and safety through more rapid access to complete patient information, practice guidelines and clinical alerts/prompts.
- Ensure a newly prescribed medication does not conflict with current medications.
- Avoid duplicate tests because previous results can be transmitted electronically to where the patient is being seen today.
- Readily access clinical guidelines and other evidence-based information relevant to the patient's current condition.
- Avoid medication and other errors due to illegible or misinterpreted handwriting.
- Improve continuity of care by being able to exchange information with their patients' other providers. Synchronizing information as a patient moves between a clinic, hospital and long term care facility.
- Receive reminders about preventive services that a patient should receive.
- Receive alerts when a prescribed action may be contraindicated.
- Improve clinical workflow processes to achieve greater efficiencies while improving outcomes.

- Access a patient's record from home when receiving a call at night.
- Always have the patient's record available at the point of care.
- Support delivery of telehealth and telemedicine services, enabling patient access to care otherwise unavailable in their community.

Value of Interoperable EHRs—Administrative Costs

EHR systems can reduce administrative costs through:

- Decreasing the need to pull, manage, transfer and store paper records.
- Enhanced revenue capture and fewer claim denials.
- More standardized data that can be readily used for multiple purposes ("enter once, use many times") versus transcribed information which must be manually abstracted.
- Directly recording clinical information into an electronic health record, thus reducing or eliminating transcription services.
- Experiencing fewer pharmacy call-backs.
- Contributing to lower malpractice premiums.

Value of Interoperable EHRs—Other Benefits

The value of EHRs extends beyond that which can be easily measured in financial terms, including:

- Improved disease surveillance and more rapid detection of community health threats.
- Increased patient satisfaction.
- Enhanced ability to recruit and retain staff.
- Retrieving and graphing patient biometric data, such as cholesterol or blood pressure levels, over time.

Value of Interoperable EHRs—Consumer Benefits

EHRs bring opportunities for consumers to be more involved in managing their health.

- Enabling patients to access their health information online, including links to tailored prevention resources and other information.
- Supporting access to telehealth services by enabling clinicians to interact with patients and access their records at a distance.
- If a clinic has several locations, the patient's health record will always be available at whichever clinic site the patient visits. This also eliminates repeated completion of lengthy health history forms in the waiting room.
- Increasingly, clinics are able to electronically and securely send

relevant health information to another provider. By not repeating tests and procedures patients and provider save time and money.

If the benefits of e-health are so compelling, why is this shift to EHRs not further along? The reasons, of course, are many and complex, ranging from the lack of health data standards to finances to the culture of medical practice. Also, the e-health transformation is not something that can be done by organizations in isolation; it requires collaboration at the community, regional, state and national levels. Some of the challenges with EHR implementation can be seen in Guide 1, *"Addressing Common Barriers to EHR Adoption – A Practical Guide,"* at the end of this plan.

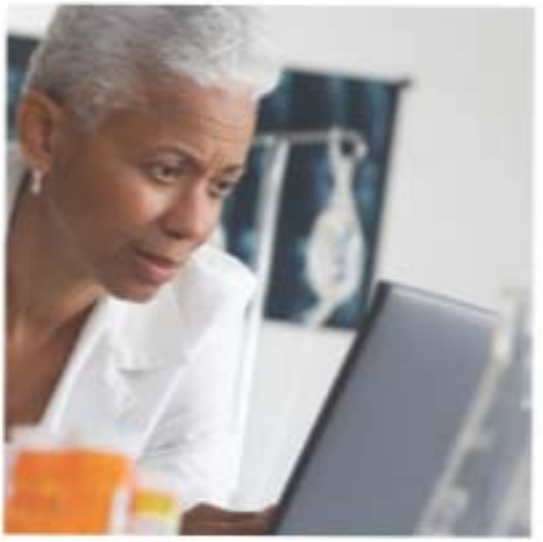
NATIONAL AND FEDERAL ACTIVITIES THAT SUPPORT THE MANDATE

Considerable public-private collaboration is also occurring at the national level between various agencies of the federal government, national trade and professional associations, EHR/HIT vendors and others.

Coordinating these efforts is the Office of the National Coordinator for Health Information Technology (ONC). The Office is responsible for bringing stakeholders together to address the major components needed to achieve the national goal of "… most Americans having an electronic health record…" by 2014 (President Bush, Remarks by the President at American Association of Community Colleges Annual Convention, Minneapolis Convention Center, Minneapolis, April 2004).

National activities are focused on the four areas most critical to resolve for e-health to contribute to a transformation in health care:

- **Certifying Electronic Health Records:** The Certification Commission for Healthcare Information Technology (CCHIT) certifies EHR software based on objective criteria (www.cchit.org).
- **Harmonizing Health Data Standards:** The Health Information Technology Standards Panel (HITSP) is working to ensure interoperability across EHR and related HIT products by recommending specific standards (www.hitsp.org).
- **Prototyping Health Information Exchange (HIE) Models:** The Nationwide Health Information Network (NHIN) program is utilizing several contracts to develop and test HIE prototypes and models (www.hhs.gov/healthit/healthnetwork/background).
- **Identifying and Addressing Privacy and Security:** The Health Information Security and Privacy Collaborative (HISPC) is working with 41 states and territories to uniformly address privacy and security issues (www.rti.org/hispc).



Governor Pawlenty has been a consistent supporter of electronic health records.

"Given the life-and-death implications, one would think health care would be more technologically advanced.

Minnesota provides shining examples of what a modernized system can be, and through hard work, it can be even better. The citizens of Minnesota deserve nothing less."

GOVERNOR TIM PAWLENTY

MINNESOTA 2008 E-HEALTH

SUMMIT PRESS RELEASE

In Part II

Minnesota's Approach to Achieving the 2015 Interoperable EHR Mandate

Part II

Minnesota's Approach to Achieving the 2015 EHR Mandate

MINNESOTA MODEL FOR ADOPTING INTEROPERABLE EHRs

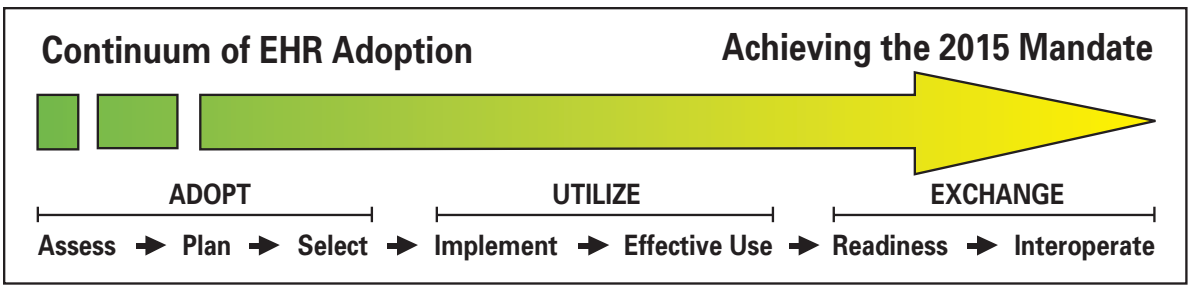
Something as complex, expensive and transformational as adopting an interoperable EHR is clearly not something that can be achieved in a few steps or a few months. The path from defining what is needed in an EHR system to getting to the stage where it can electronically exchange information with another organization is long, complex and—if done right—transformational. The planning for such an endeavor itself can be quite transformational for an organization, giving it the opportunity to re-examine its business processes, workflows and "ways of doing business"—all of which can be streamlined and made more effective with proper planning and implementation of an EHR system.

The Minnesota e-Health Initiative has identified seven major steps in adopting, implementing and using an interoperable EHR system (see Figure 1). The seven steps can, in turn, be grouped into three major categories:

- **Adopt,** which includes the sequential steps of Assess, Plan and Select.
- **Utilize,** which involves implementing an EHR product and learning how to use it effectively.
- **Exchange,** which includes readiness to exchange with other partners as well as interoperating electronically.

Every health care provider in Minnesota needs to be making progress through these seven steps. Regardless of where an organization is on the continuum, it must continue moving further to the right, toward effective use and interoperability.

Figure 1. Minnesota Model for Adopting Interoperable Electronic Health Records



All organizations should determine where they are on this continuum. Guide 1 at the end of this plan provides practical guidance on ways to address barriers at each step.

DEFINING THE SEVEN STEPS OF THE MODEL

While the continuum of EHR adoption is more iterative and less linear than the graphic suggests, each of the steps are necessary for a successful implementation and a positive return on investment.

1. Assess

The assessment phase is foundational to every subsequent step in the continuum. It helps answer the questions: *Why? Are we ready?* and *How do we involve our staff?* It is here that an organization can begin to identify—or at least predict—the barriers it might encounter.

It may be tempting to skip the assessment and planning steps in favor of making a quick decision on an EHR product and getting the implementation underway. It is critical that an organization understand in concrete terms why it is moving toward an interoperable EHR system, how it will be financed on an ongoing basis (health information technology is not just a one-time acquisition cost), the status of EHR adoption among other provider organizations in the community, and staff readiness.

2. Plan

Effective planning is perhaps the most critical element in successful EHR implementation. As with assessment, skipping this step for the sake of expediency not only threatens the implementation project but often the operations of an entire organization. The planning phase for an organization needs to address questions such as:

- Which features in an EHR are most important to our organization?
- How do we engage our staff in defining what the system needs to do for us?
- What reports (quality improvement, patient registry, etc.) are most important to us?
- Do we want the EHR to interface with or replace our practice management system or other information system(s)?
- Where are the inefficiencies in our current processes, and how can we use implementation of the EHR as a way to streamline them?
- What is a reasonable timeline for each step and implementation process?
- Do we convert our paper charts? Do we manually enter any information from a certain time period or for any categories of patients?
- Who will train our staff?
- How will be the up-front acquisition, implementation and training costs be covered? How about the on-going maintenance costs?

Because of the complexity and criticality of this step, a trusted and knowledgeable consultant can provide invaluable guidance to an organization and its planning team. The consultant can not only help avoid costly mistakes, but help ensure that the decisions and purchases made are aligned with state and national efforts around health data standards and interoperability.

3. Select

Choosing an EHR system from the range of products in the marketplace can be daunting. Selection involves having identified ahead of time—in clear, detailed and unambiguous terms—what the organization is looking for in an EHR. This is necessary both for preparing a Request for Proposals, as well as in evaluating demonstrations of the products. This step also involves the complex and often nuanced process of negotiating a contract with a selected vendor.

The Institute of Medicine identified the following as "Core Clinical Functions" of an EHR[3]:

- Health information and data
- Results management
- Orders management
- Decision support
- Electronic communications and connectivity
- Patient support
- Administrative processes
- Reporting and population health management

[3] Adapted from *Key Capabilities of an Electronic Health Record System,* Institute of Medicine, Committee on Data Standards for Patient Safety, 2003.

Table 1 below identifies example clinical functions in EHR systems based on the eight core functions of the Institute of Medicine.

Table 1. Example Clinical Functions in Interoperable EHR Systems

Core Clinical Functions	
Health Information and Data Patient demographic information Patient problem lists Patient medication lists Clinical notes Minimum Data Set Notes include medical history and follow-up notes	**Electronic Communications and Connectivity** Electronic health information exchange (eHIE) Access to shared patient histories Continuity of Care Document (CCD)
Order Entry Management Computerized orders for prescription Computerized orders for labs Computerized orders for radiology Orders sent electronically for prescriptions Orders sent electronically for labs Orders sent electronically for radiology	**Patient Support** Patient portal to EHR ("tethered Personal Health Record") E-mail communication with clinicians **Administrative Processes** Scheduling/appointments Billing Inventory
Results Management Viewing lab results Viewing imaging results Electronic images are returned	**Reporting and Population Health Management** Disease reports Disease registries Quality measurement and improvement reports Patient safety Immunization information exchange
Decision Support Warnings of drug interactions or contraindications are returned Out of range lab levels are highlighted Reminders for guideline-based interventions and screenings Access to online clinical guidelines	

Both planning efforts and vendor request for proposals need to specify in detail the organization's needs, in specific and concrete terms, in each of the areas listed above and in Table 1, plus any other areas of interest to the organization.

Note: The current EHR marketplace is not responding evenly to the needs of various care delivery settings. While hospitals and ambulatory

care have dozens of products to choose from, settings such as specialties and sub-specialties, long term care, public health and hospice have many fewer, if any, viable EHR products available.

For settings without viable EHR products, especially if Certification Commission for Healthcare Information Technology (CCHIT) certification is not yet on the horizon for a particular setting, or for those with "home grown applications" that are not realistically CCHIT-certifiable, an organization can:

- Monitor the health data standards recommended/required for use in Minnesota and nationally (www.health.state.mn.us/ehealth), evaluate to what extent the current application(s) incorporates those standards of most relevance to the setting, and work with a vendor (or IT department if internally developed) to adopt those standards.
- Evaluate whether it is cost-effective to migrate to a different application, one that is certified nationally and so more likely to have a longer life span within the industry and more likely to be kept current. Included in the evaluation should be the comparative costs of upgrading an existing application versus acquiring and installing a new one, including the data conversion costs that are likely to occur in both scenarios.

Also, see page G1-13 of the Barriers and Prescription for Action in Guide 1 at the end of this plan.

Note also that the national CCHIT process is ongoing and evolving. Currently, certification must be renewed every three years, and criteria are added on an ongoing basis. A vendor must be committed to seeking certification for new products and releases.

The only EHR products that should be selected for use in Minnesota are ones certified by the national Certification Commission for Healthcare Information Technology (CCHIT) or a comparable national certification process[4]. This certification means that the EHR product meets national standards for functionality and data exchange, based on criteria at the time it was certified. If a product is not certified now, providers should ask the vendor how (or if) they are participating in CCHIT or any other national certification process. Purchasing a product with no hope or plan of being certified will almost certainly cost a provider more in the long run, if not also in the short run. If the prospective product is certified now, providers should determine whether the vendor has an ongoing commitment to staying certified.

[4] *See Minnesota Statutes 2008, Section 62J.495*

4. Implement

Implement may sound like a single step, but in reality it is a series of steps leading up to a "go live" date. It involves implementing various interrelated work plans (staff training, redesigning work processes, installing terminals and other hardware, testing and retesting the customized

portions of EHR software, etc.), continually refining and adjusting those workplans as issues crop up. Very importantly, it includes ensuring that staff is trained, being both psychologically and functionally ready for the transition. Finally, it involves "going live," often uncovering and fixing issues that were not predicted.

5. Effective Use

Here begins the payoff for the work to date. With effective planning, selection and implementation, the return on investment will become apparent at this stage.

If, however, the implementation is basically automating old paper processes (many of which may have been inefficient), the return on investment/value on investment will elude the organization. Worse, the staff will likely be frustrated by what they see as an encumbrance and obstacle to their work, one that detracts from their effectiveness as clinicians or support staff.

Effective use will be defined in different ways across different organizations but should have two main components:

1. An adequately trained staff that can make effective use of the technology; and
2. The tools and processes that make up an optimally functional, integrated EHR system, such as:
   - e-prescribing tools.
   - Clinical Decision Support Systems to provide expert guidance based on patient-specific history.
   - Consolidated medication history to support both appropriate prescriptions and medication reconciliation.
   - Reminders about preventive services a patient is due to receive.
   - Alerts for when an order may be contraindicated or a newly prescribed medication is in conflict with existing medications.
   - Ready access to clinical guidelines and other evidence-based information most relevant to a patient's current condition.
   - The ability to easily search for and rearrange patient information to support appropriate diagnostic and treatment decisions.
   - Direct dictation within an electronic health record.
   - Patient portal or other online access to their health information, including links to tailored prevention and other information resources.
   - Physician access to a patient's record from another facility, home or elsewhere.
   - Synchronizing information as a patient moves between a clinic,

hospital and long term care facility.

- Automated graphing and displaying of a person's key biometric data, such as cholesterol or blood pressure levels, over time.
- Quality measurement and population health reports that impact pay for performance and reimbursement levels.

6. Readiness for Electronic Exchange

Readiness to exchange health records electronically consists of three related factors:

- The capacity of the EHR system (or other technology) to exchange information with another system.
- The use of health data standards during the collection and recording of patient information.
- Having the policies and data sharing agreements in place between organizational trading partners.

Vendors are being driven to rapidly move away from proprietary methods for recording and coding information toward adopting national standards—a prerequisite for meaningful exchange of health records between systems.

It is very important to note that achieving electronic health information exchange is much more than a technical issue; there are significant policy dimensions as well. These include forging inter-organizational data sharing agreements, crafting inter-organizational policies around issues such as consent, and collaboratively developing detailed implementation guides to ensure that standards and exchange protocols are implemented consistently across organizations.

See Guide 2 at the end of this Plan for more specific information on standards, included those recommended for use in Minnesota.

7. Interoperate—Electronic Exchange

Electronic exchange of health records is the "holy grail" of e-health. Much of the benefit of improving the continuity, quality and safety of care depends upon the ability to securely and meaningfully exchange health records from point to point in a timely manner. This is the meaning of the term *interoperability* as used in this plan.

Table 2 identifies initial priority exchange transactions for Minnesota—priorities which would benefit from a collaborative approach to implementation. Standards for these transactions are being identified by the Minnesota e-Health Initiative, and are based largely on national recommendations.

Table 2. Initial Priority Exchange Transactions for Minnesota

e-Prescribing and Medication Management
Laboratory Results Reporting
Immunization Data Exchange
Clinical Summaries
Disease Surveillance and Reporting

THE ROLE OF STANDARDS IN INTEROPERABILITY

Most of this plan has focused on the "EHR" part of the interoperable EHR mandate; this section addresses issues around interoperability and the role of standards.

It would be hard to over-estimate the importance of standards in exchanging health information. They are critical to achieving interoperability across disparate electronic health record systems, since many of these systems currently use proprietary methods of recording information (and many health care organizations customize them even further).

Establishing standards for transmitting health information (or more accurately narrowing the current list of over 2,100 standards to something that can be more readily adopted universally) is a complex undertaking. For instance, for e-prescribing and medication management alone, there are 48 different required standards, of which nine relate directly to e-prescribing (see Table 3). The remainder serve as "foundation" standards required for most exchanges, such as privacy, security and sending electronic messages.

Note: Standards continually evolve and become more refined over time. Even as standards such as those in Table 3 are approved, their successor versions are already being developed. *This is* not *a reason to hold off on acquiring an EHR, since there is no end point at which standards will be done!* Rather, it reflects a reality that information technology requires ongoing upgrades to stay current. Upgrades in use of standards should be part of a vendor's normal version release schedule. Having a certified EHR system helps to ensure that the system complies with national standards.

Considerable progress has been made in Minnesota since legislation enacted in the 2007 session required the establishment of standards by

January 2009. A standards workgroup of health care industry experts was convened under the Minnesota e-Health Initiative to identify health data standards for Minnesota in a way that could both contribute to and leverage the monumental and historic work going on nationally. By the time of this report, the workgroup made several recommendations that were subsequently approved by the Minnesota e-Health Initiative Advisory Committee and incorporated into law (see Guide 2 at the end of this document).

The current process for adopting and implementing standards in Minnesota includes:

- Identifying and analyzing existing standards.
- Evaluating and classifying standards in terms of their applicability and value to Minnesota.
- Validating proposed standards with experts within Minnesota who would be impacted by the recommended standard.
- Making formal recommendations to the Commissioner of Health through the Minnesota e-Health Initiative Advisory Committee.
- Monitoring and providing feedback to national standards development and harmonization efforts.
- Incorporating standards into Minnesota state law.

See Guide 2 on page G2-7 for a graphic depicting Minnesota's Approach for Recommending e-Health Standards.

In the future, the process will likely include mechanisms for the community to work collaboratively to ensure that detailed implementation guides and other necessary resources are identified or developed to ensure uniform implementation of the standard(s).

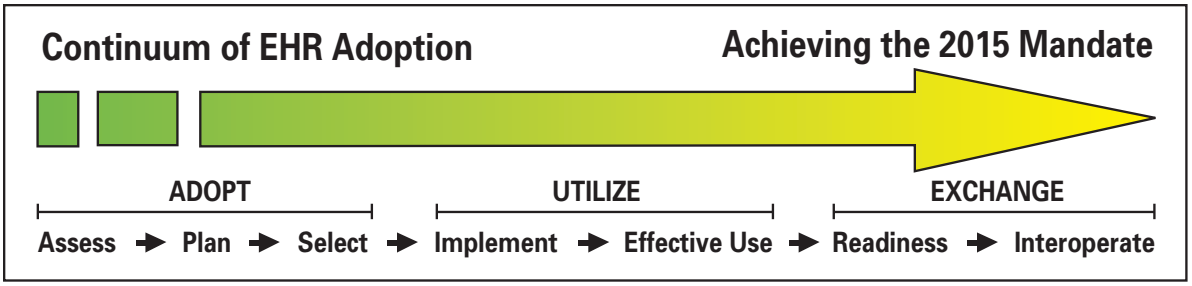
Table 3. The Complexity of Health Standards: The Example of e-Prescribing

e-Prescribing Activity	Relevant Standard
Eligibility inquiries and responses between prescribers and plan sponsors	Accredited Standards Committee (ASC) X12N 270/271
For eligibility and benefits inquiries and responses between dispensers and plan sponsors	NCPDP Telecommunication Standard Specification, Version 5.1
For transactions between prescribers and dispensers	NCPDP Script 8.1
Exchange of medication history	NCPDP Script 8.1
Formulary & benefit information	NCPDP formulary and benefits standards 1.0
Ability to send, store, and receive coded medication information	Federal Medication Terminologies (FMT): NDC, RxNorm, UNII. SNOMED-CT HITSP C32 v.2.0
Send text or coded allergy information with new electronic prescriptions to pharmacy (directly), PBM (directly), or via intermediary network (e.g. SureScripts, RxHub)	NCPDP Script 8.1 (NEWRX)
Receive medication fulfillment history	NCPDP Script 8.12 (RXFILL)
Send electronic prescription to pharmacy, including structured and coded dispensing instructions.	NCPDP Script 10.5

More detailed information is available at: www.health.state.mn.us/ehealth/standards.

COMMON BARRIERS AND PRESCRIPTION FOR ACTION

A successful EHR implementation requires that barriers—real or perceived—be identified and addressed. Guide 1 at the end of this plan contains practical guidance for how to address some of the most commonly cited barriers to EHR implementation. It is organized by the seven steps of the adoption continuum discussed previously and shown below.



Note: There are more barriers described for the early Adoption steps than for those at

the end of the continuum. This is a consequence of there being more experience to date among Minnesota providers in the early stages of adoption. As the industry moves closer to interoperability, barriers in the Utilize and Exchange stages will undoubtedly emerge and will also need to be addressed collaboratively. Updated versions of Guide 1 on addressing barriers to adoption, as well as updates to this entire statewide plan, can be found at: www.health.state.mn.us/ehealth.

Prescription for Action found in Guide 1

Adopt (Assess – Plan – Select)

- Addressing barriers to getting started
- Addressing barriers related to start-up or on-going cost
- Addressing barriers related to clinical and administrative needs
- Addressing barriers related to data standards
- Addressing barriers related to privacy and security
- Addressing barriers related to staff skills
- Addressing barriers related to HIT support issues

Utilize (Implement and Effective Use)

- Addressing barriers related to implementation
- Addressing barriers related to effective use

Exchange (Readiness for Exchange and Interoperate)

- Addressing barriers related to readiness
- Addressing barriers related to interoperability

LESSONS FROM THE FIELD

The following are among the key lessons learned from organizations of all sizes implementing health information technology. Each of them highlights the extent to which this process is, as commonly noted, "more about sociology than technology."

- The process of transforming care to be "patient-centric and information-rich" is more about people, processes and policies than about technology.
- EHR adoption must be seen as a change management process across the organization.
- Providers and organizations must be willing to identify inefficient processes and to correct them in order for the EHR system to achieve the desired benefits.
- EHRs and other HIT will magnify both good and bad processes: good processes will get better; bad ones will get worse.

- EHRs only provide the tools to support people in performing processes and implementing policies that improve health and health care. They are not a panacea and are only as good as the people using them.

See Guide 1 at the end of this plan for additional lessons learned by projects funded through the 2006-2007 Minnesota e-Health grant program.

SETTINGS OF SPECIAL INTEREST IN THE 2008 STATEWIDE IMPLEMENTATION PLAN

The 2015 interoperable EHR mandate will be realized in a number of settings in which health care is delivered, including physician offices, hospitals, nursing homes/transitional care and many others. Assessments made by the 2007 e-Health Advisory Committee have identified two settings of special interest for this 2008 version of the statewide plan. These settings either present particular challenges in meeting the mandate, or provide special opportunities for action in support of achieving it. They are:

- Long term care
- Public health

Special Interest Area #1—Long Term Care

Long term care is a complex, highly varied and highly regulated industry. It has complex information management needs due to the many types of settings/services/licenses, as well as complex federal and state requirements. The information needs are different between the two major categories of long term care facilities: skilled nursing facilities/ nursing homes and assisted living. What little work has occurred nationally around standards has focused around skilled nursing facilities—the type of facility that is steadily declining in favor of assisted living settings.

While EHR products for long term care are improving, there are few products in the marketplace today, of which none currently meet facility-wide clinical, administrative and reporting needs in Minnesota. A 2007 survey of nursing homes conducted by Stratis Health found that very few facilities are using electronic tools to support care delivery, and for those that are, they must use three or four different information systems to meet their needs.

Long term care is a setting in which health information exchange is of crucial importance given the number of health care providers typically

seen by seniors, the frequency of hospital admissions, and the frequent back-and-forth migration of individuals between assisted living, skilled nursing and other facilities. The sheer number and complexity of admissions and discharges highlights the need for timely, accurate and complete health record exchange, compounded by detailed federal and state documentation requirements. These requirements can mean that an individual must be retained in a more expensive facility while the health information needed to discharge them to a lower-level facility is being collected by other facilities and sent by fax or postal mail.

Revenues for long term care facilities through reimbursements and room rates are also highly regulated by federal and state government. EHRs must compete with personnel costs and capitol improvement projects for scarce funds.

See Part IV for recommendations for the long term care sector (page 39).

Special Interest Area #2—Public Health

Minnesota's statutory mandate requiring all hospitals and health care providers to have an interoperable EHR system impacts local government, which provides public health services in all 87 of Minnesota's counties and in four metropolitan cities, as well as the Minnesota Department of Health (MDH) and the Minnesota Department of Human Services (DHS). This is because:

- Each of these three must be capable of electronically exchanging information with private providers, hospitals and other private sector partners, either for purposes of ensuring continuous care, receiving electronic disease reports, quality reporting or other population health assessment.
- Local health departments provide services to individuals, and that information needs to become part of a person's health history for the purposes of continuous and safe care.
- Health plans and providers depend on timely and accurate exchange of information from public health systems (e.g., immunizations, lead screening results) to make sure patients get the care they need.
- All three units of government are statutorily responsible for measuring the health status of the population, both for populations on public programs and the population overall. The information needed to carry out these responsibilities will increasingly be available only electronically.

While being early adopters of health information technology in the 1980s and 1990s, public health agencies have experienced a recent and rapid increase in federal and public expectations for more timely and complete information. In addition, the continued absence of standard system specifications and other standards inhibit progress toward integration and interoperability.

For local health departments, the consequences of the lack of integration and interoperability include:

- The challenge of providing seamless and integrated services due to the inability to bring all information on a client or family together from various programs into one place that's available at the time of an appointment. For instance, Women, Infants, and Children Program (WIC) staff have no way to readily see if a child is up to date with immunizations or Child & Teen Checkup screenings. This can result in wasted time and money for families on unnecessary return visits and unnecessary delivery of services.
- The inefficiencies of having to log into, query and enter data into multiple, non-interoperable information systems for the same client. Staff time spent on double entering data—and ensuring consistent and accurate demographic information across systems—is time not spent in delivering services.
- The lost opportunities to protect the public's health because of the inability to generate reports at the population/community level in ways that integrates information on health status or risks.
- Even something as seemingly straightforward and necessary as generating an unduplicated count of individuals who received services from an agency in the past year is nearly impossible with today's myriad of disparate and non-interoperable information systems.

For MDH, the consequences are similar but on a statewide scale. Very few information systems are capable of interoperating with private provider systems or other systems within MDH.

In order to focus initial efforts in modernizing public health information systems, the Population Health and Public Health Information Systems Workgroup of the Minnesota e-Health Initiative evaluated a wide range of opportunities for health information exchange that could lead to improvements in population health. Information systems across MDH, DHS, and local health departments need to be modernized in order to interoperate with health care providers.

Out of that analysis, five areas were indentified to focus initial modernization efforts:

- Reportable diseases screening and surveillance (electronic submission of required disease reports)
- Immunizations (two-way, real time exchange between EHRs and the statewide immunization registry)
- Laboratory result reporting
- Chronic disease management
- Maternal and child health risk factors

Additional information on the opportunities for exchange and the information systems which need to be modernized can be found on the Population Health/Public Health link at: www.health.state.mn.us/ehealth.

The scale of these projects also means that sufficient and ongoing resources will be required to implement them effectively. When a clinic or hospital implements an EHR system, it requires hiring knowledgeable consultants, re-tasking staff to work on project teams, providing significant senior leadership engagement and support, ensuring effective project management, and having the finances in place. It is no different for public health. To modernize its many information systems, and to meet Minnesota's 2015 interoperable EHR mandate, agencies will need to make the same types of financial, staffing and organizational resource commitments. The work described in the recommendations for public health in Part IV (page 39) is significant and on-going; but if done right, it will improve services, save money and be transformational in how agencies use and exchange information to create healthier families and communities.

In Part III

Emerging Issues and Future Versions of the Plan

"Comprehensive reform this year should move Minnesota toward an interoperable electronic health record system."

GOVERNOR TIM PAWLENTY

STATE OF THE STATE ADDRESS

JANUARY 17, 2007

Part III

Emerging Issues and Future Versions of the Plan

Future versions of this plan will address some of the key emerging issues necessary to achieve an e-health transformation. Such issues could include:

- Effective use of EHRs.
- Standards and interoperability of EHRs.
- e-prescribing and medication management.
- e-Health issues from the 2008 Legislative session.
- Measuring EHR adoption, interoperability and effective use.
- Continuing support for privacy, confidentiality and security.
- Preparing the workforce for e-health.
- Preparing and engaging citizens in e-health.
- Telehealth and telemedicine, including in-home monitoring.
- Population health and quality indicators.

In addition, progress in recommending standards for interoperability will continue on an ongoing basis, leveraging the national work of HITSP and CCHIT wherever possible.

The latest version of this plan can be found at: www.health.state.mn.us/ehealth.

EFFECTIVE USE OF INTEROPERABLE EHRs

This 2008 version of the statewide implementation plan focuses on the Adoption stage of the EHR adoption continuum; the next version will need to focus on Effective Use and optimizing an EHR system. This is where considerable value is added for both patients and clinicians, and the return on investment/value on investment is fully realized. It is also where e-health contributes most to health care transformation and to improvements in quality and population health.

Effective use is defined in different ways in different organizations, but for the purposes of statewide planning, the Minnesota e-Health Initiative will need to address at least three main components:

- Ensuring that all staff are adequately trained and making effective use of interoperable EHRs and related technology.
- Identifying and supporting the tools, processes and policies that constitute and support an optimally functional, integrated EHR system. Such tools include clinical decision support systems, e-prescribing tools, prompts for preventive and other services, alert systems to prevent drug interactions, and easy access to clinical guidelines and other evidence-based information most relevant to the patient's current condition.
- Using EHR functions and reports for population health and quality improvement and measurement.

STANDARDS AND INTEROPERABILITY OF EHRs

Establishing standards for interoperability is a dynamic, ongoing and continuous process since the standards themselves are subject to ongoing change and enhancements. For the Minnesota e-Health Initiative, the ongoing tasks are to:

- Identify, analyze, evaluate, classify and validate standards for use in Minnesota.
- Continue to provide feedback to national standards-setting efforts.
- Work collaboratively to ensure that detailed implementation guides and other necessary resources are identified or developed to ensure uniform implementation of standards (see page G2-1 of Guide 2 at the back of this plan).

An upcoming version of this statewide plan will need to define the scope of "interoperability"—how it is defined, implemented and measured in terms of the 2015 interoperable EHR mandate. This should include how a provider organization will know that they are meeting the mandate. The definition should describe the scope of interoperability in concrete

terms; that is, in terms of specific health data and transaction sets, such as lab results and e-prescribing. Defining the scope of interoperability for Minnesota in concrete terms will provide valuable clarification around a complex topic.

E-PRESCRIBING AND MEDICATION MANAGEMENT

One of the highest value transactions in terms of improved efficiency and safety is e-prescribing and medication management. It has been a priority within the Minnesota e-Health Initiative since its inception in 2004, and the subject of one of its earliest recommended standards (see Guide 2 on standards in Minnesota). Additionally, the 2008 Legislature and Governor Pawlenty enacted a new statutory requirement that all providers, group purchasers, and others must implement and use an e-prescribing system by 2011, using specified standards (Minnesota Statutes, section 62J.497). Given both the level of interest in e-prescribing and the mandate, identifying and addressing barriers to widespread adoption will likely be the focus of considerable activity across the state and within the e-Health Initiative.

E-HEALTH ISSUES FROM THE 2008 LEGISLATIVE SESSION

The 2008 Minnesota Legislature passed legislation which Governor Pawlenty subsequently signed into law that was based on two Minnesota e-Health Initiative recommendations:

- All EHRs acquired by providers must be certified by the national Certification Commission for Healthcare Information Technology (CCHIT) or its successor assuming a certified EHR product for the provider's particular setting is available (Minnesota Statutes, section 62J.495).
- All providers, group purchasers, prescribers and dispensers must, by January 1, 2011, "establish and maintain an electronic prescription drug program that complies with the applicable standards in this section for transmitting, directly or through an intermediary, prescriptions and prescription-related information using electronic media" (Minnesota Statutes, section 62J.497). The standards cited in the statute can also be found at the end of this plan in Guide 2 on standards for Minnesota.

Additional guidance on these new requirements will be developed through the Minnesota e-Health Initiative, as part of the next version of this statewide implementation plan.

Other provisions of the law that impact Minnesota's e-health priorities and activities include increased transparency in health care quality and pricing, requirements for health care homes and coordination of care, and support for community population health improvement activities.

MEASURING EHR ADOPTION, INTEROPERABILITY AND EFFECTIVE USE

With seven years between the time of this first version of the plan and the 2015 mandate, it is paramount that we measure where the various provider types/care delivery settings are in terms of the adoption and use of interoperable EHRs. With the creation of the Minnesota Model for Adopting Interoperable EHRs (see Appendix A), we have a broad framework within which we can measure progress by setting.

To establish a valid and consistent methodology for future assessments, the Minnesota e-Health Initiative will need to charter and guide activities such as:

- Developing a collaborative of professional and trade associations and other organizations who commit to a shared plan for carrying out HIT assessments.
- Reviewing existing survey tools and assessment results from within Minnesota and nationally.
- Developing a core set of survey questions that measure stages of adoption, levels of effective use, and exchange capabilities.
- Identifying barriers to adoption, effective use, interoperability and use of standards.
- Identifying potential benchmarks against which to measure progress along the adoption continuum and across settings.
- Establishing a timeline for which care delivery settings are assessed and when.
- Creating a "dashboard" to display progress toward achieving the mandate of interoperable EHRs.
- Developing a communications plan around the assessment results, including actions to take for settings that are at risk of not achieving the mandate.
- Identifying the resources needed to implement this assessment plan effectively.

PREPARING THE WORKFORCE FOR E-HEALTH

Tools are only constructive when people know how to use them effectively. Likewise, Minnesota's health care workforce must be equipped with the basic computer skills and the necessary informatics skills to fully and effectively use EHRs to improve practice, patient safety and quality.

There are four basic issues related to EHRs and the health workforce:

- Educating and training health career students and the existing workforce in effective use of EHRs. The knowledge and competencies should include both effective use of technologies,

as well as health informatics, the emerging discipline that focuses how to best use information and information systems to improve clinical practice.

- Recruiting, educating and training health informaticians, including informatics specialists in medicine, nursing, public health, pharmacy, laboratory, and other specialties.
- Recruiting information technology (IT) workers into health IT, a complex field that supports comprehensive management of medical information and its secure exchange among consumers and providers.
- Ensuring senior management and board members have the knowledge and skills they need for effective decision making around health IT.

While post-secondary institutions are educating health IT and health informatics professionals, more options are needed for the current workforce. The Minnesota e-Health Initiative encourages academic institutions and employers already conducting training to:

- Develop educational content around health informatics, including medical, nursing, public health, laboratory and others.
- Identify effective ways in which to transfer educational content from the classroom into learning venues that work for busy practitioners.

See page G1-22 of Guide 1 at the back of this plan for information about addressing barriers related to the training needs of the current workforce, including generational differences in accepting technology, and concerns about EHRs interfering in clinician-patient interactions.

ENGAGING CITIZENS IN E-HEALTH

Citizens as users of health care are central to e-health. Improving the quality and safety of care is ultimately about patients. However, public fears about the confidentiality of personal health information, real and perceived, must be effectively addressed to engage citizens and ensure the success of e-health. Communicating the benefits and security of interoperable EHRs to patients is critically important. Considerable research shows that people first and foremost trust their own clinician and clinic for health information. That is why provider organizations must plan for and implement communications strategies to keep their patients informed and engaged in the implementation and value of EHRs. Consistent and tested messages can be developed collaboratively at a statewide level, but communicating the message is likely to be most effective when delivered as close as possible to the individual.

There is growing interest in how health information technology can make it easier for consumers to manage their health and care, especially with tools such as Personal Health Records (PHRs). A PHR gives people the ability to collect—electronically or on paper—all their important health history in one place, so that a complete and accurate history and medication list is available to them when they need it. Links to prevention and other important health information are often included. Many people create a PHR for their children and aging parents.

In 2007, the Minnesota e-Health Initiative defined a Personal Health Record as: *"A universally available, lifelong resource of health or health related information needed by individuals to make health decisions. Individuals manage the information in the PHR, which comes from health care providers and the individual. The PHR is maintained in a secure and private environment, with the individual determining rights of access. The PHR is separate from and does not replace the medical record of any provider."* (See www.health.state.mn.us/e-health/consumers.html.)

PHRs are being offered to a growing number of Minnesotans either through their health care provider or, in some cases, through employers and colleges. They are also available on the internet, including recent high profile offerings from Microsoft Corporation™ and Google™.

An MDH fact sheet on PHRs, including principles to guide their development in Minnesota, can be found at: www.health.state.mn.us/e-health/phrfactsheet.pdf.

The American Health Information Management Association has considerable information on PHRs at (www.myphr.org), as does the Markle Foundation at (www.connectingforhealth.org).

Future versions of the statewide implementation plan will need to address concerns related to PHRs, including:

- The lack of standards in terms of content and interoperability.
- The mostly unregulated nature of the emerging industry, and lack of a legal framework for protecting the confidentiality of health information.

PRIVACY, CONFIDENTIALITY AND SECURITY

Patient privacy protections are paramount in e-health. Strong security measures, uniformly implemented, are essential to success. Minnesota has stronger privacy protections than most states, especially around consent to release information. The Minnesota e-Health Initiative will continue to facilitate dialogue on how to best balance interoperability and exchange for the sake of improved quality and safety of care with appropriate privacy protections to safeguard personal health information. In addition, all organizations using EHRs should incorporate best practices for health information security. Uniform and effective implementation of security practices and privacy laws are paramount to consumer acceptance of e-health. In the end, strong privacy and security measures equal strong e-health.

TELEHEALTH AND TELEMEDICINE

Telehealth is the delivery of health-related services and information through telecommunications technologies. Telemedicine is a subset of telehealth that focuses on exchange of medical information via telecommunications technologies, as in a remote consultation, and can include remote procedures or examination. Both can occur in either real time (synchronous) and as "store-and-forward" (asynchronous) communications, where a patient's visit is taped for later viewing by the provider.

Considerable progress in providing telehealth services has been made in Minnesota. Future versions of the plan will need to address how telehealth—including telemedicine, in-home monitoring and other uses of telecommunications technologies—relates to EHRs and other information technologies, and fits into the overall e-health goals of improving health and care. The plan will need to address how the information exchange and privacy and security infrastructure of telehealth fits with that of other types of health information exchange and other technologies.

POPULATION HEALTH AND QUALITY INDICATORS

Future versions of this plan will also need to address how to optimize the design and use of EHRs to support measuring and reporting quality indicators. With the increased emphasis on transparency in quality, EHRs can be powerful tools for not only collecting and reporting data on quality indicators, but also for embedding relevant expert knowledge into decision support systems and other tools to improve practice around those indicators.

The Benefits of Having an EHR System

"It's easy to read. It's easy to understand. It can be very clear. You don't have to do a lot of callbacks. It has a huge savings in clarity and takes ... errors or potential for ... errors out of the system."

RACHELLE SCHULTZ,
PRESIDENT AND CEO OF
WINONA HEALTH

THE PBS NEWSHOUR ON-LINE
"DIGITAL FILES PUT MEDICAL RECORDS
AT DOCTORS' FINGERTIPS"
MARCH 24, 2008

In Part IV

Recommendations

Part IV

Recommendations

Recommendations to advance progress toward achieving the 2015 interoperable EHR mandate are made for the following:

- State policymakers
- Health care plans and purchasers
- Health care providers and organizations
- Professional and trade associations
- Settings of special interest in this 2008 version of the plan
  - Long term care
  - Public health

RECOMMENDATIONS FOR STATE POLICYMAKERS

Rapid progress in e-health priorities requires policymakers' ongoing support in these areas:

a) Continuing to support and integrate requirements for the effective use of health information technology into health care transformation and reform.

b) Ensuring that payment reforms and mechanisms are consistent with the state policy objectives of requiring providers to have interoperable electronic health records.

c) Supporting key elements of the health information technology implementation plan, such as a broad, inclusive definition of providers and electronic health record technologies. This will help ensure the mandate has far reaching impact on improving the quality, continuity and safety of health care.

d) Continuing to support appropriate privacy protections as the health care industry moves into electronic exchange of information.

RECOMMENDATIONS FOR HEALTH CARE PLANS AND PURCHASERS

Those paying for health care services will benefit from widespread and effective use of interoperable EHRs through improved quality and safety, reduced duplicative tests and other means. Health plans and purchasers can support accelerated adoption and effective use of EHRs by:

a) Ensuring payment incentives are aligned with statewide policies around EHR adoption and use.

b) Exploring when it is appropriate to participate in regional or statewide health information exchange organizations or initiatives.

c) Examining how to ensure administrative and clinical data reporting requirements are consistent and able to be uniformly incorporated into the reporting functions of EHRs.

d) Informing and educating their members/enrollees about the value of interoperable EHRs in supporting the improved quality, safety and cost-effectiveness of care.

RECOMMENDATIONS FOR HEALTH CARE PROVIDERS AND ORGANIZATIONS

Recommendations Related to Getting Started

a) Use the practical guide to EHR implementation found in Guide 1, the Stratis Health DOQ-IT program worksheets and templates (www.stratishealth.org), and the other e-health resources found in Appendix C to begin the planning process for your organization *this year.*

b) No organization has to do this alone—the lessons learned from others are available through health professional associations, your peers and EHR/HIT consultants based in Minnesota and elsewhere. Their assistance will help planning and implementation proceed more smoothly and cost-effectively, and may, in fact, save dollars overall.

c) Independent or small practices should explore joining or forming cooperatives around HIT/IT support. This could be with other practices or with a regional hospital.

d) Check on the availability and your eligibility for the Minnesota e-Health grant and EHR loan programs, as well as other grants administered by MDH that support EHR investments (www.health.state.mn.us/ehealth/funding.html).

e) Seek other funding opportunities from foundations and the federal government (www.health.state.mn.us/ehealth/funding.html).

Recommendations Related to Technology

a) Purchase only CCHIT-certified EHR products (or ones certified through a comparable national certification process) as they become available. This will greatly increase the chances of your system being standards-based and ready to exchange with your community partners.

b) Explore the tradeoffs of using an Application Service Provider (ASP or more recently known as Software as a Service or SaaS) to host and support your EHR off-site. Be sure to include all the direct cost savings and indirect "hassle-saving" factors from not having to maintain the equipment and software yourself.

c) To the extent that software products do not meet the needs of a setting/area of practice, trade and/or professional associations for that setting should convene their members to collaboratively define their business requirements and unique information needs.

d) Ask your vendor to explain how the coding, terminology and messaging standards used in your EHR product or other clinical information system compares to what is approved and published by HITSP and CCHIT. Make sure that what they call standards are not just their proprietary "standards" but are in fact those officially created by national Standards Development Organizations and endorsed by HITSP and/or are required by CCHIT. For more information, go to the standards section of www.health.state.mn.us/ehealth.

e) Create a five to seven-year IT budget to address needed IT implementations and ongoing support.

Recommendations Related to People, Policies and Procedures

a) If purchasing an EHR, make sure adequate training is part of the package. Staff will also likely need at least six months of helpdesk support after implementation.

b) Identify current staff who have an interest, aptitude or skills in health IT and informatics. Such "super users" are an effective source of peer support and encouragement.

c) Identify a nurse and/or physician champion who can spearhead efforts to discover new ways of using technology to improve care delivery.

d) Learn the lessons from others in similar settings by seeking out information from peers and professional associations. There is one chance to do it right—and the path to effective implementation has been made clearer through the work of others.

e) Make sure that the champions and innovators in your organization have a systematic means to relay their insights and ideas so other staff can try them out and incorporate them into their everyday practice.

f) Become fully aware of the latest privacy and security considerations for your setting. If unsure, check with your trade or professional association or peers. Make sure your security infrastructure is adequate for implementing an EHR system.

g) Identify and document your organization's current/planned external data exchange requirements; that is, what data is externally exchanged, with whom, and how it is being exchanged. This represents the starting point where the EHR may be able to replace current inefficient and insecure exchange methods.

h) Work with others in your community/service area to coordinate and identify priorities for information exchange based on population health or other needs. Become proactive now so that you are not just responding to a changed environment down the road.

i) Monitor or participate in efforts within your professional organizations or elsewhere to advance standards adoption or to develop implementation guides (detailed documents that specify requirements for those areas within a standard that allow for flexibility) for how information will be exchanged.

RECOMMENDATIONS FOR MINNESOTA'S PROFESSIONAL AND TRADE ASSOCIATIONS

Membership associations are highlighted throughout much of Guide 1 on barriers and prescribed actions because of their potentially powerful role in influencing, engaging and supporting their members in advancing the adoption and effective use of EHRs. Not only do these associations exist to support the professional needs of their members, whether as individuals or organizations, but they have existing venues, such as annual meetings/conferences, web sites, newsletters, journals, standing and ad hoc committees, etc., that their members already pay attention to and look to for credible information.

The Minnesota e-Health Initiative has convened the communications staffs from a wide spectrum of professional and trade associations in order to collaborate in developing and communicating effective messages around e-health. A key principle is to use those communication channels that members already pay attention to, while working together to develop consistent messages on topics of shared interest.

An e-Health Resource Guide is being developed under the direction of the Minnesota e-Health Initiative to make credible and accurate information readily available to stakeholders in formats that are easily used and adapted, and that fit within their existing communications strategies. The resource guide includes information resources to support Minnesota's 2015 interoperable EHR mandate and the statewide implementation plan.

This guide will contain the following types of resources: fact sheets; sample slides with speaker's notes; sample newsletter articles; other related documents and web-based resources to support associations in getting the word out to their members (See www.health.state.mn.us/ehealth, Communications & Education/Training).

Recommendations for Action

The list below summarizes the actions being recommended in this plan (from Guide 1 on barriers and prescribed actions) for trade and professional associations.

a) Use existing and new venues such as conferences, meetings, newsletters and web sites to exchange lessons learned and best practices on EHR adoption. Consider creating an "EHR Corner" or track for all newsletters, continuing education meetings and conferences.

b) Create the venue for collaboratively defining functional and other EHR requirements for settings in which current EHR products do not meet needs.

c) Create ongoing or ad hoc workgroups to develop or identify requirements and specifications for medical specialty areas that will help advance development of appropriate EHR products for those specialties.

d) Develop policy statements/issue briefs on key aspects of EHR, such as its role in improving quality, reducing overall costs and increasing patient safety. A core set of messages should flow from these statements that can be incorporated into articles, slides and other communications. See the Communications section of the Minnesota e-Health Initiative web site at www.health.state.mn.us/ehealth.

e) Associations such as the Minnesota Health Information Management Association, the Minnesota Chapter of the Health Information Management Systems Society and the Minnesota Nursing Work Group for Informatics should use their annual meetings, newsletters and other venues to share experiences of information managers, medical records staff, nurses and other health professionals in making successful transitions from paper records to EHRs.

f) Identify ways to assess and help meet the technology competency needs of the membership.

RECOMMENDATIONS FOR SETTINGS OF SPECIAL INTEREST

The 2008 version of this plan features two settings that face particular challenges in terms of implementing interoperable EHRs: long term care and public health. The recommendations below are included to help identify initial steps these settings can take to advance EHR adoption in their organizations. See also Part II, pages 21-24 for more information on long term care and public health.

Recommendations for Long Term Care

The recommendations below summarize key actions that can be taken by the long term care industry to accelerate the adoption of EHR systems. Many involve working with and through their professional trade associations (see above). *In addition to these recommendations, many of the ones listed above for health care providers and organizations will also likely apply to long term care.*

a) Trade and/or professional associations should lead efforts to collaboratively define the business requirements and unique information needs of long term care. This will both communicate requirements and specifications to EHR/HIT vendors and provide an objective basis for product evaluation.

b) Work with national trade associations to monitor and help influence standards and/or certification criteria within CCHIT, HITSP or other bodies that will meet the needs of the long term care industry.

c) Long term care facilities and associations should work with the Minnesota Legislature and the Minnesota Department of Human Services (DHS) to explore means to ensure adequate resources exist to meet the 2015 interoperable EHR mandate.

d) Seek other funding opportunities from foundations and the federal government (www.health.state.mn.us/ehealth/funding.html).

Recommendations for Public Health

To be credible and contributing partners in the emerging transformation of health care, local health departments, MDH and DHS must pursue a collaborative and enterprise-wide approach to modernizing key information systems to be more standards-based, integrated and interoperable. This will require a commitment to:

a) A joint local–state collaboration for advancing integration and interoperability of public health information systems.

b) Collaboratively defining business processes[5], information systems and infrastructure specifications needed for systems to be more standards-based and interoperable including:

[5] A business process is a set of related work tasks and activities that lead to accomplishing a specific goal in an organization. It is how an organization does its day-to-day business to meet client needs and to fulfill its mission. Examples include food safety inspections, home visits, community health assessments, immunization administration, and billing and accounts receivable.

- Identifying information systems from other sectors with which information must be exchanged, such as clinical care, health plans and correctional health.
- Adopting recommended data and messaging standards in order to be interoperable with other systems.
- Collaboratively identifying what information needs to be collected and exchanged in order to carry out those business processes.
- Taking a coordinated, enterprise-wide approach to decisions such as standards adoption, overall architecture issues related to interoperability such as choice of secure data transport, and funding.
- Enabling linkages and integration of data across systems where allowed by law, particularly for programs serving the same population, such as child health.

c) Developing the agency-specific and collective business and resource plans for modernizing information systems to meet new specifications.
   - Include plans for developing the capacity for supporting standardized electronic messages, including the capacity to implement and support the HL7 messaging standard.

d) Developing an implementation plan for increasing informatics knowledge and skills across the workforce so that staff can effectively use information and information systems to measure and improve population health.

e) Identifying funding required to support planning and implementation for integration and interoperability of public health information systems. Work with the Minnesota Legislature, local elected officials and other potential funders to allocate needed resources for information system development and modernization.

Summary of the Call to Action

All hospitals and health care providers are part of meeting the Minnesota Initiative e-Health vision and implementing the 2015 interoperable EHR mandate. Regardless of the setting, the concrete guidance in this plan can help organizations understand what they can do *today*.

- Wherever a hospital or health care provider is on the adoption continuum, the goal remains the same: moving to the right from Adoption through Effective Use to Interoperability by 2015.
- Those who have not yet begun to plan or select an interoperable EHR system must begin immediately, since it typically takes at least three years for a successful clinic implementation and longer for a hospital.
- There are many business and quality improvement reasons to implement an EHR system now; Minnesota's 2015 mandate is simply one more.
- No organization has to do this alone—lessons learned from others are available through health professional associations and EHR/HIT consultants based in Minnesota and elsewhere.
- Some settings, such as long term care and public health which are highlighted in this plan, face particular challenges including publicly-allocated funding and limited, if any, EHR products.
- Use this plan to help your board, organization or association members understand how they fit into the broader context of health care reform and health information technology.
- This is a shared vision and a shared responsibility across all individuals and organizations working to improve the health and health care of Minnesotans.

Your thoughts welcomed …

The Minnesota Department of Health and the Minnesota e-Health Initiative welcome your thoughts on how to update both this plan and the attached guide to barriers to keep them useful and practical for health care providers and organizations in Minnesota.

Comments can be sent to: mn.ehealth@state.mn.us.

Thank you.

Appendix A:

Full-page view of the Minnesota Model for Adopting EHRs

Appendix B:

List of provider types/settings covered by the 2015 mandate

Appendix C:

Glossary of e-health terms

Guide 1:

Addressing Common Barriers to EHR Adoption—A Practical Guide for Health Care Providers

Summary of e-Health Resources

Guide 2:

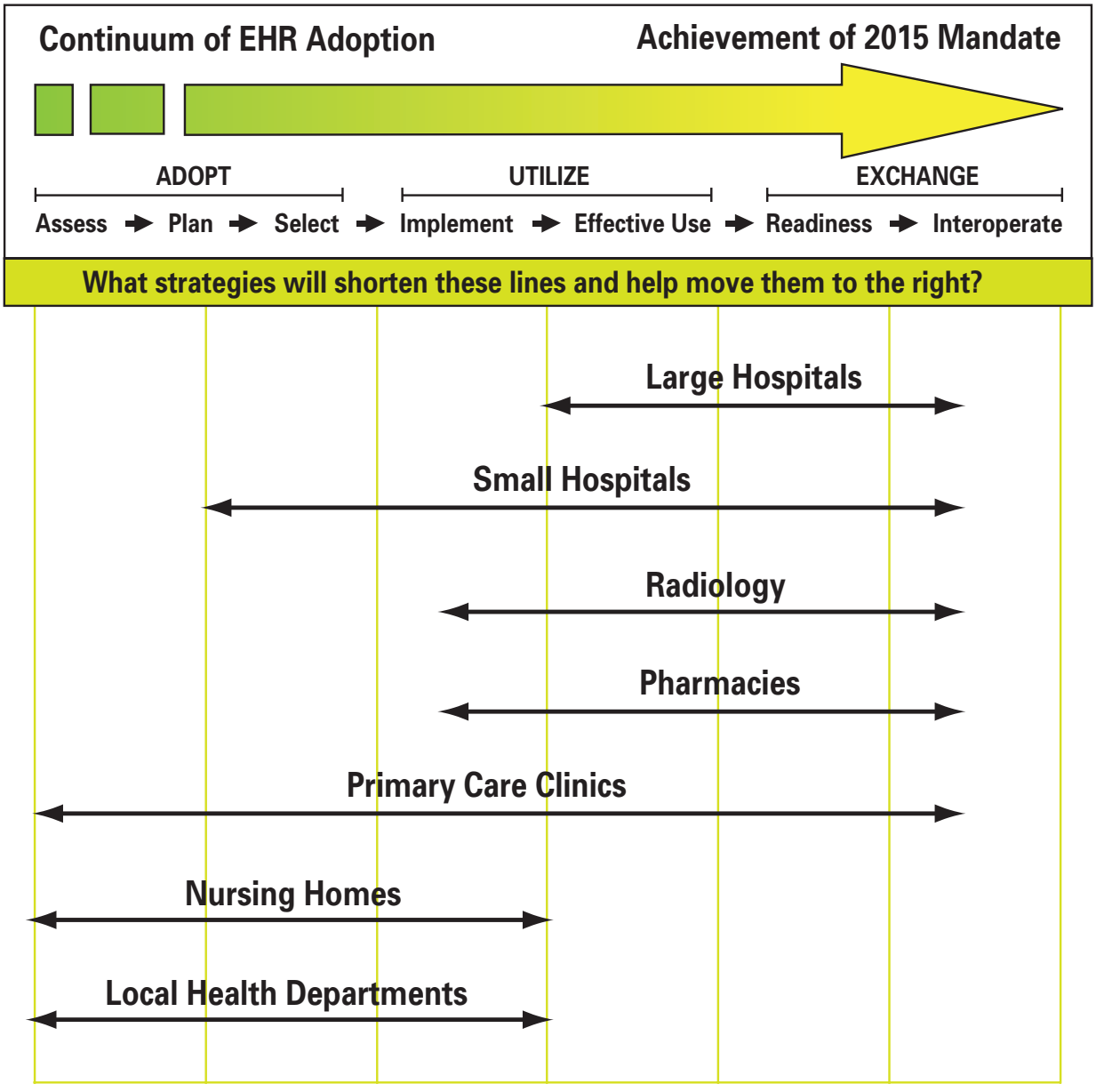
Standards Recommended for Use in Minnesota

Minnesota Process for Recommending e-Health Standards

Appendix A:

Minnesota Model for Adopting Interoperable EHRs

ADOPTING INTEROPERABLE ELECTRONIC HEALTH RECORDS



Estimated range of adoption based on various surveys and other sources. | Minnesota Department of Health, February 2008

Appendix B:

Minnesota's 2015 Interoperable EHR Mandate: Impacting All Providers and Care Delivery Settings

The 2007 Minnesota Legislature mandated that, "By January 1, 2015, all hospitals and health care providers must have in place an interoperable electronic health records system within their hospital system or clinical practice setting" (Minnesota Statutes, section 62J.495).

Minnesota Statutes, section 62J.03, defines "provider"and "health care providers" as:

"…a person or organization other than a nursing home that provides health care or medical care services within Minnesota for a fee and is eligible for reimbursement under the medical assistance program under chapter 256B. For purposes of this subdivision, "for a fee" includes traditional fee-for-service arrangements, capitation arrangements, and any other arrangement in which a provider receives compensation for providing health care services or has the authority to directly bill a group purchaser, health carrier or individual for providing health care services. For purposes of this subdivision, "eligible for reimbursement under the medical assistance program" means that the provider's services would be reimbursed by the medical assistance program if the services were provided to medical assistance enrollees and the provider sought reimbursement, or that the services would be eligible for reimbursement under medical assistance except that those services are characterized as experimental, cosmetic or voluntary."

The inclusion of all providers is intended to ensure that the benefits of e-health apply across the entire continuum of care, from cradle to grave, from primary to specialty care, public to private, and from traditional to alternative practitioners.

See the example list of providers impacted by the mandate on the next page. The list is not intended to indicate every type of health care providers covered by the mandate, but simply to provide examples of those affected.

Example List of Providers Impacted by the 2015 Interoperable EHR Mandate

EXAMPLE PROVIDER/CARE DELIVERY SETTING

Primary Care Settings
- Family Practice
- Pediatrics and Pediatric Subspecialties
- Retail-Based Clinics
- OB-Gyn
- Community Clinics/FQHCs
- Jail Health/Correctional Facilities
- School-Based Clinics
- Migrant Health

Examples of specialty care clinics, *including but not limited to:*
- Allergy and Asthma
- Bariatrics
- Cardiology
- Cosmetic/Plastic/Reconstructive
- Dermatology
- Gastroenterology
- Infectious Disease
- Internal Medicine
- Neurology
- Oncology
- Ophthalmology
- Podiatry
- Urology
- Family Planning
- Genetic Services
- Anesthesia
- Cardiac
- Head and Neck
- Neurology
- Occupational Medicine
- Osteopathic Clinics
- Sports Medicine
- Pain Management
- Sleep Disorders

Hospitals
- Inpatient
- Outpatient
- Emergency Departments

Pharmacies
- Community
- Hospital-Based

Laboratories
- Clinic-based
- Hospital-Based
- Independent

EXAMPLE PROVIDER/CARE DELIVERY SETTING

Radiology
- Radiation Oncology
- Diagnostic Centers

Urgent Care Centers

Ambulatory Surgical Centers

Long Term Care Facilities
- Assisted Living
- Skilled Nursing Facilities

Home Health Agencies
- Hospital/Health System Based
- Independent

Hospice
- Hospital/Health System Based
- Independent

Local Public Health Departments
- Services to at-risk populations (i.e., TB, STD, WIC)
- Population-Based Screening & Other Services
- Surveillance

Habilitation
- Occupational therapy
- Physical therapy
- Recreational therapy

Dental
- General practice
- Oral Surgery

Mental /Behavioral Health
- Mental Health Centers
- Group/Private Practice

Chiropractic Clinics

Complementary Medicine/Care

State Agencies
- Minnesota Department of Health
- Minnesota Department of Human Services
- Minnesota Department of Corrections

Appendix C:

Selected Glossary of e-Health Terms[6]

AHIC (American Health Information Community): AHIC is a federally-chartered commission that provides input and recommendations to the federal Department of Health and Human Services on how to make health records digital and interoperable, and assure that the privacy and security of those records are protected, in a smooth, market-led way.
Reference: www.hhs.gov/healthit/ahic.html

CCHIT (Certification Commission for Healthcare Information Technology): A voluntary, private-sector organization launched in 2004 to certify health information technology (HIT) products such as electronic health records and the networks over which they interoperate. Reference: www.cchit.org

Confidentiality: A Third party's obligation to protect the personal information with which it has been entrusted. Reference: www.ehealthinitiative.org

Decision Support: Computerized functions that assist users in making decisions in their job functions. In the practice of medicine, these functions include providing electronic access to medical literature, alerting the user to potential adverse drug interactions and suggesting alternative treatment plans for a certain diagnosis. Reference: www.ehealthinitiative.org
See also: DSS (Decision Support System)

DOQ-IT (Doctors' Office Quality Information Technology): DOQ-IT promotes the adoption of electronic health records 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.
Reference: www.centerforhit.org/x255.xml *See also: Stratis Health.*

e-Health (Electronic Health): e-Health is the use of information technology to improve the delivery of health care. e-Health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through technologies. In a broader sense, the term characterizes a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology.
Reference: www.jmir.org/2001/2/e20/

[6] This glossary was compiled and adapted by the Minnesota Department of Health from many sources on the World Wide Web. Unless otherwise noted, definitions were adapted from the Minnesota e-Health Initiative Glossary of Selected Terms & Acronyms. For a more complete glossary, please visit www.health.state.mn.us/e-health/glossary.pdf.

EHR (Electronic Health Record):

- An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization. Reference: The National Alliance for Health Information Technology Report to the Office of the National Coordinator for Health Information Technology on Defining Key Health Information Technology Terms, April 2008. http://www.nahit.org/docs/hittermsfinalreport_051508.pdf
- EHR is 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. EHR is considered more comprehensive than the concept of an Electronic Medical Record (EMR). Reference: http://www.hhs.gov/healthit/glossary.html

e-Prescribing: Provides features to enable secure bidirectional communication of information electronically between practitioners and pharmacies or between practitioner and intended recipient of pharmacy orders. Reference: Health Level Seven, Inc. "HL7 EHR-S Functional Model and Standard." July 2004. www.hl7.org/ehr/downloads/index.asp *See also: Electronic Prescribing*

Health Informatics: The use of the principles and practices of computer science in addressing the problems of health care. An interdisciplinary field of scholarship that applies computer, information, management and cognitive sciences to promote the effective and efficient use and analysis of information to improve the health of individuals, the community and society. *See also: Informatics.* Reference: Adapted from the University of Minnesota, Health Informatics program: www.hinfgrad.umn.edu/mhi/background.html

HIE (Health Information Exchange):

- The electronic movement of health-related information among organizations according to nationally recognized standards. Reference: The National Alliance for Health Information Technology Report to the Office of the National Coordinator for Health Information Technology on Defining Key Health Information Technology Terms, April 2008. http://www.nahit.org/docs/hittermsfinalreport_051508.pdf
- The mobilization of healthcare information electronically across organizations within a region or community. HIE provides the capability to electronically move clinical information between disparate healthcare information systems while maintaining the meaning of the information being exchanged. The goal of HIE is to facilitate access to and retrieval of clinical data to provide safer, more timely, efficient, effective, equitable, patient-centered care. Reference: eHealth Initiative. "Second Annual Survey of State, Regional and Community-based Health Information Exchange Initiatives and Organizations." Washington: eHealth Initiative, 2005.

HIT (Health Information Technology): HIT is the application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making.
Reference: www.hhs.gov/healthit/glossary.html

HIMSS (Healthcare Information and Management Systems Society): HIMSS is the healthcare industry's membership organization exclusively focused on providing leadership for the optimal use of health care information technology and management systems for the betterment of human health. References: www.himss.org/ASP/aboutHimssHome.asp or www.himss-mn.org/

Interoperability:

- The ability of two or more systems or components to exchange information and to use the information that has been exchanged accurately, securely, and verifiably, when and where needed. *See also: Health Care Interoperability.* Reference: http://www.ehealthinitiative.org/
- According to the Interoperability Clearing House "interoperability is the ability of information systems to operate in conjunction with each other encompassing communication protocols, hardware software, application, and data compatibility layers. With interoperable electronic health records, always-current medical information could be available wherever and whenever the patient and attending health professional needed it. At the same time, EHRs would also provide access to treatment information to help clinicians as they care for patients." Reference: http://www.ichnet.org

ONC (Office of the National Coordinator for Health Information Technology): ONC provides leadership for the development and nationwide implementation of an interoperable health information technology infrastructure to improve the quality and efficiency of health care and the ability of consumers to manage their care and safety. Reference: www.hhs.gov/healthit/

PHR (Personal Health Record):

- An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be drawn from multiple sources while being managed, shared, and controlled by the individual. Reference: The National Alliance for Health Information Technology Report to the Office of the National Coordinator for Health Information Technology on Defining Key Health Information Technology Terms, April 2008. http://www.nahit.org/docs/hittermsfinalreport_051508.pdf
- The personal health record (PHR) is a universally available, lifelong resource of health or health related information needed by individuals to make health decisions. Individuals manage the information in the PHR, which comes from health care providers and the individual. The PHR is maintained in a secure and private environment, with the individual determining rights of access. The PHR is separate from and does not replace the medical record of any provider. Reference: Adapted from The Role of the Personal Health Record in the HER, October 2003. The American Health Information Management Association (AHIMA). Available at: http://library.ahima.org/

Population Health: Population health is an approach to health that aims to improve the health of an entire population. One major step in achieving this aim is to reduce health inequities among population groups. Population health seeks to step beyond the individual-level focus of mainstream medicine and public health by addressing a broad range of factors that impact health on a population level, such as environment, social structure, resource distribution, etc. An important theme in population health is importance of social determinants of health and the relatively minor impact that medicine and health care have on improving health overall.
Reference: en.wikipedia.org/wiki/Population_health

Privacy: Right of an individual to control the circulation of information about him/herself within social relationships; freedom from unreasonable interference in an individual's private life; an individual's right to protection of data regarding him/her against misuse or unjustified publication.
Reference: www.ehealthinitiative.org/

Public Health: Public health is concerned with threats to the overall health of a community based on population health analysis.
Reference: en.wikipedia.org/wiki/Public_health. Governmental public health agencies provide the backbone to the public health infrastructure, but this infrastructure is also dependent on other entities such as the health care delivery system, the public health and health sciences academia, and other sectors that are heavily engaged and more clearly identified with health activities. Public health also plays a legal regulatory role (e.g., conducting restaurant inspections).
Reference: Adapted from the Institute of Medicine.

Security: In information systems, the degree to which data, databases, or other assets are protected from exposure to accidental or malicious disclosure, interruption, unauthorized access, modification, removal or destruction.
Reference: www.ehealthinitiative.org/

Standards: Documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines or definitions of characteristics to ensure that materials, products, processes and services are fit for their purpose. A standard* specifies a well-defined approach that supports a business process and;

- Has been agreed upon by a group of experts
- Has been publicly vetted
- Provides rules, guidelines or characteristics
- Helps to ensure that materials, products, processes and services are fit for their intended purpose
- Is available in an accessible format
- Is subject to ongoing review and revision process

Reference: www.ehealthinitiative.org/ *This differs from the health care industry's traditional definition of "standard of care."

Addressing Common Barriers to EHR Adoption

A Practical Guide for Health Care Providers

2008
JUNE

Minnesota Department of Health *and the*
Minnesota e-Health Initiative Advisory Committee

FOR MORE INFORMATION: Minnesota Department of Health
Minnesota e-Health Initiative/Center for Health Informatics
P.O. Box 64882, 85 East Seventh Place, Suite 220, St. Paul, MN 55164-0882
651-201-5979 www.health.state.mn.us/e-health/

In Guide I

Addressing Common Barriers to EHR Adoption

A Practical Guide for Health Care Providers

Guide I

Addressing Common Barriers to the Adoption of EHRs

A Practical Guide for Health Care Providers

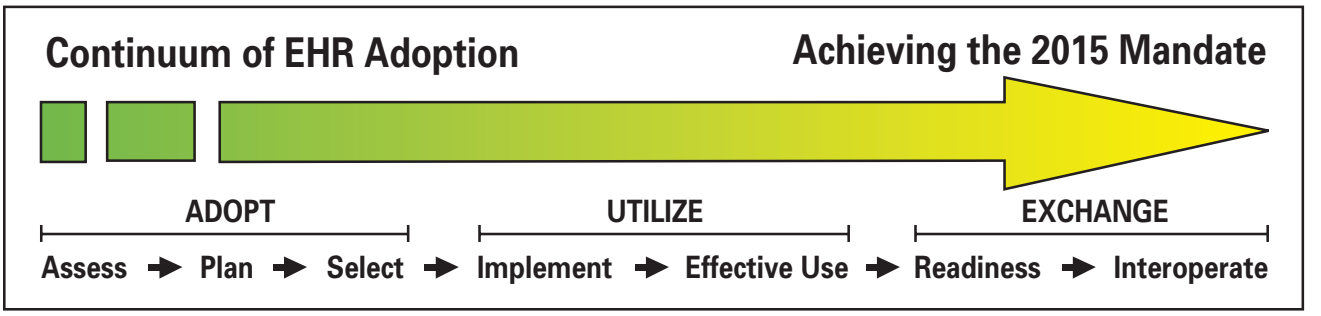
This guide provides practical guidance for health care providers on how to address some of the most commonly perceived barriers to electronic health record (EHR) implementation and use. It is designed to:

- Identify common barriers to adopting EHRs.
- Provide thoughtful considerations and solutions related to those barriers based on the experience of organizations that have been through the adoption process.
- List actions that providers and others can take to incrementally address barriers and make progress toward achieving the 2015 mandate.

The guide was developed to support providers in meeting the Minnesota mandate that all hospitals and providers have an interoperable EHR system by 2015 (see www.health.state.mn.us/e-health/).

It is organized by the seven steps of the adoption continuum shown below and also discussed in more depth in the statewide implementation plan, found at the Web address above.

Minnesota Model for Adopting Interoperable Electronic Health Records



G1-3

You will note that there are more barriers described for steps at the beginning of the continuum than at the end. This is because there is more experience with Adoption than with Utilization or Exchange. As the industry moves more fully into Utilization and Exchange, new barriers will undoubtedly emerge for which collective solutions and best practices can be identified and shared.

Lessons Learned and Best Practices

The following are among the key lessons learned from organizations of all sizes that are implementing EHR systems. Each of them highlights the extent to which this process is, as commonly noted, "more about sociology than technology."

- The process of transforming care to be "patient-centric and information-rich" is more about people, processes and policies than about technology.
- EHR adoption must be seen as a change management process across the organization.
- Providers and organizations must be willing to identify inefficient processes and to correct them in order for an EHR system to achieve the desired benefits.
- EHRs will magnify both good and bad processes: good processes will get better; bad ones will get worse.
- EHRs only provide the tools to support people in performing processes and policies that improve health and care. They are not a panacea, and are only as good as the people using them.

Index to Addressing Common Barriers to EHR Adoption

A number of community e-Health collaboratives were funded in 2007 through the Minnesota e-Health grant program (www.health.state.mn.us/divs/orhpc/funding/index.html#ehr). Their advice to other projects is below.

Planning and Resources

- Thorough and systematic planning is critical; set modest, doable objectives.
- Using a trusted consultant, existing tools, tips or templates can save time and avoid costly mistakes.
- It takes time to do it right; it almost always takes longer than anticipated.
- Use a dedicated project management staff.
- Train staff from all sites at a single training.

Needs Assessment

- Comprehensive needs assessments are crucial for successful product selections; consultants can play a valuable role in this process.
- Information systems expectations are a function of both business and care delivery needs.
- Determine site readiness through an external IT infrastructure evaluation.
- Scheduling and billing system upgrades often need to occur before an EHR implementation.

Engaging Staff and Others

- Involve key stakeholders in the entire process and ensure that all have a thorough understanding of the project goals.
- Agree on the model to help manage competing priorities and differing motivations.
- Engage physicians early as their commitment to the EHR process is essential.
- Engage internal staff. Adequate preparation of those impacted directly is a critical success factor.

Let the EHR be a tool in guiding your practice, since these systems provide proven approaches to practicing and supporting quality medicine. Prepare to adapt your processes to take advantage of improvements in care made possible by the EHR system.

You are buying a powerful tool – take advantage of it!

Addressing Barriers to Getting Started

BACKGROUND

The best guarantee of successful EHR implementation is effective planning. This is done by:

- Thoroughly assessing your business (financial, administrative), clinical and quality improvement needs so it is clear what you need the technology to do to support you in your practice.
- Thoroughly planning every step, from ensuring executive and physician support to knowing how you will capture the years of information trapped in paper records.
- Selecting an EHR product that is certified nationally and will meet your business, clinical and quality improvement needs.

BARRIERS COMMONLY EXPRESSED AS …

"It's too daunting to know where to begin."

"We know we have to make this move but are concerned about the prolonged period of transition, inefficiency and loss of productivity. We are reluctant to reduce the number of appointments available to our patients, and concerned about the reduced revenue."

"It's not proven to us that EHRs will really improve care."

"Planning is fluffy—an unnecessary expense."

"We don't know how to plan for something as transformative as this."

CONSIDERATIONS

- Selecting the right HIT tool such as an EHR and implementing it effectively takes time, often years, so you can't afford to delay getting started.
- Minnesota has a statutory mandate that requires all health care providers to have an interoperable EHR by 2015. This not only means that you must have an EHR in place but that you also have the agreements and capabilities to electronically and securely exchange health information with other providers.
- HIT is evolving rapidly. If you haven't looked at an EHR system or other HIT products in a while, chances are that today's solutions are much better at meeting provider needs.
- Remember that an effective implementation is less costly than an ineffective one. It will also accelerate your return on investment and effort. Effective implementation begins with effective planning. That's something you can begin today.

ACTIONS PROVIDERS CAN TAKE NOW

- Begin now to identify the business value (benefits minus costs) of migrating to an EHR. This is not a decision that can be done in the abstract—it requires advice from experienced peers or a consultant who can guide you through the financial, total cost of ownership, and non-financial pay-backs of an EHR.
- Engage physicians, nurses and other stakeholders from the *very beginning and throughout* the planning process. This is a critical success factor for effective change management.
- Hire a trusted consultant experienced in EHR implementation who can guide you through the process of assessing staff attitudes, staff competencies with IT, finances, and IT support. This assessment is necessary to undertake an initiative that, to be truly successful, will be transformational to your practice and work processes.
- Rely on your peers and your professional and/or trade associations to learn the lessons from other settings similar to yours. You have one chance to do it right—and the path to effective implementation has been made clearer through the work of others.
- Review an EHR roadmap such as from the DOQ-IT program (www.stratishealth.org/doq-it) to become familiar with the sequential early steps that are critical to success.
- *Go slow – don't jump to software demos.* It's like building a house based on a picture instead of a blueprint. Don't let software vendors define your clinical and business requirements. Without systematic and thorough assessment and planning, there is no way you can effectively remain in the driver's seat when working with an EHR vendor.
- Explore joining an existing community collaborative or forming your own, to jointly plan for EHR adoption and acquisition.

ACTIONS OTHERS CAN TAKE NOW

- Professional and trade associations must make every effort to use existing and new venues such as conferences, meetings, newsletters and web sites to exchange lessons learned and best practices on EHR and HIT adoption. Associations should consider creating an "HIT Corner" or track for all newsletters, continuation education meetings and conferences.
- Professional and trade associations should develop policy statements/issue briefs on key aspects of EHR adoption, such as its role in improving quality, reducing overall costs and increasing patient safety. A core set of messages should flow from these statements that can be incorporated into articles, slides and other communications.
- MDH should work with others knowledgeable in EHR planning and implementation to establish a clearinghouse of information on planning needs and lessons learned. The information should both be based on real life experience and separate facts from myths.

- Look for opportunities to develop a mentorship program to connect those who have implemented EHRs with similarly sized organizations that are just beginning, such as that explored by Stratis Health in the past.
- Stratis Health, MDH and others must seek financial support for the DOQ-IT program so that these services continue to be available to health organizations that may not have the financial and planning resources for EHR adoption.

Resources Available *(see also the summary of resources beginning on page G1-38)*

- For a list of nationally certified EHR products, see the Certification Commission for Healthcare Information Technology (CCHIT) at: www.cchit.org. The EHR products are certified based on a demonstrated ability to meet criteria for functionality, interoperability and security.
- For a detailed planning and implementation roadmap, complete with dozens of worksheets and other planning tools, see the Stratis Health DOQ-IT (Doctor Office Quality – Information Technology) web site at: www.stratishealth.org. Find it under Health Care Professionals, then Health Information Technology. Stratis Health also has a comparable toolkit for small and critical access hospitals (the Health Information Technology Toolkit for Small and Critical Access Hospitals).
- For grants and no-interest loans available from the State of Minnesota, see www.health.state.mn.us/e-health, Funding and Other Resources.
- Both the American Academy of Pediatrics (AAP) and the American Academy of Family Physicians (AAFP) have very helpful, member–driven web sites to assist with EHR planning and implementation.
- The AAP's Council on Clinical Information Technology's (COCIT) web site offers peer reviews of EHR products. Other features require AAP membership.
- The AAFP's Center for HIT (www.centerforhit.org/) provides very practical tutorials on the four steps of Preparation, Selection, Implementation and Maintenance. The Readiness Assessment ("What step am I in?"), physician product reviews and other features require AAFP member login.
- The AHRQ *Health Information Technology Evaluation Toolkit* provides step-by-step guidance for project teams who are developing evaluation plans for their health information technology projects. (www.healthit.ahrq.gov/)
- The American Health Information Management Association (www.ahima.org) has information on electronic Health Information Management (e-HIM).

Addressing Barriers Related to Start-Up or On-going Costs

BACKGROUND

Few investments are as substantial as implementing an interoperable EHR system. This is true regardless of the size of the health organization. It's not always as easy to see the return on investment for an EHR as for a new wing, reimbursable service or diagnostic equipment.

But both market forces and the 2015 legislative mandate for Minnesota providers require finding your way through the many issues around costs, benefits and overall value. Soon, delivering health care without an EHR will be as unthinkable as operating your business without systems for billing, payroll and scheduling.

BARRIERS COMMONLY EXPRESSED AS …

"We do not have the capital resources to invest in such a large project."

"Our capital budget needs to go to other priorities, including physical plant and new diagnostic equipment. Health IT is simply not as high of a priority in our organization."

"It is not clear to us that there is adequate ROI for a practice of our size."

"We cannot make this investment until incentives/payments are in place to partially offset our start-up and long-term costs."

"We didn't calculate a total cost of ownership for an EHR system, so our board is reluctant to authorize more IT spending."

"We can't afford a full-featured EHR but want to get started on using HIT."

CONSIDERATIONS

If you have not started because of a lack of capital or not seeing a clear ROI, consider this:

- Value on Investment (VOI) is a more accurate means to assess what an EHR will mean for business, since the return is not always readily expressed in dollars. Value can be found in areas such as:

- Savings in staff time from, for example, fewer calls with pharmacies because now the scripts are legible and match the patient's formulary.
- Reduced transcription costs as information is entered directly at the time of care or through voice dictation.
- The marketing value of patients being able to set their own appointments online, communicate with their physician or nurse by e-mail, and even have access to their data through a Personal Health Record (PHR).
- Physicians can get home earlier every evening as dictation and chart notations are done more efficiently.
- Physicians on call can access medical records from home.
- More accurate and timely billing, with fewer rejections from payers.
- Record storage areas can be re-tasked to exam rooms or other revenue-generating space.
- Decreased staff time needed for creating, filing, pulling and maintaining paper charts.

- Pay For Performance (P4P) will continue, and the easiest way to report on P4P measures—and to truly achieve higher quality and patient safety—is through effective use of EHRs through its Clinical Decision Support Systems (CDSS).
- Future P4P payments will likely soon be tied to use of EHRs and CDSS. Start the planning process now so you are ready to capitalize on new payments and incentives.
- Other quality reporting initiatives, such as Minnesota Community Measurement, will also continue. An EHR provides potential for improved gathering and reporting of more complete and accurate information.
- Medicine has become too complex to be practiced from memory. Physicians need CDSS tools, especially in areas like disease management for patients with complex co-morbidities, multiple physicians, multiple treatment modalities and poly-pharmacy.
- ROI/VOI is not always in the short term. Much like other capital investments, with an EHR system you must think strategically and in terms of five years and beyond. It is critical to plan and budget for upgrades over time.
- Remember that effective planning increases the potential of positive ROI.
- A bank could not operate or compete today without being online. The same is rapidly becoming true for health care.

- Like other technologies, including mobile phones and the Internet itself, the value of having an EHR goes up as more and more providers begin using them to exchange information.
- With most primary care providers in Minnesota either having or in the process of implementing an EHR system (62 percent in 2007, Stratis Health), it is rapidly becoming the expectation for providers, patients and payers:
  - Patients increasingly want the ability to electronically communicate with their physician and to have access to their basic health information.
  - Physicians and other clinicians are increasingly demanding to practice in a setting that has an EHR. This is particularly true for younger clinicians who have trained on EHRs.
  - Payers are increasingly focused on paying for quality. Some are even providing financial incentives for using EHRs because of their ability to improve measurable quality.
- Similarly, the power of EHRs is rapidly making them the standard of care in medical practice, particularly because of functions that help reduce medication and other errors.

ACTIONS PROVIDERS CAN TAKE NOW

- Check on the availability and your eligibility for the Minnesota e-Health grant and EHR loan programs, as well as other grants administered by MDH which can support EHR investments (www.health.state.mn.us/e-health).
- Do an ROI/VOI using proven tools such as from the DOQ-IT program (www.stratishealth.org/doq-it) or available from other consultants.
- When calculating a ROI/VOI, base it on Total Cost of Ownership (TCO) so that you understand at the outset what investments will be needed over time, as well as where cost-savings will likely accrue to pay for those investments.
- By carefully planning your activities and understanding where you can save money; you can ensure your implementation gets to those areas that have the greatest return, such as transcription and e-prescribing/medication management.

- If you cannot afford a full EHR system, as an interim step toward full EHR adoption, evaluate other types of HIT that are often critical components of a full-featured EHR, but are also available as stand-alone products, such as e-prescribing tools, dictation software, and lab ordering and results. These are all high value technologies that support improvements in quality and safety, while often reducing costs. Such a migration path enables you to phase in components based on their ROI or other value.
- Explore joining an existing community collaborative or forming your own, to jointly plan for EHR adoption and acquisition.

ACTIONS OTHERS CAN TAKE NOW

See actions steps on page G1-7 on *Addressing Barriers Related to Getting Started.*

Resources *(see also the summary of resources beginning on page G1-38)*

- Stratis Health has ROI, business case and financial assessment tools on its DOQ-IT (Doctor Office Quality – Information Technology) site (see www.stratishealth.org). Find it under Health Care Professionals, then Health Information Technology.
- See also the resources on page G1-8 *Addressing Barriers Related to Getting Started.*

Addressing Barriers Related to Clinical and Administrative Needs

BACKGROUND

It may be that after defining your business needs (both clinical and administrative) and conducting a review of EHR products, you learn none that are available, or perhaps that one meets your needs but is not certified nationally.

BARRIERS COMMONLY EXPRESSED AS …

"Today's EHR products don't meet our business requirements. The solutions are just not in place for our sector or specialty."

"The EHR we want is not CCHIT-certified."

"We need an integrated package across our hospital, clinics and long term care facilities. The only ones that are broad and flexible enough to meet all our needs are too expensive."

CONSIDERATIONS

- EHR vendors are looking for broad markets with many potential customers. Such a broad market can only be created by organizations working together collaboratively to define the information system requirements—especially the unique information needs and requirements—for a particular provider setting.
- Certification criteria developed by CCHIT are expanding rapidly to areas like child health, cardiology, Emergency Department and long term care. You can provide feedback on the functional, interoperability and security features you believe are critical at: www.cchit.org.
- While a comprehensive EHR system is clearly ideal for a multi-facility integrated care delivery organization, finding applications that work for each of the major settings (inpatient, ambulatory, long term care) can be achieved through a "best of fit" approach that enables you to purchase components/applications from various vendors based on which products best fit your needs. That approach can yield more satisfactory and productive solutions for each of the settings, but increases the challenges (and usually costs) around interoperability.

- The Institute of Medicine identified eight core capabilities of an EHR system (www.iom.edu/?id=19374) or (www.nap.edu/catalog.php?record_id=10781). Define for yourself the needs of your setting in terms of these eight capabilities, then consider using them as a framework for evaluating EHR solutions or, at a minimum, to more comprehensively and accurately define your needs. The eight capabilities are:
  - Health information and data
  - Results management
  - Orders management
  - Decision support
  - Electronic communications and connectivity
  - Patient support
  - Administrative processes (e.g., scheduling)
  - Reporting (e.g., disease reporting, patient safety)

ACTIONS PROVIDERS CAN TAKE NOW

If a viable product is not available for your setting:

- Work with your trade and/or professional associations to collaboratively define the business requirements and unique information needs of your sector. This will provide both an objective basis for your organization to evaluate products and communicate your sector's needs to EHR/HIT vendors.
- Check with any national trade associations to see if they are aware of products used by members in other states.
- Work with national trade associations to push for standards and/or certification criteria within CCHIT or other body.
- At least start with automating the capture of information that is part of the national standards for a Continuity of Care Document (CCD). Focus on those standards initially so you are in a good position to be a valued trading partner when exchange begins to occur in your community.
- Ask a prospective vendor:
  - How do you participate in national EHR certification activities? Which of your products are certified now?
  - Can you produce the DOQ-IT measures or other standardized quality reports?

If your application was developed internally:

- Monitor the health data standards recommended for use in Minnesota and nationally (www.health.state.mn.us/ehealth), evaluate to what extent your current application(s) incorporates those standards of most relevance to your setting, and work with your vendor (or IT department if internally developed) to adopt those standards.

- Evaluate whether it's prudent to migrate to a different application, one that is certified nationally and so more likely to have a longer life span within your industry and more likely to be kept current. Include in the evaluation the comparative costs of upgrading an existing application versus acquiring and installing a new one, including the data conversion costs that are likely to occur in both scenarios.

ACTIONS OTHERS CAN TAKE NOW

- Trade and professional associations must be the catalyst that creates the venue for collaboratively defining functional and other EHR requirements for settings in which current EHR products do not meet needs.
- Software vendors must seek to better understand the unique business and informational needs of these settings, encouraging collaborative approaches to defining those across the industry.
- Academic institutions should continue to use EHRs as integral tools in their training programs to both develop competencies and drive demand.

Resources *(see also the summary of resources beginning on page G1-38)*

- Your trade association or other groups working on EHR or exchange requirements.
- For a case study of how state public health laboratories worked together to identify and define their common needs, see www.aphl.org/programs/informatics. For more information on the collaborative requirements definition approach, see www.phii.org/resources/doc/Taking_Care_of_Business.pdf.
- "Medical Home" initiatives are occurring nationally and in Minnesota to ensure "care that is accessible, family-centered, comprehensive, continuous, coordinated, compassionate, culturally-effective, and for which the primary care provider shares responsibility with the family." (American Academy of Pediatrics, American Academy of Family Practitioners, American College of Physicians)
- Useful medical home web sites:
  - American Academy of Pediatrics: (www.medicalhomeinfo.org)
  - Center for Medical Home Improvement: (www.medicalhomeimprovement.org)
  - American Board of Internal Medicine: (www.abimfoundation.org)

Addressing Barriers Related to Data Standards

BACKGROUND

A fundamental requirement for achieving the goal of electronic health information exchange (eHIE) is the universal adoption of data, messaging and other standards. Until information is captured, coded, documented, stored and exchanged in standardized ways, we will continue to require human interpretation and translation of information for which timely machine-to-machine exchange could greatly improve the quality and safety of practice.

BARRIERS COMMONLY EXPRESSED AS …

"We are reluctant to implement an EHR until standards are finalized nationally and all products in the marketplace are interoperable. We don't want to "rip and replace" down the road."

CONSIDERATIONS

- Many standards are in place, often in areas of greatest need, such as lab results reporting and medication management. If you start now, no one else will be further ahead; but if you wait, you will be further behind.
- National progress in establishing standards is both accelerating and effectively engaging the provider and the vendor communities. Generally speaking, vendors are rapidly moving toward adopting standards and abandoning their proprietary approaches to capturing and reporting data.
- Know that vendors upgrade their products anywhere from quarterly to annually. Ask about the typical upgrade schedule from prospective vendors and whether upgrades are part of ongoing maintenance costs or a separate charge.
- Readiness assessment tools and templates already exist through the national eHealth Initiative program (www.ehealthinitiative.org) and other sources which address issues of standards and electronic exchange.

ACTIONS PROVIDERS CAN TAKE NOW

- Start with systematic assessment and planning (see above and www.stratishealth.org/doqit) to identify which areas of your practice would benefit most from data exchange. Chances are it's the same areas for which national standards are established and which EHR vendors have adopted or are rapidly adopting.
- Continue your assessment and planning process to identify vendors that fully incorporate the standards of interest to you.
- Make sure that your EHR system is CCHIT-certified so that it incorporates the latest standards adopted nationally.
- Become familiar with the HIT tools that exist today, such as those from the DOQ-IT toolkit.
- Work with others in your community/service area to coordinate and identify priorities for HIE based on population health or other needs. Greater value will accrue to all partners if this is done in a coordinated way across the community.
- Although upgrades can be expensive, vendors will often incorporate standards and new functionality as they are approved nationally. The increased utility may increase the ROI and often eases your workflow over time. Remember also that you don't have to purchase an upgrade simply because it's available. As with any software, you can wait for a larger upgrade to be released in the future. Note that keeping your EHR system upgraded is not a one-time occurrence; it is an evolutionary process that must be part of your business plan.
- As always, working with a trusted consultant can help make sure that the decisions and purchases you are making are aligned with national efforts around health data standards.

ACTIONS OTHERS CAN TAKE NOW

- The Minnesota Department of Health, collaborating with others through the Minnesota e-Health Initiative, must ensure that collaborative efforts continue in identifying appropriate standards based on national recommendations, including developing polices and implementation guides as needed to ensure uniform use of those standards across the state.
- Trade associations should periodically issue a Request For Information (RFI) to seek responses from EHR vendors on current functionality and use of standards. Such a systematic approach

would enable their members to monitor the maturing of EHR applications for their care delivery settings.

- Trade and/or professional associations for medical specialties should create ongoing or ad hoc workgroups to develop or identify standards for their specialty areas that will help advance the development of appropriate EHR products and functionality for those specialties.

Resources *(see also the summary of resources beginning on page G1-38)*

- The national Health Information Technology Standards Panel (HITSP) is tasked with setting data standards that will facilitate health information exchange. All of the HITSP requirements, design and standards selection documents—as well as the ability to comment on them—can be found at: www.hitsp.org/.
- Stratis Health has EHR selector tools on its DOQ-IT (Doctor Office Quality – Information Technology) site (see www.stratishealth.org). Find it under Health Care Professionals, then Health Information Technology.
- The Minnesota e-Health Initiative web site has an extensive section on health data standards, including primers on the need for and types of standards, currently establish standards and other resources (see www.health.state.mn.us/e-health/standards/index.html and www.health.state.mn.us/e-health/stndrdshome.html).

Addressing Barriers Related to Privacy and Security

BACKGROUND

Effectively addressing privacy and security issues—in statute, policies and EHR products—is crucial to both patient and provider acceptance of EHRs and electronic health information exchange.

BARRIERS COMMONLY EXPRESSED AS …

"We are reluctant to implement an EHR until privacy and security issues are more fully addressed."

CONSIDERATIONS

- Minnesota has among the strongest privacy protections in the country. The statutes related to health records were updated in 2007 by the Minnesota Legislature to better reflect the requirements of electronic exchange. The Minnesota Health Records Act (Minnesota Statutes 2007, Section 144.291-298) provides clear requirements around patient consent and information disclosure that should be reassuring to providers hesitant to head down the road of eHIE. The national HIPAA requirements may be met by a vendor but make sure they can meet Minnesota's stricter privacy requirements.
- EHRs and eHIE actually strengthen privacy protections since EHRs can control who accesses what information, and can track who accessed what information when.
- Security practices for within an organization are well established. Failures in security are most often failures to follow standard practice.
- Major activities have been underway to strengthen security safeguards and privacy policies. Many vendors have addressed this in great detail within their applications.
- Like any major undertaking, e-Health is about balancing needs. Patient privacy has to be protected but we also need to move forward in order to achieve greater patient safety and quality improvements.

- Remember that most breaches in confidentiality come from individual staff being careless in how they treat confidential information, whether in unmindful conversations within earshot of other patients or paper records being left out where they are accessible to unauthorized individuals. Continual training in security practices and developing a culture of privacy can go a long way in avoiding accidental disclosures.
- Just as we have all adjusted to electronic banking and online airline reservations, so will we adjust to electronic health records and health information exchange. The health care industry is the last major industry fully moved into the information age. We cannot continue to practice 21st-century medicine and stay stuck in 19th-century paperwork.
- The younger generations are much less concerned about privacy than the World War II or Boomer generations. They also have much higher expectations for electronic access to information.

ACTIONS PROVIDERS CAN TAKE NOW

- Become familiar with the privacy protections, including patient privacy protections and provider liability protections, found in the Minnesota Health Records Act (see www.health.state.mn.us/ehealth). At the same web site is a framework of 19 principles to guide security policies and practices related to eHIE.
- Talk to prospective vendors about their features to maintain a secure environment and safeguard patient privacy.
- Learn more about the security features of EHRs and other HIT. Security measures are continually improving, and provide types and levels of protection not available in the past or with paper records.
- National privacy and security standards are rapidly emerging that will provide greater legal protection for those who adhere to them. Make sure that your EHR is CCHIT-certified so that it incorporates the latest privacy standards adopted nationally.
- Make sure you are fully aware of the latest privacy and security considerations for your setting. If you are not sure, check with your trade or professional association or peers. Make sure your security infrastructure is adequate to implementing an EHR system.
- If you are concerned about the security of your patients' information or the robustness of your infrastructure, there are qualified security consultants that can guide you through a review of your current policies and security controls, which can include a complete vulnerability assessment, and can help identify how to best strengthen the security of your information.

ACTIONS OTHERS CAN TAKE NOW

- Professional and trade associations must make every effort to use existing and new venues such as conferences, meetings, newsletters and web sites to exchange lessons learned and best practices on EHR and HIT adoption. Associations should consider creating an "HIT Corner" or track for all newsletters, continuation education meetings and conferences.
- Health plans and health systems can use their newsletters and other patient information/education channels to inform members/citizens about the value of EHRs and offer reassurance on the measures taken to protect their privacy.

Resources *(see also the summary of resources beginning on page G1-38)*

- The Minnesota e-Health Initiative web site contains extensive information on health data privacy in Minnesota, including a standard form for patient release of health information that can be downloaded. Click on the Privacy link at: (www.health.state.mn.us/ehealth).
- Ask your prospective/current vendor how completely their application adheres to and/or exceeds the privacy and security standards established by the national Certification Commission for Health Information Technology (CCHIT) (see www.cchit.org).
- Become familiar with the CCHIT standards in order to reassure yourself, your staff and your patients in the growing privacy and security standards being set nationally.
- The American Health Information Management Association (AHIMA) has a number of tools to strengthen your organization's knowledge related to privacy and security. Look for AHIMA's Body of Knowledge, Community of Practice and other training materials, which are all powerful educational resources

Addressing Barriers Related to Staff Skills

BACKGROUND

Staff skills and competency levels can also be a significant hurdle to smooth and effective implementation, which is why assessing staff skills and attitudes is so important early in the assessment and planning phases.

BARRIERS COMMONLY EXPRESSED AS …

"I don't want a computer getting between me and my patient."

"The pressure on clerical and or nursing staff to make it work is simply beyond their typing skills and comfort level with computers."

"Our medical records staff are reluctant to give up the paper records that have been their bread and butter. They worry about losing their jobs."

"Our staff, many of them older staff who have been with us for many years, are reluctant and sometimes unwilling to learn new skills, to abandon old paper-based processes and to even give technology a try. Some of these folks are our management staff, which makes the transition even harder to implement."

CONSIDERATIONS

- Your staff, from senior management on down, need to be prepared for the challenges of implementing an EHR. It will initially be disruptive and introduce lots of inefficiencies. But it can be transformative in workflow and how work gets done. It will touch all aspects of your practice or facility. It is most accurate to think of it as culture change and change management.
- While older staff may be challenged by shifting to greater use of technology, younger staff—from physicians to medical assistants—are expecting an EHR system to be in place. In fact, a growing number of physicians are making it a major consideration when joining a practice.
- Skilled consultants and trainers—and just as important, the champions within your organization—can make the transition to using an EHR less daunting. They know how to keep morale up by reiterating the eventual improvements in patient care and workflow efficiencies.
- Health information management/medical records staff in organizations that have gone to an EHR system are still required to review requests for record exchange, ensuring data quality and appropriate coding, and in making the transition from paper records to electronic information.

- Studies show that EHRs can actually improve the clinician-patient interactions.
- Clinician attitudes about the EHR in the exam room—whether positive or negative—will have the greatest impact on the clinician-patient interaction.

ACTIONS PROVIDERS CAN TAKE NOW

- If you have not yet assessed the typing skills and comfort levels of your staff, do so now. Regardless of where you are in the planning phase, you need to know this before beginning implementation, since an effective training plan is an essential ingredient for a successful implementation.
- As you experience staff vacancies, review the job responsibilities and requirements to see if you need to update the job descriptions to include appropriate skill sets related to information management and EHR use.
- Examine how the exam room and all other appropriate areas in your facility are set up to facilitate effective use of the EHR.
- If purchasing an EHR, make sure adequate training is part of the package.
- Identify early in the planning process how your organization can re-train and re-purpose staff to move into more productive roles for the future.
- Identify the person in your practice that could be re-tasked to work on clinical template and clinical decision support issue, such as a "techie nurse."
- Target at least 80 percent of your current processes, identifying inefficiencies that can be streamlined using technology. Then redesign, test and implement the revised work processes while developing new ones as needed. Being clear about how you intend to use the EHR system will highlight the staff skills necessary to implement them effectively and efficiently.
- Let the EHR be a tool in guiding your practice, since these systems pass on proven approaches to practicing and supporting quality medicine. It also helps to standardize your practice across all clinicians, customizing only where appropriate and necessary.
- Make sure you are using staff at the top of their licensure. Understand what the system could provide in terms of improved processes (more efficiency, etc.) Don't assume you know your processes well.
- Arrange to visit other organizations or practices similar in size to yours to learn how they adapted to using an EHR.

- Prepare to adapt your processes to take advantage of improvement in care made possible by the EHR. You are buying a powerful tool – take advantage of it!

ACTIONS OTHERS CAN TAKE NOW

- Minnesota Health Information Management Association (MHIMA) should use its annual meetings, newsletters and other venues to share experiences of Health Information Management professionals in making successful transitions from paper records to EHRs.
- Minnesota Healthcare Information and Management Systems Society (MN HIMSS) should use its annual meetings, newsletters and other venues to share best practices around supporting and training staff in making the transition to EHRs and other HIT.
- MN HIMSS can expand its efforts around facilitating peer learning and information sharing, especially for staff with new responsibilities around EHR planning and implementation. Making special efforts to attract and support non-HIM staff who must function in key informatics roles around EHR implementation would help to build a broader cadre of health informaticians in Minnesota.
- Trade and professional associations should also make it a priority to assess and help meet the technology competency needs of their members.
- All academic institutions with health professional programs (from MDs to MAs) must ensure that graduating students have a minimum level of computer (keyboarding) and HIT skills.

Resources *(see also the summary of resources beginning on page G1-38)*

- The AHIMA web site has a number of sample job descriptions, including Clinical Decision Support Specialist, HIM Director, HIM Compliance Specialist, and Privacy Officer, among many others (www.ahima.org/infocenter/job_descriptions/).
- Stratis Health DOQ-IT (Doctor Office Quality – Information Technology) Toolkit contains dozens of practical worksheets and other tools to assist in EHR assessment, planning, selection, implementation, effective use and maintenance at: (www.stratishealth.org) under Tools and Resources.
- There are a number of experienced EHR/HIT consultants in Minnesota with extensive experience in serving health care organizations of varying sizes.
- The *Connecting Communities* toolkit and other support services enable peer sharing of information on common issues (see www.ehealthinitiative.org/). (Note: Access to eHI's resources requires a no-cost sign-in account.)

Addressing Barriers Related to Health IT Support Issues

BACKGROUND

Attracting and retaining health IT workers is an acute challenge nationwide, especially in rural areas where it is harder to offer competitive salaries. Many predict a shortage of health IT workers that will exceed the impact of the nursing shortages of the last two decades.

BARRIERS COMMONLY EXPRESSED AS …

"We don't have strong project management skills to successfully direct such a complex project."

"We don't have critical IT technical skills to support implementation of an EHR."

"We do not have access to IT staff skilled in supporting EHR implementations."

"Finding and keeping skilled IT staff in the rural areas is a real challenge."

CONSIDERATIONS

- In the same way that group purchasing cooperatives provided important clout and cost-savings, cooperatives around EHR support may also be an appropriate model.
- Using an Application Service Provider (ASP) to host your EHR is a very reasonable and potentially cost-effective model to explore. In this arrangement, both your EHR application and your patient data are hosted off-site on a secure server maintained by the vendor. They do the back-ups, keep the server up to date, fix problems and install upgrades.
  - This has the added advantage of being more secure in case of a natural disaster in your area, since vendors generally have redundant back-up schemes for both the application and the patient database.

ACTIONS PROVIDERS CAN TAKE NOW

- Explore joining or forming cooperatives around HIT/IT support. This could be among independent practices or with a regional hospital. Several organizations working together can offer a more competitive benefits package than one alone.
- Explore the tradeoffs of using an Application Service Provider (ASP) to host your EHR. Be sure to include all the direct cost-savings and indirect "hassle-saving" factors from not having to maintain the equipment and software yourself.
- Identify current staff who have an interest and promising skills in health IT and informatics.

ACTIONS OTHERS CAN TAKE NOW

- MN HIMSS can expand its efforts around facilitating peer learning and information sharing, especially for staff with new responsibilities around EHR planning and implementation. Making special efforts to attract and support non-HIM staff who must function in key informatics roles around EHR implementation would help to build a broader cadre of health informaticians in Minnesota.

Resources *(see also the summary of resources beginning on page G1-38)*

- A growing number of EHR and other HIT products are available as Software as a Service or SaaS (the preferred term for Application Service Provider or ASP). See (en.wikipedia.org/wiki/Software_as_a_Service) for background information on SaaS. Performing a search on "SaaS health" or "SaaS EHR" returns numerous articles and news stories to provide real life applications of this approach in health care.
- The AHIMA web site has a number of sample job descriptions, including Clinical Decision Support Specialist, HIM Director, HIM Compliance Specialist, and Privacy Officer, among many others (www.ahima.org/infocenter/job_descriptions/).
- The Healthcare Leadership Alliance, in conjunction with HIMSS and other national associations, has developed a Competency Director for health care leaders. Domain 5 relates to competencies needed in information management (www.healthcareleadershipalliance.org/).
- The Minnesota Nursing Informatics Group (MINING) includes a page for posting informatics positions (www.informaticsnurse.com).
- A number of community collaboratives exist in Minnesota around e-Health and HIT. See the directory of e-Health projects in Minnesota at: (www.health.state.mn.us/e-health/profiles.pdf).

Addressing Barriers Related to Implementation

BACKGROUND

"Going live" with an EHR may seem like the culmination of your project, but in many respects it is just the beginning. The implementation phase involves refining how the EHR fits into and improves clinical workflow and business processes. This can be the period of "culture shock" for many staff, and ensuring adequate support from both the IT and clinical perspectives is critical. Be aware that staff resistance may not come as much at the beginning, but several months into implementation when the novelty has worn off … and just when the support team is perhaps no longer as available!

BARRIERS COMMONLY EXPRESSED AS …

"The computer in the exam room gets in the way of clinician-patient interactions. It makes the encounter less personal."

"It's too cumbersome to find the essential patient information that used to be right on the face sheet in our paper charts. EHRs are not as efficient as proponents claim."

"We have an EHR system but half of our team is still relying on paper. We just can't seem to make the transition as an organization"

"We've adjusted to using an EHR but so far it is failing to deliver on the promises."

"We've installed our EHR but only a few staff actually use it."

CONSIDERATIONS

- Preventing serious problems in the implementation phase is precisely why so much emphasis is placed on thorough up-front assessment and planning.
- Involving staff in the planning phase to identify how to best incorporate the EHR into the workflow vastly improves the likelihood of a smooth implementation. If your staff doesn't feel ready for the change, your organization isn't ready.
- Experience has shown that an EHR can actually facilitate provider-patient communication and patient education.
- While you can expect inefficiencies during the period of adjustment, depending in large part on how effectively you planned

the implementation, it may take three to nine months (depending upon the size of your organization, how effective your preparations were, and the level of IT support) to see the time savings, so don't expect to realize savings right away.

- The complexity of EHR is such that it can take several months (again depending upon many factors, including the effectiveness of the EHR training and the readiness of the staff) to learn how to really use the system fully, so include in your plan a second wave of training to focus on effective use.
- An important lesson from others is that you must make the shift to the EHR across the entire clinic/facility. Allowing only the "computer geeks" or younger staff to start will only stretch out the period of pain. This pain will come not only from continued resistance but from having to maintain both paper and electronic systems. Focus sufficient time and other resources on staff readiness so you can move everyone at once.
- Most EHRs today enable the user to customize the "face sheet"—the opening screen—to reflect the priority information needs of their practice.
- Minnesota Community Measurement is adding EHR implementation as a reportable indicator. Patients, especially younger patients, will increasingly consider EHRs, personal health records, online appointments and e-mail with their clinicians when choosing a clinic.
- Not all staff are likely to be equally ready. But uneven use of an EHR system across your organization introduces workflow issues, undermines your efforts to redesign processes to be more efficient, introduces risks and undermines the benefits of an expensive but powerful tool.

ACTIONS PROVIDERS CAN TAKE NOW

- Review an EHR roadmap such as from the DOQ-IT program (www.stratishealth.org/ (see Appendix A) to make sure you have adequately prepared for implementation, including assessing staff attitudes, staff competencies with technology, finances and IT support. *This is not something the EHR vendor can tell you.* Summarize what should be done in the first month, at three months, then six months. Make sure that you create a planning structure to guide the process.
- Seek out information from your peers and your professional and/or trade associations to learn the lessons from other settings similar to yours. You have one chance to do it right—and the path to effective implementation has been made clearer through the work of others.
- Begin to create a five to seven year IT budget to address needed IT implementations and ongoing support. The EHR/HIT environment needs ongoing support just like your physical plant does. The board and/or senior leadership must see this as a necessary cost of doing business in the 21st century.

- If it's not possible to roll out an EHR system across your entire organization, consider starting with a department or unit as a pilot. Whether organization-wide or as a pilot, there are tradeoffs in terms of implementation. Only you can decide which is best, based on factors such as level of staff readiness and/or acceptance, IT support, size of organization, etc.
- Include in your EHR vendor contract a provision for knowledge transfer so that in-house staff have the knowledge and skills to support optimal utilization of the technology.
- Disseminating best practices for effective use of an EHR requires that you have "in-hours experts" or "super users" to provide practical, real-time peer support to other staff.

ACTIONS OTHERS CAN TAKE NOW

- Professional and trade associations must make a major effort to use existing and new venues such as conferences, meetings, newsletters and web sites to exchange lessons learned and best practices on EHR and HIT implementation.
- MDH must work with others knowledgeable in EHR planning and implementation to establish a clearinghouse of information on implementation best practices.
- Stratis Health should continue to explore its mentorship program to connect those who have implemented EHR systems with similarly sized organizations that are preparing to implement.
- Stratis Health, MDH and others must seek ongoing and adequate financial support for the DOQ-IT program, so that those services continue to be available to health organizations that may not have the financial and planning resources for EHR adoption.
- All organizations with an interest in surveying providers on EHR adoption and functionality should collaborate in developing standardized ways to assess and report adoption. ("Ask providers once, use many times.") MDH should convene such organizations to establish common definitions ("EHR," "adoption," etc.), and a common assessment instrument where appropriate.
- MDH should ensure that an annual assessment of EHR adoption, effective use and interoperability is conducted annually for most provider settings. Trade associations should be engaged to ensure high response rates, and the results widely shared to help meet the assessment needs of the participating organizations.

Resources *(see also the summary of resources beginning on page G1-38)*

- Major EHR vendors can often provide accurate resource estimates for both IT implementation and ongoing IT support.

Addressing Barriers Related to Effective Use

BACKGROUND

The transformative power of an EHR comes only with effective use. It is at this step that an EHR becomes more than just an electronic version of the paper chart. It is here that it proves its value and delivers much of its return on investment. Identifying opportunities for effective use that can save time or money, or improve quality and safety of care, can be potent selling points as you prepare staff for training and implementation. Such opportunities for effective use include: improved measurable performance in a P4P environment, improved revenue from more accurate billing and fewer claims rejections, and attracting and retaining staff.

Effective Use is not so much a phase in the adoption continuum as an ongoing commitment to continuously seeking more and better ways to use EHRs and your clinical data to improve the health and care of your patients.

BARRIERS COMMONLY EXPRESSED AS …

"The IT environment has become so complex—multiple vendors and systems, interfaces, varying age of applications, and mixture of hardware—that our whole focus is just on keeping it all running. Going to the next step in using the EHR more effectively to improve quality and safety is simply beyond our resources at this time."

"Our vendor's EHR application is a proprietary, closed system, and does not allow for easy/cost effective integration with other vendor products. This limits our ability to expand our EHR's capabilities and interoperability."

"I both trained on and am accustomed to finding clinical guidelines in books. Accessing electronic versions of the guidelines through the EHR is time-consuming enough for me that I perhaps do not check guidelines as much as I used to or want to."

"The alerts and reminders are too many to realistically pay attention to, so we tend to either ignore them or turn them off."

"We have an EHR but have to optimize our use of it to show measurable improvements in care or even to save money."

"We've adjusted to using an EHR but it has so far failed to deliver on the promises."

CONSIDERATIONS

- If you use the EHR to only replicate your old paper processes, you will be missing much of the real value. Effective use of an EHR is necessarily a transformative process that potentially touches and improves every aspect of your operation.
- Increasing effective use does not necessarily mean an increase in required IT resources. Many improvements stem from clinicians and other staff understanding and acting on how the EHR can save time and money, while also improving care.
- There is only so much a user can learn at the beginning. Continue to explore, find new features, and share them across staff to optimize use.

- Once you are using an EHR system effectively, you can really increase the ROI by optimizing use; i.e., wringing the most out of your investment which includes being able to generate reports on patient groups/populations (e.g., LHD levels of all patients over age 50 for whom <name of drug> has been prescribed).
- A fundamental value of automation is how much easier it is to get information out of an electronic system than from paper charts. The better EHRs provide ample ability to generate standard and ad hoc reports on individual patients (HbA1c levels over time; who received a TdaP vaccine between January 1 and March 1), patients assigned to a provider (which patients need their asthma plans updated), and trends in patient population within the clinic (hypertensives with controlled blood pressure before and after instituting a new treatment protocol). Acting on such reports can lead to:
  - Care givers being more effective in providing quality care.
  - Care processes being more effective, especially in areas such as disease management.
  - Improved health in the community.

ACTIONS PROVIDERS CAN TAKE NOW

- Make sure you have a physician and/or nurse champion who can spearhead efforts to discover new ways of using technology to improve care delivery.
- Make sure that the champions and innovators in your organization have a systematic means to relay their insights and ideas so that other staff can try them out and perhaps incorporate them into their everyday practice.
- Clinical teams will need to prioritize which alerts and reminders are most important to your practice, based on P4P requirements, internal quality improvement projects, national recommendations or other purposes.

- Make sure that your EHR system is CCHIT-certified or standards-based so that effective use includes the ability to exchange health information with other providers.
- Customize the EHR "face sheet" so that the data your physicians want and need is readily available.
- Develop ongoing IT support budgets/resource requirements for the EHR environment, obtaining board/senior leadership buy-in.

ACTIONS OTHERS CAN TAKE NOW

- Professional and trade associations must use existing and new venues such as conferences, meetings, newsletters and web sites to exchange lessons learned and best practices on effective use of EHRs and related HIT.
- MDH must work with others to establish a clearinghouse of information on best practices related to effective use.
- Stratis Health should continue to disseminate information on effective use as it relates to quality improvement.

Resources *(see also the summary of resources beginning on page G1-38)*

- Major EHR vendors/your selected vendor can provide the level of ongoing IT support resources needed to support the EHR production environment.

Addressing Barriers Related to Readiness for Exchange

BACKGROUND

Readiness for interoperability—the ability to exchange information electronically such that the information is meaningful and consistently interpreted—is not only about your technology, but also your internal organizational policies and your external agreements with trading partners. In addition, semantic interoperability (the ability of machines to receive and accurately assign meaning to incoming data) requires a sufficient level of standardization across the industry. Such standards must be adopted not only by EHR vendors but also by those supporting laboratories, pharmacies, radiology centers and other ancillary services.

BARRIERS COMMONLY EXPRESSED AS …

"Content and messaging standards are simply not adopted universally enough by EHR/HIT vendors to say we are ready for electronic health information exchange."

"The implementation guides and other supporting technical documents are not sufficiently available to ensure accurate exchange between disparate systems. Without those documents, we will still be writing custom interfaces between systems into the future."

"We are reluctant to engage in eHIE until we solve issues around who owns the record."

CONSIDERATIONS

- Expect vendors to more rapidly incorporate standards as the Certification Commission for Health Information Technology (CCHIT) and the Health Information Technology Standards Panel (HITSP) to accelerate their activities. Vendors are actively engaged in both, as well as other national standards development activities.
- Standards are rapidly emerging in areas of greatest interest and value for providers, such as e-prescribing, medication history, lab results reporting and immunizations. Standards for administrative data are more advanced.
- The EHR vendor community may not have products for your setting, but you can focus on interoperability in priority areas/use cases such as medication histories, immunizations, referrals and lab results.

- The entire health care industry is committing to interoperability. You simply can't build something that doesn't take that reality into account.
- Full machine-to-machine interoperability is still in the formative stages, and will likely take years to achieve at the level we aspire to. In the meantime, pay attention to those transactions that make sense for your setting and your "trading partners."
  - Don't approach EHR implementation from only the point of optimizing your business, but also how you will respond and contribute to exchange in your community. Think of it as the highway system: Putting a road in to your front door is of limited use if it does not connect to other roads.
  - Think both vertically (across the continuum of care) and horizontally (with other settings like yours).
- Vendor supplied proprietary interfaces may actually restrict exchanges and is contrary to the direction Minnesota is going. There is a fundamental business responsibility today to understand the bigger picture. It's about improved patient care.
  - The situation today is much like it was when the HIPAA went into effect. It was the provider community that then drove solutions to meeting the HIPAA transaction requirements. We need to do the same now for clinical data. The solutions are not likely to come from vendors without first getting clear direction from the health care community.

ACTIONS PROVIDERS CAN TAKE NOW

- Purchasing only CCHIT-certified EHR products—and keeping them up to date with new releases—increases the chances of your system being standards-based and ready to exchange.
- Ask your vendor to explain how the coding, terminology and messaging standards used in your EHR product compare to what is approved and published by HITSP and CCHIT. Push them to make sure what they call standards are not just their proprietary "standards" but are in fact those officially created by national Standards Development Organizations (SDOs) and endorsed by HITSP and/or are required by CCHIT.
- Monitor or participate in efforts within your professional organizations or other initiatives to advance standards adoption or to develop implementation guides (detailed documents that specify requirements for those areas within a standard that allow for flexibility) for how information will be exchanged in Minnesota.
- Focus on exchange priorities for Minnesota (medication histories).
- Identify and document your organization's current/planned external data exchange requirements; that is, what data is externally exchanged, with whom, and how it is being exchanged. This represents the starting point where the EHR system may be able to replace current inefficient and insecure exchange methods.

ACTIONS OTHERS CAN TAKE NOW

- Regional and statewide Health Information Exchange organizations should take the lead in creating implementation guides, beginning with high value exchange opportunities such as medication history, and lab ordering and results reporting.
- MDH must continue to work with others to identify and endorse standards for interoperability that address priority areas for exchange, assuring that knowledgeable individuals are engaged in developing implementation guides and other supporting documentation.

Resources *(see also the summary of resources beginning on page G1-38)*

- The national Health Information Technology Standards Panel (HITSP) is tasked with setting data standards that will facilitate health information exchange. All of the HITSP requirements, design and standards selection documents—as well as the ability to comment on them at: (www.hitsp.org/).
- For a list of nationally certified EHR products, see the Certification Commission for Health information Technology (CCHIT) at: (www.cchit.org). The EHR products are certified based on a demonstrated ability to meet criteria for functionality, interoperability and security.
- Stratis Health has EHR selector tools on its DOQ-IT (Doctor Office Quality – Information Technology) site. See (www.stratishealth.org). Find it under Health Care Professionals, then Health Information Technology.
- The Minnesota e-Health Initiative has an extensive section on health data standards on its web site, including primers on the need for and types of standards, currently established standards and other resources.
  See (www.health.state.mn.us/e-health/standards/index.html) and (www.health.state.mn.us/e-health/stndrdshome.html).

Addressing Barriers Related to Interoperability

BACKGROUND

Secure electronic exchange of health information that can occur machine-to-machine with no or minimal human intervention is the 'holy grail' of e-health. Interoperability is the solution to many of the problems currently seen with ensuring continuity of care, the lack of complete medication and medical histories when needed at the point of care, and the absence of timely, complete and accurate information in emergencies. The challenges to achieving true interoperability are formidable, requiring the adoption and adherence to vocabularies, messaging and other standards by a range of health information technologies and across disparate organizations. What makes this so much more daunting compared to similar efforts as in the banking and other industries—and even compared to exchanging electronic health claims data—is the complexity of clinical information.

BARRIERS COMMONLY EXPRESSED AS …

"The implementation guides and other supporting technical documents are not sufficiently available to ensure accurate exchange between disparate systems. Without those documents, we will still be writing custom interfaces between systems into the future."

"We are reluctant to engage in eHIE until we solve issues around who owns the record."

CONSIDERATIONS

- The policies, business cases, and governance and other structures are already being created in Minnesota for the exchange of medication, lab results and other clinical information. Electronic submission of claims data is very advanced in Minnesota. These provide a solid foundation for advancing interoperability across the state.

ACTIONS PROVIDERS CAN TAKE NOW

- Purchasing only CCHIT-certified EHR products—and keeping them up to date with new releases—increases the chances of your system being standards-based and ready to exchange.

- If you are not part of a regional or statewide health information exchange organization (HIE), explore where the greatest clinical value in exchanging information for you would lie, then begin the conversations with either an HIE or your likely trading partners within your service area. Become proactive now so that you are not just responding to a changed environment down the road.

ACTIONS OTHERS CAN TAKE NOW

- The largest hospital in a region without an HIE should serve as the convener of regional exchange discussions, being willing to provide up-front funds and other support to create an exchange infrastructure (whether virtual or physical) that can be sustained over time through user/membership fees.

Resources *(see also the summary of resources beginning on page G1-38)*

- The HIE Value and Sustainability Toolkit can be downloaded from the national eHealth Initiative (eHI). The Connecting Communities toolkit and other support services are also available from eHI, both at: (www.ehealthinitiative.org/). (Note: Access to eHI's resources requires a no-cost sign-in account.)
- The national Health Information Technology Standards Panel (HITSP) is tasked with setting data standards that will facilitate health information exchange. All of the HITSP requirements, design and standards selection documents—as well as the ability to comment on them—can be found at www.hitsp.org/.
- For a list of nationally certified EHR products, see the Certification Commission for Health information Technology (CCHIT) at (www.cchit.org). The EHR products are certified based on a demonstrated ability to meet criteria for functionality, interoperability and security.
- The Minnesota e-Health Initiative has an extensive section on health data standards on its web site, including primers on the need for and types of standards, currently establish standards and other resources. See (www.health.state.mn.us/e-health/standards/index.html) and (www.health.state.mn.us/e-health/stndrdshome.html).
- AHIMA's Foundation of Research and Education has released results from a national study on state-level HIE initiatives. It offers research findings, case studies, and workbook materials to assist existing and emerging state-level HIE initiatives. The report is the result of a six-month project conducted under contract to the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology (www.ahima.org/hie/).

Web-based and Other Resources for EHR Adoption and Effective Use

Electronic Health Records (EHR) ADOPTION AND IMPLEMENTATION

Stratis Health DOQ-IT (Doctor Office Quality – Information Technology) Quality Resource Kit

- The DOQ-IT resource kit contains dozens of practical worksheets and other tools to assist in EHR assessment, planning, selection, implementation, effective use and maintenance (www.stratishealth.org) under Tools and Resources.

American Academy of Family Physicians (AAFP)

- Information on a variety of practice management issues, including EHRs, can be found at: www.aafp.org/online/en/home/practicemgt.html.
- The AAFP's Center for Health Information Technology (CHiT) is at: www.centerforhit.org/. CHiT is the focal point of the AAFP's technical expertise, advocacy, research, and member services associated with medical office automation and computerization.

American Academy of Pediatrics (AAP)

- Most resources related to EHRs and HIT require an AAP membership (www.aap.org).

American College of Physicians

- The ACP web site offers a step-by-step guide to finding, selecting and implementing a successful Electronic Health Record system, as well as a service (for ACP members only) to help select the right EHR product for a practice. (https://www.acponline.org/running_practice/technology/ehr/

Electronic Prescribing Readiness Assessment Project

- Five national physician organizations launched a new program to help providers assess their readiness for sending electronic prescriptions (www.getrxconnected.com/).

Certification Commission for Healthcare Information Technology (CCHIT)

- The national body that certifies EHR based on objective, verifiable criteria for functionality and interoperability (www.cchit.org).
- List of CCHIT-certified EHR products:
  - Ambulatory EHR 2007: www.cchit.org/choose/ambulatory/2007/index.asp
  - EHR 2007: (www.cchit.org/choose/inpatient/2007/index.asp)
  - Ambulatory EHR 2006: www.cchit.org/choose/ambulatory/2006/index.asp

2007 Physician's Guide to Certification for Ambulatory Electronic Health Records

- A guide to help physicians and practice managers understand the benefits when EHR products have been certified by CCHIT (www.cchit.org/files/CCHITPhysiciansGuide2007.pdf).

EHR Decisions

- Electronic Health Record (EHR) Information & News (www.ehrdecisions.com/)

Electronic Health Records (EHR) EFFECTIVE USE

American Health Information Management Association (AHIMA)

- The AHIMA web site includes an extensive section on "e-HIM" that includes practice standards for transitioning from paper to electronic medical records (www.ahima.org/e-him).

Health Information Management System Society

- Provides numerous resources on topics related to EHR, integration, interoperability and other issues. Many resources require a HIMSS membership (www.himss.org/ASP/topicsHome.asp).

AHRQ National Resource Center for HIT

- Information on activities and projects around the country, toolkits, knowledge library, FAQs and funding opportunities (www.healthit.ahrq.gov).

EHR Decisions

- Electronic Health Record (EHR) Information & News (www.ehrdecisions.com/).

Case studies of CCHIT Certified EHRs in practice

- Stories on the impact of EHR use told in human and business terms (www.cchit.org/about/casestudies/index.asp).

Electronic Health Records (EHR) INTEROPERABILITY AND HEALTH INFORMATION EXCHANGE

eHealth Initiative (eHI)

The eHealth Initiative and the Foundation for eHealth Initiative are independent, non-profit affiliated organizations whose missions are to drive improvement in the quality, safety, and efficiency of health care through information and information technology (www.ehealthinitiative.org).

Resources (many require no–cost sign-in account):

- *Connecting Communities* toolkit on health information exchange with modules, tools and templates on:
  - Getting Organized
  - Communications and Outreach
  - Value Creation and Financing
  - Practice Transformation
  - Policies for Information Sharing
  - Technology
  - Public Policy and Advocacy
- The national eHealth Initiative's *Value and Sustainability Model* provides a practical guidance for communities in building viable business plans and achieving sustainability in health information exchange (www.ehealthinitiative.org).
- *Connecting Communities* coalition membership; sign up for free e-newsletters and learn from other exchange coalitions.
- The eHealth Initiative *Blueprint: Building Consensus for Common Action* represents multi-stakeholder consensus on a shared vision and a set of principles, strategies and actions for improving health and health care through information and information technology (IT) (www.ehealthinitiative.org/blueprint/).
- Summaries of Congressional and state policy actions.

STANDARDS

Health Information Technology Standards Panel (HITSP)

The mission of the Healthcare Information Technology Standards Panel is to serve as a cooperative partnership between the public and private sectors for the purpose of achieving a widely accepted and useful set of standards specifically to enable and support widespread interoperability among health care software applications, as they will interact in a local, regional and national health information network for the United States (www.hitsp.org/).

Resources from HITSP:

- Interoperability Specifications
- Security and Privacy Documents
- Requirements, Design and Standards Selection

Certification Commission for Healthcare Information Technology (CCHIT)

- The national body that certifies EHR based on objective, verifiable criteria for functionality and interoperability (www.cchit.org).
- List of CCHIT-certified EHR products:
  - Ambulatory EHR 2007: (www.cchit.org/choose/ambulatory/2007/index.asp)
  - EHR 2007: (www.cchit.org/choose/inpatient/2007/index.asp)
  - Ambulatory EHR 2006: (www.cchit.org/choose/ambulatory/2006/index.asp)

Minnesota e-Health Initiative Web Page on Standards

Provides information on both the Minnesota mandates and recommendations around standards, as well as background information on health data standards generally, including EHR certification (www.health.state.mn.us/e-health/standards/index.html).

Health Information Management Systems Society (HIMSS) Tutorial: Standards 101

(www.himss.org/content/files/standards101/Standards_101.pdf)

HL7 organization, tutorial on HL7

(www.hl7.org/library/committees/education/Intro%20To%20HL7.zip)

Standards Recommended for Use in Minnesota

2008
JUNE

Minnesota Department of Health *and the*
Minnesota e-Health Initiative Advisory Committee

FOR MORE INFORMATION: Minnesota Department of Health
Minnesota e-Health Initiative/Center for Health Informatics
P.O. Box 64882, 85 East Seventh Place, Suite 220, St. Paul, MN 55164-0882
651-201-5979 www.health.state.mn.us/e-health/

In Guide 2

Standards Recommended for Use in Minnesota as of June 2008

Minnesota Statutes 2007, Section 62J.495

"By January 1, 2015, all hospitals and health care providers must have in place an interoperable electronic health records system within their hospital system or clinical practice setting. The commissioner of health, in consultation with the [Minnesota e-Health Initiative] Advisory Committee, shall develop a statewide plan to meet this goal, *including uniform standards to be used for the interoperable system for sharing and synchronizing patient data across systems. The standards must be compatible with federal efforts. The uniform standards must be developed by January 1, 2009...*"

Guide 2

Standards Recommended for Use in Minnesota as of June 2008

The following standards have been recommended by the Minnesota e-Health Initiative to the Commissioner of Health. Standards #1 and #2 below have been enacted into law by the 2008 Minnesota Legislature and Governor Pawlenty. The adoption of all the standards listed here applies to all providers covered by the 2015 interoperable EHR mandate (see Appendix B of the statewide implementation plan).

See Figure 1 on page G2-7 for a graphic showing Minnesota's Approach for Recommending e-Health Standards.

To support providers in understanding and effectively adopting this complex array of health data standards, MDH has developed an extensive series of Web pages that provide background and educational information, report on progress of the Minnesota Standards Workgroup, and report on and summarize the extensive work being conducted nationally (see www.health.state.mn.us/ehealth).

The two national bodies that serve as the basis for much of the standards activities in Minnesota are:

- Certification Commission for Health Information Technology (CCHIT): Certifies electronic health record software products for functionality and the ability to exchange information (www.cchit.org).
- Health Information Technology Standards Panel (HITSP): Harmonizes the actual data standards to be used for capturing and exchanging information (www.hitsp.org).

1. Certified EHRs

Minnesota Statutes 2008, Section 62J.495, Subd. 3. Interoperable Electronic Health Record Requirements:

(a) To meet the requirements of [the 2015 interoperable electronic health records (EHR) mandate], hospitals and health care providers must meet the following criteria when implementing an interoperable EHR system within their hospital system or clinical practice setting.

(b) The electronic health record must be certified by the Certification Commission for Healthcare Information Technology (CCHIT), or its successor. This criterion only applies to hospitals and health care providers whose practice setting is a practice setting covered by CCHIT certifications. This criterion shall be considered met if a hospital or health care provider is using an electronic health records system that has been certified within the last three years,

even if a more current version of the system has been certified within the three-year period.

(c) A health care provider who is a prescriber or dispenser of controlled substances must have an electronic health record system that meets the requirements of section 62J.497.

2. Medication Management

Minnesota Statutes 2008, Section 62J.497

Subd. 2. Requirements for Electronic Prescribing.

(a) Effective January 1, 2011, all providers, group purchasers, prescribers and dispensers must establish and maintain an electronic prescription drug program that complies with the applicable standards in this section for transmitting, directly or through an intermediary, prescriptions and prescription-related information using electronic media.

(b) Nothing in this section requires providers, group purchasers, prescribers or dispensers to conduct the transactions described in this section. If transactions described in this section are conducted, they must be done electronically using the standards described in this section. Nothing in this section requires providers, group purchasers, prescribers or dispensers to electronically conduct transactions that are expressly prohibited by other sections or federal law.

(c) Providers, group purchasers, prescribers and dispensers must use either HL7 messages or the National Council for Prescription Drug Programs (NCPDP) SCRIPT Standard to transmit prescriptions or prescription-related information internally when the sender and the recipient are part of the same legal entity. If an entity sends prescriptions outside the entity, it must use the NCPDP SCRIPT Standard or other applicable standards required by this section. Any pharmacy within an entity must be able to receive electronic prescription transmittals from outside the entity using the adopted NCPDP SCRIPT Standard. This exemption does not supersede any Health Insurance Portability and Accountability Act (HIPAA) requirement that may require the use of a HIPAA transaction standard within an organization.

(d) Entities transmitting prescriptions or prescription-related information where the prescriber is required by law to issue a prescription for a patient to a nonprescribing provider that in turn forwards the prescription to a dispenser are exempt from the requirement to use the NCPDP SCRIPT Standard when transmitting prescriptions or prescription-related information.

Subd. 3. Standards for electronic prescribing.

(a) Prescribers and dispensers must use the NCPDP SCRIPT Standard for the communication of a prescription or prescription-related information. The NCPDP SCRIPT Standard shall be used to conduct the following transactions:

(1) get message transaction;

(2) status response transaction;

(3) error response transaction;

(4) new prescription transaction;

(5) prescription change request transaction;

(6) prescription change response transaction;

(7) refill prescription request transaction;

(8) refill prescription response transaction;

(9) verification transaction;

(10) password change transaction;

(11) cancel prescription request transaction; and

(12) cancel prescription response transaction.

(b) Providers, group purchasers, prescribers and dispensers must use the NCPDP SCRIPT Standard for communicating and transmitting medication history information.

(c) Providers, group purchasers, prescribers and dispensers must use the NCPDP Formulary and Benefits Standard for communicating and transmitting formulary and benefit information.

(d) Providers, group purchasers, prescribers and dispensers must use the national provider identifier to identify a health care provider in e-prescribing or prescription-related transactions when a health care provider's identifier is required.

(e) Providers, group purchasers, prescribers and dispensers must communicate eligibility information and conduct health care eligibility benefit inquiry and response transactions according to the requirements of section 62J.536.

Recommendation on standards to monitor: All Minnesota health care organizations should prepare for implementation of the following four standards and should implement them when they are approved as part of CCHIT or a comparable national certification process.

(a) Ability to send, store and receive coded medication information:
Federal Medication Terminologies (FMT): NDC, RxNorm, UNII, SNOMED CT and HITSP C32 v.2.0.

(b) Send text or coded allergy information with new electronic prescriptions to Pharmacy (directly), PBM (directly) or via intermediary network (e.g. SureScripts, RxHub):
NCPDP SCRIPT 8.1 (NEWRX) using the free text field of the message drug segment (DRU 090).

(c) Receive medication fulfillment history:
NCPDP SCRIPT 8.1 (RXFILL)

(d) Send electronic prescription to pharmacy including structured and

coded SIG instructions:
NCPDP SCRIPT 10.5

3. Laboratory Results Reporting

Recommendation for immediate action: All Minnesota health care organizations should use the following three standards for laboratory results reporting.

(a) For laboratory results reporting between laboratory and providers: HL7 v 2.5.1 message.

(b) For representation of laboratory tests in orders and results: LOINC (Logical Observations Identifiers, Names, Codes).

(c) For representation of laboratory result contents: SNOMED CT (Systematized Nomenclature of Medicine Clinical Terms).

Recommendation on standards to monitor: All Minnesota health care organizations should prepare for implementation of the following three standards and should implement them when they are approved as part of CCHIT or a comparable national certification process.

(d) For reporting of Toxicology Screens:
RxNorm
(www.nlm.nih.gov/research/umls/rxnorm/index.html)

(e) For coding of units in laboratory results:
UCUM (HL7 code set)
(www.aurora.regenstrief.org/UCUM/ucum.html)

(f) Laboratory Results Reporting using Document method:
HL7 CDA R2

4. Immunization Information Exchange

Recommendation for immediate action: All Minnesota health care organizations should use the following two standards for electronic communications of immunization data.

(a) Reporting of immunization data to an Immunization Information System:

For immunization data exchange between provider EHRs and immunization information system: HL7 v 2.5 message

For representation of immunization data: CVX (Vaccine Code Set) + MVX (Vaccine Manufacturer / Distributor code set) + Vaccine Lot Number
or
CPT (Current Procedural Terminology) code set + MVX (Vaccine Manufacturer / Distributor code set) + Vaccine Lot Number

(b) Query and retrieve immunization status and history
For immunization data exchange between provider EHRs and

immunization information systems: HL7 v 2.5 message

For representation of immunization data: CVX (Vaccine Code Set) + MVX (Vaccine Manufacturer / Distributor code set) + Vaccine Lot Number
or
CPT (Current Procedural Terminology) code set + MVX (Vaccine Manufacturer / Distributor code set) + Vaccine Lot Number

Recommendation on standards to monitor: All Minnesota health care organizations should prepare for implementation of the following standards and should implement them when they are approved as part of CCHIT or a comparable national certification process.

(c) Interface Requirements between EHRs and Registries and sharing of decision support and immunization schedules: Revised HL7 standards (underway) / TBD

(d) Population specific reports and alerts from immunization information system to EHRs: Standards TBD

(e) For representation of allergy and adverse reactions to immunizations: Codes (TBD based on national recommendations)

ONLINE RESOURCES RELATED TO STANDARDS

Health Information Technology Standards Panel (HITSP)

The mission of the Healthcare Information Technology Standards Panel (HITSP) is to serve as a cooperative partnership between the public and private sectors for the purpose of achieving a widely accepted and useful set of standards specifically to enable and support widespread interoperability among health care software applications, as they will interact in a local, regional and national health information network for the United States (www.hitsp.org/).

Resources from HITSP:

- Interoperability Specifications
- Security and Privacy Documents
- Requirements, Design and Standards Selection

Certification Commission for Healthcare Information Technology (CCHIT)

- The national body that certifies EHR based on objective, verifiable criteria for functionality and interoperability (www.cchit.org).
- List of CCHIT-certified EHR products:
  - Ambulatory EHR 2007: (www.cchit.org/choose/ambulatory/2007/index.asp)
  - Inpatient EHR 2007:

(www.cchit.org/choose/inpatient/2007/index.asp)

- Ambulatory EHR 2006:
  (www.cchit.org/choose/ambulatory/2006/index.asp)

Minnesota e-Health Initiative Web Page on Standards

Provides information on both the Minnesota mandates and recommendations around standards, as well as background information on health data standards generally, including EHR certification (www.health.state.mn.us/e-health/standards/index.html).

Health Information Management Systems Society (HIMSS) Tutorial: Standards 101

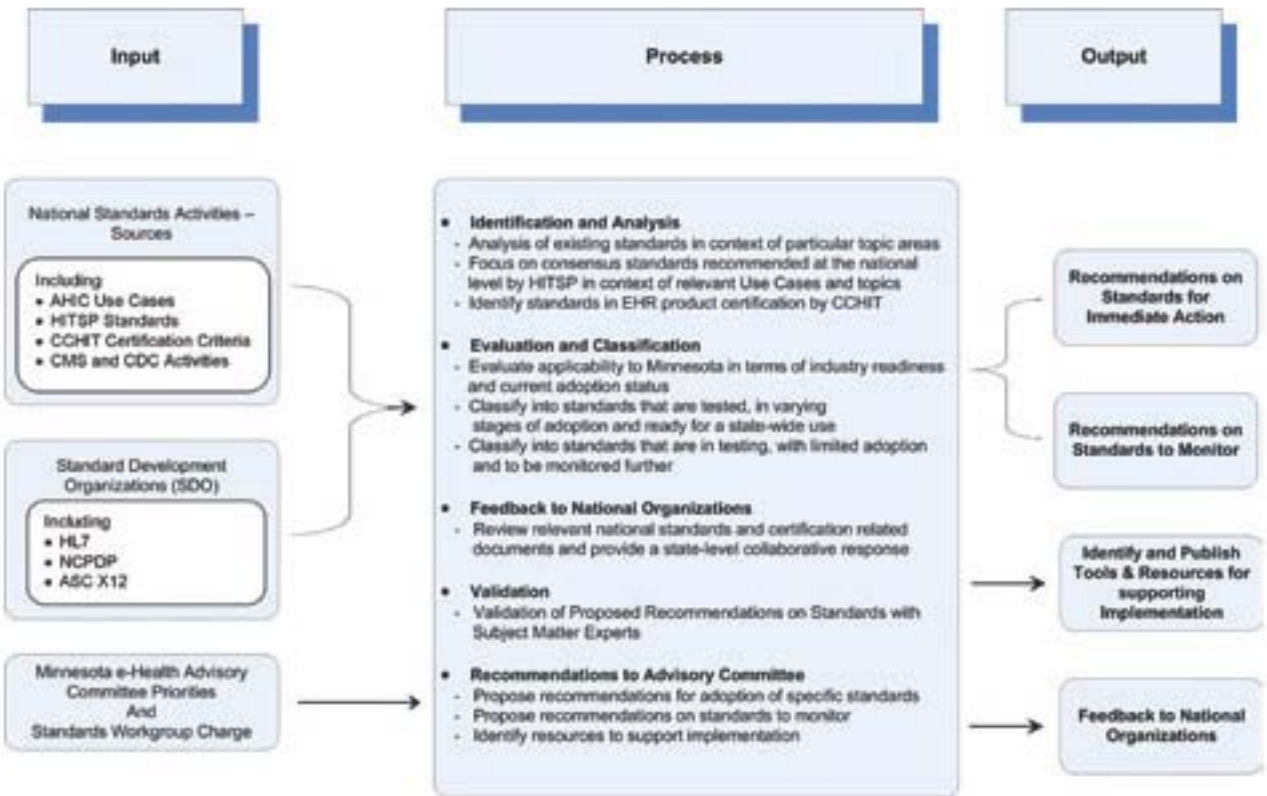
(www.himss.org/content/files/standards101/Standards_101.pdf)

HL7 organization, tutorial on HL7
(www.hl7.org/library/committees/education/Intro%20To%20HL7.zip)

More information resources on standards can be found at:

(www.heath.state.mn.us/ehealth), under Standards.

Figure 1. Minnesota Approach for Recommending e-Health Standards



Minnesota Department of Health, May 2008

For More Information:

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