



Minnesota e-Health Initiative Report to the Minnesota Legislature 2014

Minnesota Department of Health
March 2014



Division of Health Policy
Office of Health Information Technology
PO Box 64882
St. Paul, MN 55164-0882
651-201-5979
www.health.state.mn.us/e-health

As required by Minnesota Statutes, Section 3.197, this report cost approximately \$2,558.00 to prepare, including staff time, printing and mailing expenses.

Upon request, this material will be made available in an alternative format such as large print, Braille, or digital audio.

Printed on recycled paper.



Protecting, maintaining and improving the health of all Minnesotans

March 12, 2014

The Honorable David W. Hann
Chair, Health and Human Services Committee
Minnesota Senate
Room 328, State Capitol
75 Rev. Dr. Martin Luther King Jr. Blvd.
Saint Paul, MN 55155-1606

The Honorable Tom Huntley
Chair, Health and Human Services Finance
Committee
Minnesota House of Representatives
585 State Office Building
100 Rev. Dr. Martin Luther King Jr. Blvd.
Saint Paul, MN 55155

The Honorable Kathy Sheran
Chair, Health, Human Services and Housing Committee
Minnesota Senate
127 State Office Building
100 Rev. Dr. Martin Luther King Jr. Blvd.
Saint Paul, MN 55155-1206

The Honorable Tina Liebling
Chair, Health and Human Services Policy Committee
Minnesota House of Representatives
367 State Office Building
100 Rev. Dr. Martin Luther King Jr. Blvd.
Saint Paul, MN 55155

To the Honorable Chairs:

As required by Minnesota Statutes, section 62J.495, this Minnesota e-Health Initiative report outlines progress toward Minnesota's goals for health information technology. Significant advances for 2013 included:

- State and national recognition for its leading e-health indicators such as the top rates of the adoption and use of electronic health records (EHRs) and secure exchange of clinical information needed for care. Adoption rates of EHRs are high among ambulatory clinics (87%) and hospitals (96%), with adoption increasing in rural and specialty care clinics.
- Being a national leader in e-prescribing services to reduce errors and manage medications.
- Leading technical assistance and outreach services offered through the Minnesota regional extension center (REACH) program. Effective use of EHRs for functions such as decision support are increasing, and earlier gaps between urban and rural settings are narrowing.
- Recognition of the Southeastern Minnesota Beacon program as a remarkable public – private community model for effective care coordination;
- Substantial assistance outreach with \$2.4 million in e-health grants and \$2.5 million in loans awarded to providers and communities in need.
- Nearly \$350 million distributed to eligible hospitals and providers achieving incentives through the Federal meaningful use program.

The Minnesota e-Health Initiative is ensuring that these and many other activities in the public-private sectors across the state are occurring in a coordinated and focused way.

Sincerely,

A handwritten signature in black ink, appearing to read "Edward J. Ebling".

Edward J. Ebling, M.D., M.P.H.
Commissioner
P.O. Box 64975
St. Paul, MN 55164-0975

General Information: 651-201-5000 • Toll-free: 888-345-0823 • TTY: 651-201-5797 • www.health.state.mn.us

An equal opportunity employer

Table of Contents

Executive Summary.....	2
Overview of the Minnesota e-Health Initiative	7
Minnesota e-Health by the Numbers.....	17
Health Information Exchange.....	24
Adoption and Use of Standards as a Foundation for Achieving Interoperability	29
Privacy, Security, and Patient Consent	33
Targeted Assistance to Minnesota Health Care Providers and Local Public Health.....	36
Collaborative Projects within MDH.....	39
The Future of e-Health in Minnesota.....	43
Conclusions	48
Appendix A: Meaningful Use of Electronic Health Records	49
Appendix B: Minnesota e-Health Advisory Committee Members, 2013-14	50
Appendix C: Other Minnesota e-Health Resources.....	52
Appendix D: Summary of MDH OHIT and MN e-Health Participation in National Activities.....	53
Appendix E: Minnesota e-Health Initiative Approach for Recommending e-Health Standards	55
Appendix F: Summary of Minnesota and Federal Law Related to Use and Disclosure	56
Appendix G: Minnesota e-Health Connectivity Grant Program for Health Information Exchange Partners	57
Appendix H: Glossary of Selected Terms	58

Executive Summary

Introduction

In the ten years since the Minnesota e-Health Initiative was established, substantial improvements in the health care delivery system are directly attributed to e-health. In 2004 almost no providers were able to perform automated drug-drug interaction safety checks on prescribed medications, and in 2013 this practice is the norm. In 2004 few health care consumers had online access to their health information or the ability to share that information across providers, and in 2013 two-thirds of clinics offer an online patient portal with access to lab test results, visit summaries, appointment scheduling and much more. Providers now routinely use clinical decision support tools within their electronic health record (EHR) systems to support improved quality and patient outcomes.

In Minnesota and across the nation e-health has emerged as a successful strategy to help transform access, care delivery and patient experiences, and improve the health of communities. Minnesota continues a strong tradition of achieving many notable e-health milestones in 2013. Foremost among these achievements are:

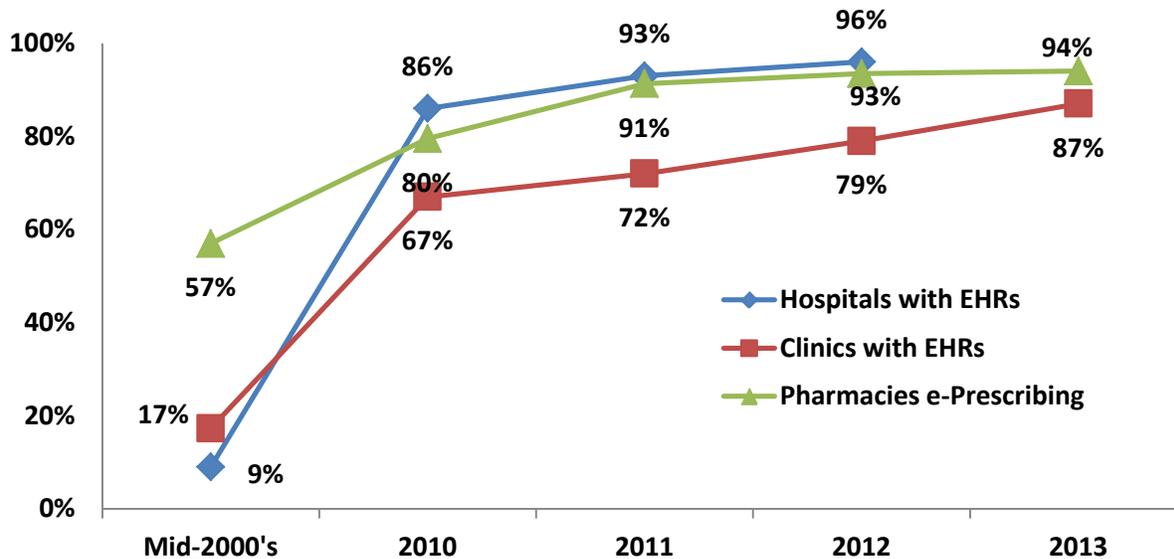
- State and national recognition for its leading e-health indicators such as the top rates of adoption and use of EHRs and secure exchange of clinical information needed for care. Adoption rates of EHRs are high among ambulatory clinics (87%) and hospitals (96%), with adoption increasing in rural and specialty care clinics.
- Being a national leader in e-prescribing services to reduce errors and manage medications.
- Leading technical assistance and outreach services offered through the Minnesota regional extension center (REACH) program. Effective use of EHRs for functions such as decision support are increasing, and earlier gaps between urban and rural settings are narrowing.
- Recognition of the Southeastern Minnesota Beacon program as a remarkable public – private community model for effective care coordination;
- Substantial assistance outreach with \$2.4 million in e-health grants awarded in 2011 and 2012, and \$2.5 million in loans awarded to providers and communities in need since 2008.
- Nearly \$350 million distributed to eligible hospitals and providers achieving incentives through the federal meaningful use program.
- More than 50 training workshops and educational presentations to local and national audiences to support e-health implementation and use.

E-Health trends in Minnesota

Minnesota uses three key steps to measure e-health progress: adoption of EHRs among all settings; effective use of the EHR to optimize the value of the investments; and interoperability, or the exchange of information to support care and securely share information vital to patient care and population health.

Figure 1 shows that Minnesota continues to make great strides in advancing e-health in many settings and has near universal adoption of EHRs in key settings such as hospitals, clinics, and pharmacies.

Figure 1: Trends in EHR Adoption



Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html. Hospital data for 2013 are not yet available.

The EHR adoption rates are much lower, or certified software is limited or absent for most of the 17 types of settings covered by the Minnesota 2015 interoperable EHR mandate¹. These settings include providers that are currently not eligible for federal incentive funds, including specialty providers; behavioral and chemical health; rural, dental and chiropractic clinics; long term care; and local and state public health departments; corrections centers and jails; and others.

Effective use of the EHR is vital to achieve the clinical care, and population health benefits of the investment. EHR use is rising in all settings but use of key tools, such as clinical guidelines, care plans, and automated reminders for population care management are not fully utilized. The number of clinics and hospitals using these tools has increased over time and earlier gaps between urban and rural rates of implementation have declined. For example, 55% of rural clinics and 58% of urban clinics were routinely using more than three clinical decision support tools. New ways of leveraging EHRs for quality improvement are developing, leading to a need for additional support to assist providers in understanding how to effectively use the EHR.

Interoperability and health information exchange of information is improving but remains low. Just over half of Minnesota's clinics (54%) exchange clinical health information with affiliated hospital and clinics, compared to just 36% among unaffiliated partners. Many

¹ Minnesota Department of Health, 2013. "Guidance for Understanding the Minnesota 2015 Interoperable EHR Mandate." Available at: <http://www.health.state.mn.us/e-health/hitimp/2015mandateguidance.pdf>

challenges exist to exchange, including privacy and security issues, that represent challenges for providers as exchange of clinical data across providers and settings becomes more expected, required and needed. New mechanisms for health information exchange are rapidly developing; therefore infrastructure, standards and protocols are needed to ensure the exchange of information is standards-based and secure. The need to save costs and improve care using health information exchange is rising across all settings at a time when federal funding to support Minnesota’s efforts is declining.

Recommendations

Minnesota can be proud of the nation-leading successes achieved since 2004 through the Minnesota e-Health Initiative and by the thousands of health professionals in communities statewide. However greater investments are needed to fill gaps in e-health implementation to achieve a successful transformation of our health system, ensure health equity across the population, and develop a Minnesota “learning health system,” which utilizes information and collaboration to continually improve population health.

Key recommendations focus on the challenges facing e-health progress and are presented in Figure 2. Specific needs focus on helping providers attest for meaningful use and achieve the Minnesota 2015 interoperable EHR mandate.

Figure 2: Minnesota e-Health Needs, Gaps, and 2014 Recommendations

Needs	Gap	Recommendation
Adoption of EHRs across the continuum of care	Adoption of EHRs lags among providers not eligible for meaningful use incentives. Financial support and technical assistance will help these providers implement HIT and better support e-health across the continuum of care.	<ul style="list-style-type: none"> • Support grant funding to providers, with emphasis on: long-term care, behavioral health, home health, and local public health. • Support resources for assessment studies to identify barriers to e-health, with emphasis on: long-term care, behavioral health, home health, and local public health, and dentistry.
Effective use of EHR systems	Many providers have not maximized the potential of their EHR by implementing tools to support clinical care.	<ul style="list-style-type: none"> • Support resources for continued technical assistance, education and training to develop and communicate best practices for clinical decision support and related EHR utilization tools. • Support development of best practices for clinical decision support, care registry standards and use.

Needs	Gap	Recommendation
Health information exchange (HIE)	About 40% of clinics and hospitals are using HIE with providers outside of their health system.	<ul style="list-style-type: none"> • Support increased HIE, targeting meaningful use-eligible providers and hospitals, by investing in resources for continued technical assistance, education and training. • Implement HIE in state government agencies, starting with MDH, to comply with the 2015 interoperable EHR mandate. • Support potential modifications to Minnesota’s HIE oversight law (§§ 62J.498 - 62J.4982) to ensure HIE is consistent with current market practices.
Privacy and security of patient health information	Two-thirds of clinics and hospitals report challenges to managing patient privacy preferences. There is a lack of awareness of Minnesota and federal laws and disseminate best practices for implementing and monitoring patient consent to share information.	<ul style="list-style-type: none"> • Support potential modifications to Minnesota’s health records act (§§ 144.291 - 144.298) to reflect current systems and practices to ensure electronic flow of vital information. • Invest resources for continued technical assistance, education and training. • Develop best practices for conducting privacy risk assessments. • Support funding for training on risk assessment.
Standards to support Health Information Exchange and interoperability	Less than one-third of hospitals and clinics in Minnesota report using recommended standards for HIE, which is a significant barrier to interoperability. Low use is attributed to lack of understanding of the benefits of standards, and the lack of standards for settings that do not currently have them.	<ul style="list-style-type: none"> • Support Minnesota e-Health Initiative’s efforts to develop and promote use of standards, ensure consensus among providers in the settings, and empower leadership to implement the efforts. • Invest resources for continued technical assistance, education and training. • Support development of best practices for transitions of care.

Needs	Gap	Recommendation
State and local government e-health readiness and workforce development and coordination	MDH and other state agencies have limited data interoperability within and between each other. MDH is not poised to achieve the 2015 interoperable EHR mandate by having electronic systems to collect, store and use individual and population-based data for public health functions.	<ul style="list-style-type: none"> • Support Minnesota’s state public health system to develop interoperable health data systems and support HIE with Minnesota’s health care providers in particular for achieving stage 2 meaningful use. • Support resources for continued technical assistance and local public health workforce education and training • Support resources to develop a roadmap for e-public health in Minnesota. • Establish a job classification series for health informatics scientists based on Federal standards.
Address current and emerging e-health priorities	E-health is changing rapidly and iteratively, with a limited workforce trained in health informatics to assure that Minnesota’s health care system evolves according to best practices.	<ul style="list-style-type: none"> • Invest resources for OHIT to develop a roadmap for e-health in Minnesota that supports accountable care, health equity for all Minnesotans, and a learning health system. • Support extension of the e-Health Advisory Committee to 2024 to provide collaborative leadership. • Sustain the Office of Health Information Technology within MDH as the coordinator of e-health within State agencies and across the health care system.

E-health in Minnesota has had great success due to the outstanding public-private collaboration, statewide leadership and voluntary contributions of thousands of professionals statewide. However e-health continues to be a very dynamic and rapidly evolving field for health care providers, public health practitioners, consumers, researchers and policy makers and other health professionals. Minnesota can achieve continued success if strategic investments build on the successes of our coordinated efforts to address the emerging urgent challenges and opportunities.

Overview of the Minnesota e-Health Initiative

What is e-Health and Why is it Important?

E-health is the adoption and effective use of electronic health record (EHR) systems and other health information technology (HIT), including health information exchange, to ***improve health care quality, increase patient safety, reduce health care costs, and enable individuals and communities to make the best possible health decisions.*** Across the nation e-health has emerged as a powerful strategy to transform access, care delivery, patient experiences, and health outcomes. Furthermore, e-health is essential to support the exchange of information necessary for health reform initiatives such as accountable care and to advance a "learning health system," which utilizes information and collaboration to continually improve population health.

National e-Health Landscape

Over the past ten years, the work of the Minnesota e-Health Initiative, its Advisory Committee, workgroups and the Minnesota Department of Health (MDH) Office of Health Information Technology (OHIT) have positioned the state to successfully leverage Minnesota e-health investments and take advantage of federal funding aimed to improve care coordination, increase patient safety, and improve health outcomes by ensuring that providers and patients have access to relevant health information when needed across the continuum of care. Because of Minnesota's upfront investment and planning, leveraging federal funding to support e-health, health and health care organizations in the state have received \$334 million in federal incentive payments and are expected to receive up to another \$450 million. These technologies will help further advance Minnesota as a national leader in improving the quality of health care and population health.

Federal Meaningful Use Requirements

In 2009, Congress passed the Health Information Technology for Economic and Clinical Health Act (HITECH Act). The HITECH Act authorized new financial incentives through the meaningful use incentive program involving Medicaid and Medicare programs (see Appendix A for additional information on meaningful use requirements). The objective is to ensure that the adoption and use of health IT contributes to a more efficient, effective and safe health care system that achieves improved health outcomes.

In order to access federal meaningful use incentives, eligible professionals and hospitals adopt, implement, upgrade, or demonstrate "meaningful use" of a certified EHR system. Meaningful use is currently defined by three consecutive stages with each stage having more advanced EHR and health information exchange requirements.

As a part of the broader e-health effort, the Minnesota e-Health Initiative views the definition of meaningful use as part of its framework for effective use of electronic health records. This approach recognizes that the real value in EHR systems comes from using them effectively to support efficient workflows and effective clinical decisions, which have a positive and lasting effect on the health of individuals and populations. While meaningful use has laid the foundation nationally and in Minnesota for hospitals and eligible professionals, significant progress is still needed in the areas of effective use and health

information exchange as well as other settings not currently eligible for meaningful use incentives.

In addition to the Meaningful Use incentive programs, the HITECH Act provided \$2 billion to the Office of the National Coordinator for continuing health information technology policy and standards development, and the implementation of several additional programs to support providers and hospitals in becoming meaningful users of electronic health records. See Figure 3 for a brief description of each program, the intended purpose and the approximate amount of funding available for Minnesota.

Sustainability Plans & Need for Future Investments/Momentum

Funding for the majority of HITECH funded programs is set to end in 2014, but there is a continued need in Minnesota to direct the Minnesota e-Health Initiative work to provide the ongoing support to health care providers in achieving or participating in meaningful use as well as achieving Minnesota's goal for interoperability. Many of Minnesota's health and health care providers across the continuum of care have not benefited from federal funding incentives, yet their interoperability is critical to the success of health reform.

Figure 3: Key Programs Established Under the HITECH Act

HITECH Act Program	Minnesota Recipient	Minnesota Funding	Funding Impact
<p>Centers for Medicare and Medicaid Services (CMS) Incentives for “meaningful use” Provides Medicare and Medicaid incentives for certain health care providers and hospitals that meet criteria established by CMS for the meaningful use of certified EHRs. Medicare providers who do not become meaningful users of EHRs will receive penalties in the form of payment reductions beginning in 2015.</p>	<p>Eligible Professionals and Hospitals in Minnesota Department of Human Services – for implementation of Medicaid Incentive Program</p>	<p>\$450-\$800 million (estimated) Medicare funding runs through 2016. Medicaid funding runs through 2021.</p>	<p>Between January 2011 and October 2013, Minnesota hospitals and eligible providers have received \$347 million in meaningful use incentive payments. Source: Center for Medicare & Medicaid Services, Combined Medicare Medicaid Payments by State.</p>
<p>Regional Extension Centers REACH Extension / Outreach center (Minnesota and North Dakota) Provides funding for the establishment of Health Information Technology Regional Extension Centers that offer technical assistance, guidance and information on best practices to support and accelerate health care providers, Critical Access Hospitals and qualifying Rural Hospitals’, efforts to become meaningful users of Electronic Health Records (EHRs).</p>	<p>Key Health Alliance: Stratis Health, The College of St. Scholastica, and National Rural Health Resource Center</p>	<p>\$22.1 million Funding ends February 2015.</p>	<p>Through December 31, 2013, REACH has achieved the following milestones:</p> <p>Priority Primary Care Providers Target = 3,276</p> <ul style="list-style-type: none"> • Milestone 1: 4,346 (133% of target) signed up for REACH • Milestone 2: 4,219 (129% of target) have EHR adoption with e-prescribing and quality reporting • Milestone 3: 2,375 (72% of target) have obtained Meaningful Use <p>Critical Access Hospitals/Rural Hospitals Target = 88</p> <ul style="list-style-type: none"> • Milestone 1: 85 (97% of target) • Milestone 2: 74 (84% of target) • Milestone 3: 61 (69% of target)

HITECH Act Program	Minnesota Recipient	Minnesota Funding	Funding Impact
<p>Health Information Exchange These programs support states in establishing secure health information exchange (HIE) capacity among health care providers and hospitals in their jurisdictions.</p>	<p>MN e-Health Connect Department of Health</p>	<p>\$9.6 million Funding ends February 2014.</p>	<p>5 HIE Service Providers Certified by the State providing HIE services statewide. Implemented Statewide Shared HIE Services to enable interoperability between State-Certified HIE Service Providers. 182 community partners receiving HIE Connectivity Grants.</p>
<p>Health Information Technology Workforce Development These grant programs support the development of Curricula, training programs and competency testing for a competent and prepared health information technology workforce.</p>	<p>University Partnership for Health Informatics (UP-HI) Students educated in six different HIT roles through two universities (3 campuses) covering the northeast, west, and mid sections of Minnesota. - UMN Twin Cities graduate programs (School of Nursing, School of Public Health, Institute for Health Informatics, and Computer science) - UMN Crookston undergraduate program (Computer Science) - College of St. Scholastica)</p>	<p>\$5.1 million Funding ended December 2013.</p>	<p>Enrollment exceeded the original target by 12% across all HIT roles. Of the 285 HIT trainees enrolled by 9/31/13:</p> <ul style="list-style-type: none"> • 212 completed their programs by 12/31/13. • 53 will complete their training after 12/31/13.
	<p>Normandale Community College</p>	<p>\$1.2 million Funding ended December 2013.</p>	<p>Normandale has successfully trained 424 Healthcare IT professionals through the grant program as of 11/1/2013. The program is projected to train nearly another 100 health IT professionals by July, 2014 (without HITECH funding), and another 33 professionals from rural provider sites by the end of 2014 through a HRSA Rural Health IT Workforce Grant.</p>

HITECH Act Program	Minnesota Recipient	Minnesota Funding	Funding Impact
<p>Beacon Community Program Provides funding to communities to build and strengthen their health information technology infrastructure and exchange capabilities to demonstrate the vision of meaningful health IT.</p>	<p>Southeast MN Beacon Community, including 11 counties, their public health offices, many health care providers, and school districts. Principal collaborating institutions include Austin Medical Center, Mayo Health System, Mayo Clinic, Olmsted Medical Center, and Winona Health Services.</p>	<p>\$12 million</p> <p>Funding ended September 2013.</p>	<p>11 counties and local public health departments and 47 school districts, with 100% EHR adoption rate among providers in the project region and 67% achieving meaningful use.</p> <ul style="list-style-type: none"> • Stable, scalable and sustainable Health IT infrastructure established – expected to affect 2500 providers and 500,000 patients. • Scalable Peer-Peer HIE among all partners. • Community Clinical Data Repository, a central data source for population management, quality measures and research. • School Portal to exchange Asthma Action Plans; expanded to all 47 school districts. • Transitions of care pilot between Mayo Clinic and Olmsted County PH to reduce hospital readmissions of PH patients.
<p>Strategic Health IT Advanced Research Projects (SHARP) Achieving breakthrough advances in health information technology to address key problems such as secondary use of EHR Data.</p>	<p>Mayo Clinic & Partners</p>	<p>\$15 million</p> <p>Funding ends March 2014.</p>	<p>To enable the use of EHR data for secondary purposes, such as clinical research and public health.</p> <p>Leverage health informatics to generate new knowledge, improve care, and address population needs.</p> <p>To support the community of EHR data consumers by developing open-source tools, services, and scalable software.</p>

Minnesota's Approach to e-Health

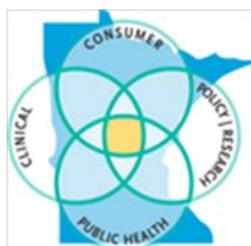
In 2004, the Minnesota e-Health Initiative was established as a public-private collaboration to pursue strong policies and practices to accelerate e-health with a focus on achieving interoperability (the ability to share information seamlessly) across the continuum of care.

The Initiative's consensus-driven approach seeks to identify and encourage policies and practices that:

- **Empower consumers** with information and tools to help make informed health and medical decisions.
- **Inform and connect health care providers** by promoting the adoption of EHRs, effectively using clinical decision support, and achieving interoperable EHRs.
- **Protect communities and improve public health** by advancing efforts to achieve interoperable public health systems and population health goals.
- **Modernize the infrastructure and increase workforce informatics competencies** through adoption of standards for health information exchange; policies for strong privacy and security protection; supporting informatics education, funding and other resources; and assessing and monitoring progress on adoption, use and interoperability.

The Initiative includes representatives from all aspects of Minnesota's health and health care system that are focused on achieving the Minnesota e-Health vision (Figure 4). Achieving the vision of the Minnesota e-Health Initiative requires a collaborative effort among the intersecting domains of clinical care, policy/research, public health, and consumer engagement. This vision guides the work of the Minnesota e-Health Initiative. For the past ten years the e-Health Initiative, led by the Minnesota e-Health Initiative Advisory Committee and OHIT, has pushed for and supported e-health across the continuum of care; as a result, Minnesota is a national leader in implementation and collaboration.

Figure 4: The Minnesota e-Health Vision is to accelerate the adoption and effective use of Electronic Health Record (EHR) systems and other health information technology (HIT) in order to improve health care quality, increase patient safety, reduce health care costs and improve public health.



The vision's comprehensive scope includes four domains:

- Consumers
- Clinicians
- Policy/Research
- Public Health

Minnesota e-Health Advisory Committee

The Minnesota e-Health Advisory Committee is a 25-member legislatively-authorized committee appointed by the Commissioner of Health to build consensus on important e-health issues and advise the Commissioner of Health on policy and common action needed to advance e-health issues. The Committee comprises a diverse set of key Minnesota stakeholders, including: consumers, providers, payers, public health professionals, vendors, informaticians, and researchers, among others. The Committee is convened quarterly, and each year members participate in workgroups to dive into detailed topics such as privacy and security, health information exchange, and standards and interoperability. See Appendix B for a listing of current Advisory Committee Members.

The workgroups are the primary vehicle for investigating specific e-health topics through discussion and consensus-building. Each workgroup has a charter declaring the purpose, schedule, deliverables, and co-chairs that guide the process. The co-chairs and workgroup participants contribute subject matter expertise in discussions, research and analyses through hundreds of hours of volunteer time. OHIT staff analyze and interpret data and summarize findings that will contribute to e-health policy development. Workgroup participants are recruited statewide and are open to the public via in-person meetings and dial-in options.

Office of Health Information Technology and e-Health

Much of the work of the Minnesota e-Health Initiative, including support for the Minnesota e-Health Advisory Committee, is achieved through the leadership and actions of the Minnesota Department of Health's Office of Health Information Technology and e-Health (OHIT). OHIT activities include coordination with stakeholders, assessment of e-health progress in Minnesota, determination of e-health gaps, program development, education, and training activities. Specifically, OHIT carries out the following responsibilities necessary for e-health progress in Minnesota:

- Overseeing statewide e-health responsibilities assigned to the Department of Health under Minnesota Statutes, sections 62J.495 to 62J.4982, including: recommendations for e-health assessment, strategy development, policy alignment and guidance, e-health standards, and outreach and education activities to Minnesota providers on achieving Minnesota's goal for interoperability.
- Convening stakeholders to create and implement a comprehensive and unified vision for e-health in Minnesota.
- Implementing Minnesota's strategic and operational plan for health information exchange to expand the secure, electronic exchange and use of health information among health care organizations using nationally recognized standards.
- Implementing e-health portions of Minnesota's Accountable Health Model through funding from the Center for Medicare and Medicaid Services State Innovation Model program.
- Collaborating with federally-funded programs designed to promote e-health (e.g., Regional Extension Centers, Medicare and Medicaid incentive programs, the State Office of Rural Health and Primary Care).

- Coordinating across state government to maximize federal and state investments in e-health related health information technology and infrastructure development (e.g. the Minnesota Department of Human Services, Minnesota Management and Budget, the Minnesota Department of Corrections, the Minnesota Department of Commerce, and Minnesota Information Technology Services).
- Providing expertise in health informatics and EHRs to guide e-health policy development and implementation, support outreach efforts, and provide other technical assistance such as: education and training; guide development; developing consensus around best practices; and assessing progress, practices, and barriers.

See Appendix C for a listing of additional Minnesota e-health resources supported by OHIT.

To stay current with e-health activities happening nationally, OHIT staff monitor, respond to and actively participate in several national activities. These activities provide opportunity to share lessons learned in Minnesota and learn from other states, as well as to identify policy trends and funding opportunities. As an example, OHIT Director Martin LaVenture was called to testify at the National Committee on Vital and Health Statistics' Hearing on Public Health Data Standards in November 2013. As a nationally-recognized e-health expert, he discussed key policy, guidance and strategic action that this subcommittee should consider in their recommendations related to standards. The Appendix D table summarizes several key national activities to provide a sense for the scope and breadth of activities happening nationally.

The Minnesota 2015 Interoperable EHR Mandate

Policy makers in Minnesota have recognized that more effective use of health information technology – including timely exchange of information – is needed to improve quality and safety of care, as well as to help control costs. As such, Minnesota enacted legislation in 2007 that requires all health care providers in the state to implement an interoperable electronic EHR system by January 1, 2015 (Minn. Stat. §62J.495).

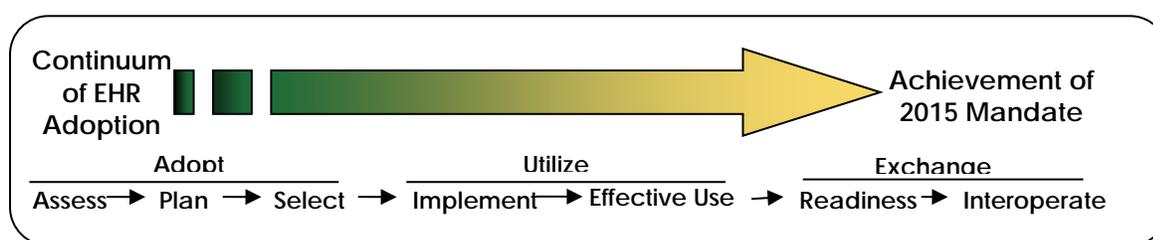
In 2013, the e-Health Initiative sought questions and input from the community and developed guidance for understanding the 2015 interoperable EHR mandate as well as recommendations from the e-Health Advisory Committee for the adoption and effective use of interoperable EHRs. This guidance has been distributed to providers and public health systems across the state to help them understand the requirements of the law, best practices for compliance, and how e-health can benefit their practice. Combined with new and existing guides and toolkits for EHR implementation, this guidance will help advance Minnesota's health care system across the continuum of care. The guidance is available at: <http://www.health.state.mn.us/e-health/hitimp/index.html>.

Minnesota Model for Adopting Interoperable EHRs

In order to help health and healthcare providers achieve the 2015 interoperable EHR mandate, the Initiative developed the Minnesota Model for Adopting Interoperable EHRs (Figure 5) in 2008 to outline seven practical steps leading up to and including EHR interoperability. The Model groups each of the steps into three major categories that apply to all aspects of the Initiative's work and policy development:

- **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**, including readiness to exchange information electronically with other partners, and implementing regular, ongoing exchange between interoperable EHR systems.

Figure 5: Minnesota Model for Adopting Interoperable Electronic Health Records



Minnesota Statutes, section 62J.495, also required the Commissioner of Health to develop a plan for the state to achieve the statutory mandate that all providers and hospitals have in place “an interoperable electronic health records system within their hospital system or clinical practice setting.” The plan, *A Prescription for Meeting Minnesota's 2015 Interoperable Electronic Health Record Mandate—A Statewide Implementation Plan*, was developed through the Minnesota e-Health Initiative and released in June 2008. The plan represents a community-wide consensus for advancing interoperable EHR systems in all settings (e.g. clinics, hospitals, local public health, long term care, etc.) across the state. Since the original release several additional guides have been developed to address specific components of the implementation process, including:

- *Guide 1: Addressing Common Barriers (2008)*
- *Guide 2: Recommended Standards (2009, revised 2011)*
- *Guide 3: Electronic Prescribing (2009)*
- *Guide 4: Effective Use of EHR Systems (2009)*
- *Guide 5: A Practical Guide to Understanding HIE, Assessing Your Readiness and Selecting HIE Options in Minnesota (2012, revised 2013)*

The guides are available at: <http://www.health.state.mn.us/ehealth/ehrplan.html>

Minnesota e-Health Achievements in 2013

Key accomplishments by OHIT and the Minnesota e-Health Initiative during 2013 include:

- Leading development of a statewide infrastructure for HIE through development of the Shared Services cooperative to support interoperability between entities providing health information exchange services statewide.
- Providing technical assistance, outreach, and communication.
- Providing financial assistance through grants and loans.
- Assessing and evaluating e-health implementation.
- Supporting and leveraging the e-Health Initiative Advisory Committee and workgroups to advance critical e-health policy guidance and recommendations. Key workgroup accomplishments included:
 - Developing guidance for providers to meet the Minnesota 2015 EHR Interoperable Mandate.
 - Convening workgroups for 2013-14 to address health information exchange, privacy and security, and standards and interoperability.
 - Identifying the need for and established ad hoc meetings on emerging issues including data analytics, workforce development and accountable care.

Through these activities the Initiative identified needs for future investments to build on successes and address statewide e-health gaps moving forward. These accomplishments are presented in detail in this report. They demonstrate that the e-health implementation framework has been effective and provides the foundation for future e-health development in Minnesota. While there has been considerable e-health progress over the past decade, the 2015 interoperable EHR mandate is fast approaching and much more work is needed in order for Minnesota to optimize the benefits of e-health. The following sections of this report describe the accomplishments, needs and opportunities for each of these topics.

Annual Minnesota e-Health Summit

The Minnesota e-Health Initiative's annual e-Health Summit brings together over 400 key leaders and national experts to share experiences and lessons learned, best practices, knowledge and practical tips, techniques and tools. The goal of the Minnesota e-Health Summit is to provide quality education about emerging national and state e-health trends and issues. In addition to hearing from internationally recognized e-health leaders, attendees discuss policy issues, learn about the progress of innovative projects underway in Minnesota, and get progress reports that highlight statewide activities.



The tenth annual MN e-Health Summit will be held June 11-12, 2014, with a theme of "Looking Back to Celebrate – Looking Forward to Innovate." This commemorative Summit will have an expanded agenda to include a second day of sessions and workshops, in part to recognize the efforts of the Minnesota e-Health community in making great strides over the past decade, and expand upon that to continue the collaboration as we look to the future.

Information on the e-Health Summit is available online at:

<http://www.health.state.mn.us/e-health/summit/index.html>.

Minnesota e-Health by the Numbers

The Initiative established a process for measuring e-health implementation progress among several health and health care settings. The Minnesota e-Health Profile is a series of assessment studies of health care facilities that uniformly collects and shares the progress of Minnesota's health care providers in adopting, implementing and exchanging electronic health information. The assessment information is designed to: measure Minnesota's status on achieving state and national goals relating to e-health and achieving interoperability; identify gaps and barriers to enable effective strategies and efficient use of resources; help develop programs and inform decisions at the local, state and federal levels of government, and support community collaboration efforts.

Minnesota's approach to e-health assessment is a collaborative effort of multiple organizations, led by OHIT, assessing multiple domains that include both health settings and professions, from across the continuum of care. Study results are used by MDH, the e-Health Initiative, provider associations, health informatics students, and the general public. Assessments settings to date include ambulatory clinics, hospitals, local health departments, clinical laboratories, nursing homes, and chiropractic offices in Minnesota.

Minnesota continues to make great strides in advancing e-health in many settings, and evidence continues to grow regarding the positive impact of EHRs for Minnesota consumers, health care providers, and communities. The Minnesota e-Health Initiative monitors the adoption and use of EHRs and the ability to electronically exchange health information among health care providers in a secure manner throughout Minnesota in a variety of settings.

Minnesota e-Health Assessment Highlights

- Adoption rates of EHRs are high (ambulatory clinics at 87% and hospitals at 96%), with adoption increasing in rural and specialty care clinics.
- Effective use of EHRs for functions such as decision support are increasing, and earlier gaps between urban and rural settings are narrowing.
- E-prescribing by pharmacies has rapidly increased in recent years and is among the highest in the nation.
- Health information exchange rates are low with most exchange occurring between affiliated clinics and hospitals (i.e., hospitals and clinics that are part of the same health network).
- Workforce gaps in skills and knowledge persist in health informatics and technology skills.

In 2013 OHIT conducted HIT assessment studies among Minnesota's hospitals, clinical labs, ambulatory clinics, and community health boards. In 2014 these settings will again be studied, and OHIT is seeking resources to conduct studies among other settings across the

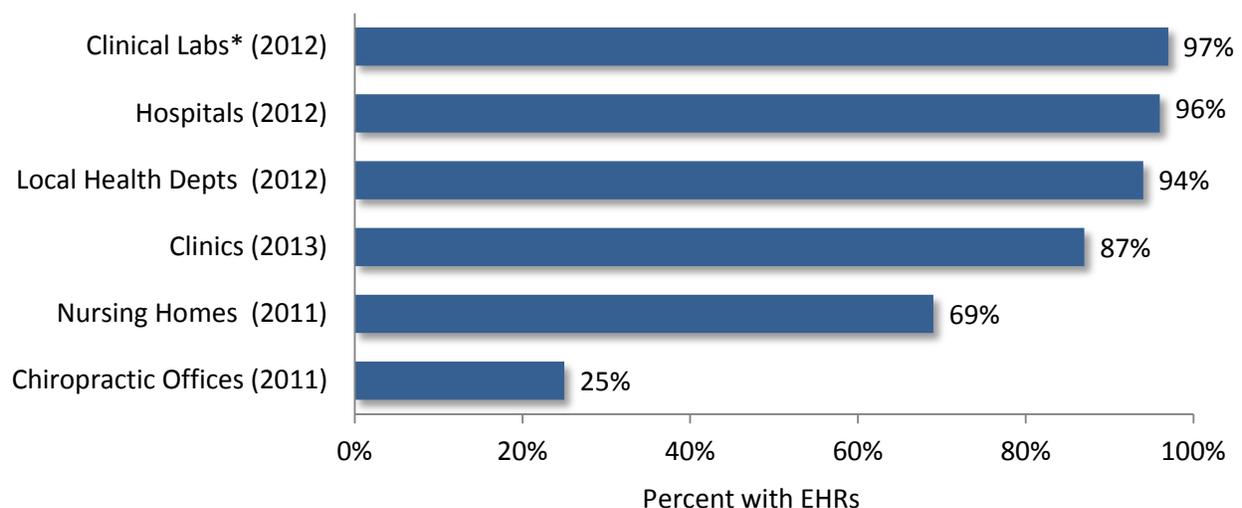
continuum of care to identify barriers to e-health, with emphasis on: long-term care, behavioral health, home health, local public health, and dentistry.

These studies will support in-depth analytic exploration of gaps in e-health implementation for targeted population areas, such as rural areas and underserved urban areas, to identify opportunities to enhance health equity through e-health and build a learning health system.

Adoption of Electronic Health Records

Minnesota has some of the highest EHR adoption rates in the country² and for some settings, such as chiropractic offices, clinical labs and local public health departments, Minnesota is the only state in the nation to have a consistent methodology to measure EHR adoption rates. Figure 6 shows adoption rates across health and health care settings.

Figure 6: Percent of Minnesota Providers Using Electronic Health Records



* Clinical Labs use lab information systems rather than EHRs

Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html

Minnesota hospitals, local health departments and clinical labs have adoption rates of over 90% with most remaining entities planning to adopt or in the process of adoption in the next year. Clinics have made substantial progress toward adoption in recent years, increasing from 67% in 2010 to 87% in 2013. Nursing homes increased from 32% in 2008 to 69% in 2011 (the most recent assessment year for this setting). Yet, gaps in adoption rates still exist in these settings. Some important notes include:

- Eighty-seven percent of clinics (1,114/1,286) reported adopting an EHR in 2013. Another 11% were installing or in the process of planning to implement an EHR. Common barriers to EHR adoption were loss of productivity during the transition,

² U.S Department of Health and Human Services, Office of the National Coordinator for Health IT, Health IT Dashboard. Accessed 11/16/2012

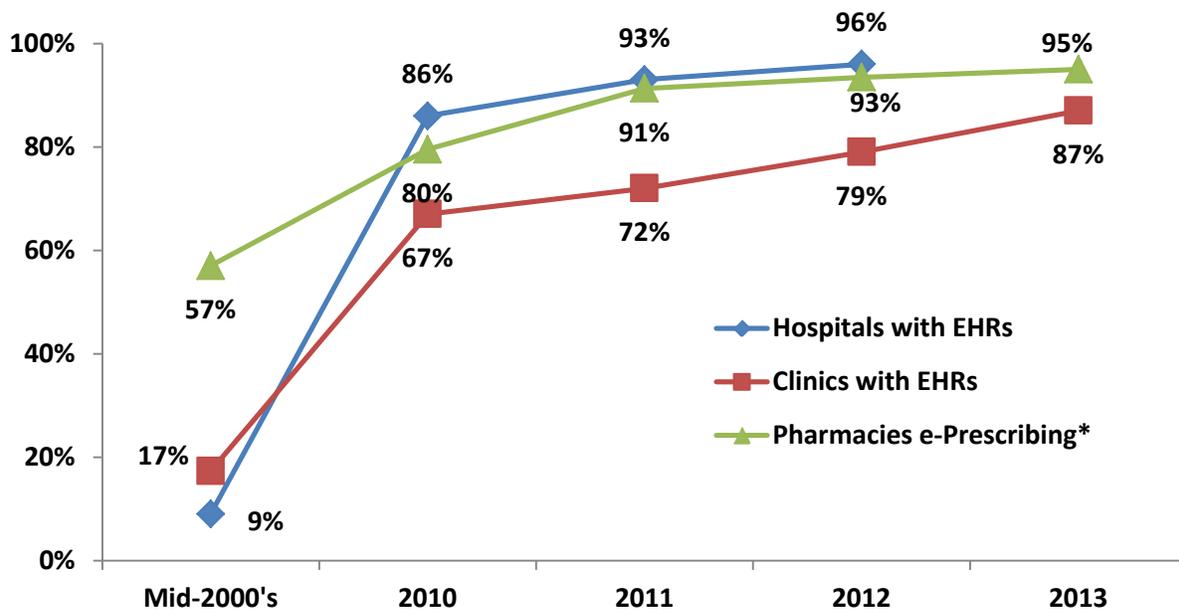
financial resources, reliability of the system, finding a system to meet the clinic's needs, and resistance to changing work practices.

- Nursing homes, which were identified as certified licensed nursing homes and certified boarding care homes, more than doubled in the number with EHRs from 94 in 2008 to 217 in 2011. Most (93/99) of the remaining nursing homes without an EHR were in the process of adoption or had plans to adopt in the next 18 months. The largest challenges to EHR adoption, implementation and upgrades were staff education and training, cost to acquire, and effects on workflow.
- Although only a quarter of chiropractic offices had EHRs in 2011, 55% of chiropractic offices without an EHR plan to implement in the next one to three years. The most common barriers to EHR adoption were cost to acquire and return on investment concerns.

It should be noted that chiropractic offices, nursing homes, local health departments, and clinical labs have no or limited nationally certified EHR software available because there are not national certification programs available for these settings. This limits the use of standards and hinders effective use and interoperability. Looking forward, Minnesota should support EHR adoption, standards and certification for these settings and others such as specialty clinics, home health care organizations and dental offices.

Looking back at trend data for adoption among hospitals, clinics and pharmacies, the adoption rate is very strong for these settings (Figure 7). While the rate of adoption is leveling off as it approaches 100%, there was tremendous progress in adoption over the past decade.

Figure 7: Trends in EHR Adoption



Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html

*Excludes pharmacies with the pharmacy class of medical device manufacturer

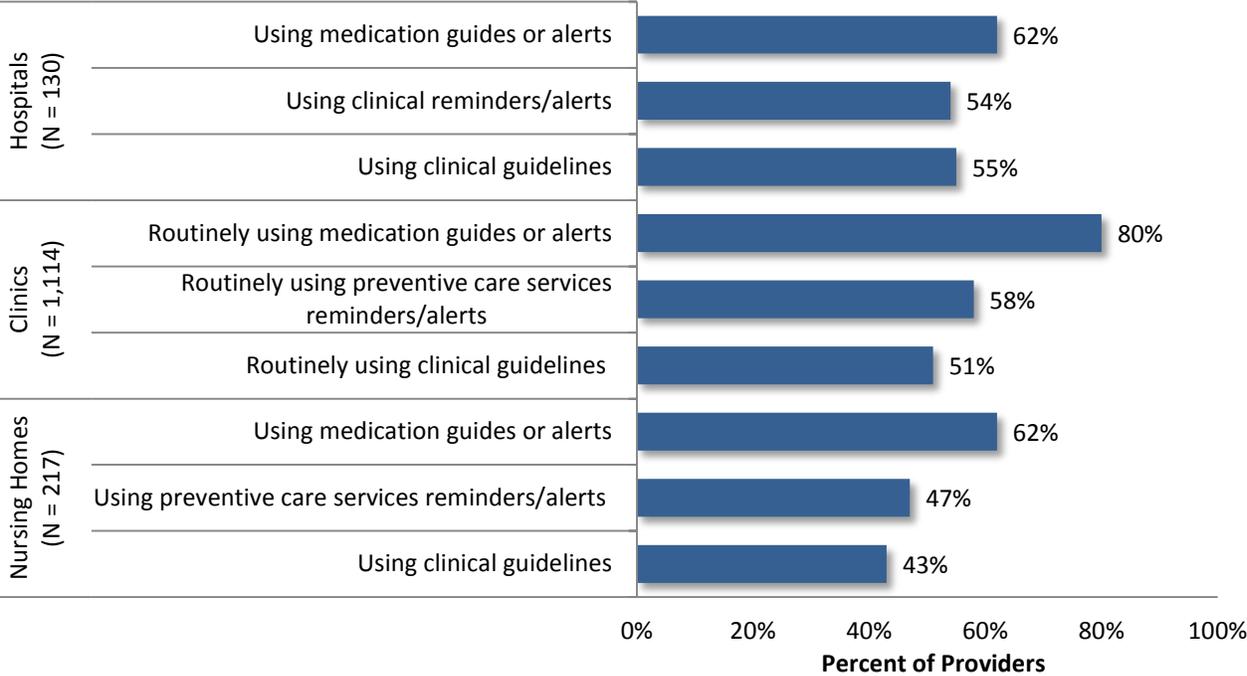
Effective Use of Electronic Health Records

The real value from investing in and implementing an EHR system is how it can be used to support efficient workflows and effective clinical decisions. Effective use means that the EHR has tools such as computerized provider order entry (CPOE), clinical decision support (CDS) tools, and electronic prescribing, and there are processes in place to use these tools for improving health care. Achieving effective use is complex and is impacted by user behavior, organizational processes and practices, and EHR functionality. There are many indicators of effective use of EHRs available for clinics, hospitals, nursing homes and pharmacies. In this section we highlight these key indicators: clinical decision support and electronic prescribing (including computerized provider order entry).

Clinical Decision Support

Clinical decision support is defined broadly as providing clinicians or patients with clinical knowledge and patient-related information, intelligently filtered or presented at appropriate times, to enhance patient care. Figure 8 shows key clinical decision support tool indicators in clinics, nursing homes and hospitals. The number of clinics and hospitals using these tools has increased over time (Figures 9 and 10), and earlier gaps between urban and rural rates of implementation have declined. For example, 55% of rural clinics and 58% of urban clinics were routinely using more than three clinical decision support tools. Among Minnesota’s clinics, common barriers to effective use of CDS tools included lack of resources to build/implement (37%), too many false alarms/too disruptive (37%), required redesign of workflow processes (30%), lack of staff and/or provider training (23%), and functionality not available for their clinical specialty (17%).

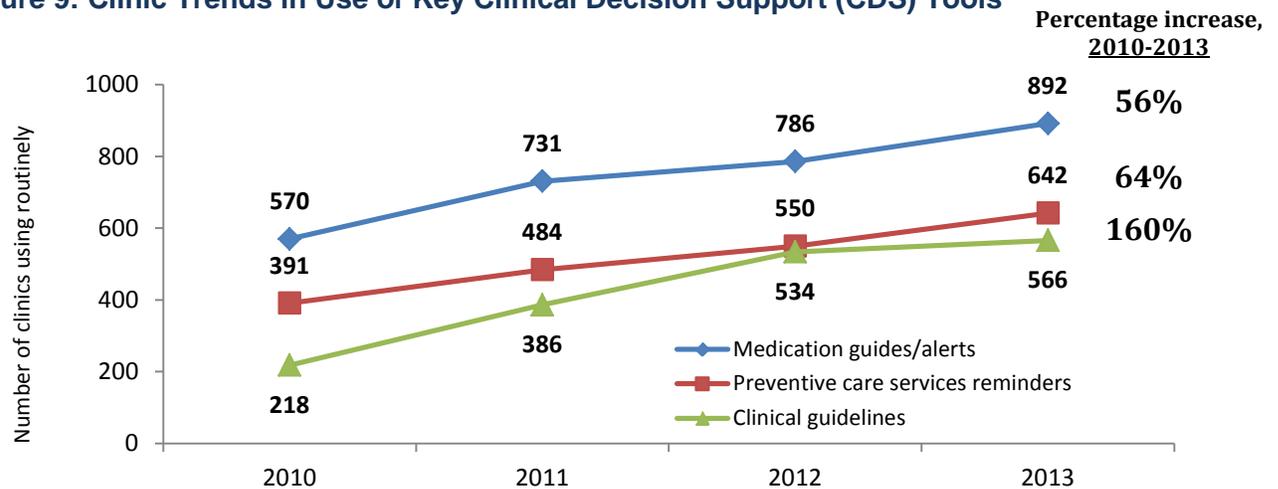
Figure 8: Use of Clinical Decision Support Tools among Providers with EHR Systems



Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html, data from 2013 clinic survey, 2012 hospital survey, and 2011 nursing home survey.

Utilization of CDS tools has increased over time. Figure 9 presents the number of clinics that utilized three key CDS tools over time: medication guides/alerts, preventive care reminders, and clinical guidelines. Routine use of medication guides/alerts increased by 56%, from 570 clinics in 2010 to 892 clinics in 2013. Routine use of preventive care services reminders increased 64%, from 391 to 642 clinics, and routine use of clinical guidelines increased 160%, from 218 to 566 clinics in that time frame.

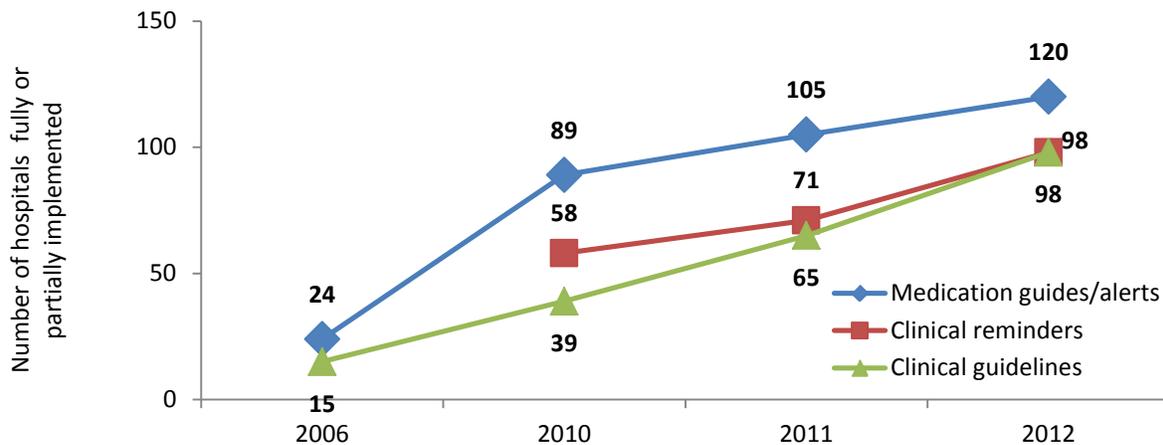
Figure 9: Clinic Trends in Use of Key Clinical Decision Support (CDS) Tools



Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html

Minnesota’s hospitals also show an increase in use of CDS tools over time (Figure 10). Of these same CDS tools, 120 of Minnesota’s hospitals – or more than nine in ten – have medication guides fully or partially implemented. Ninety-eight hospitals have fully or partially implemented clinical reminders and clinical guidelines, representing three-fourths of Minnesota’s hospitals.

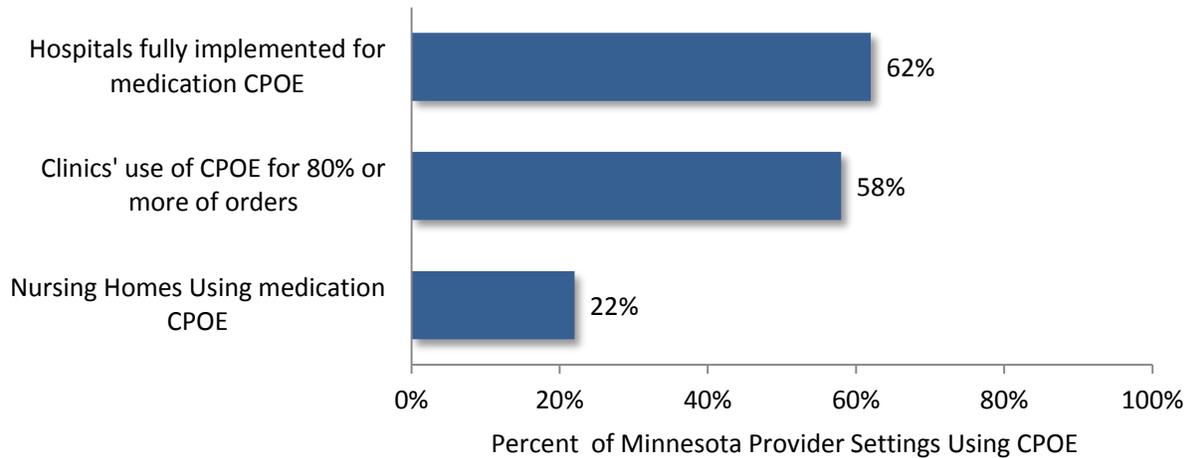
Figure 10: Hospital Trends in Use of CDS Tools



Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html

Another effective use tool is computerized provider order entry (CPOE). CPOE is a computer application that allows a physician's orders for diagnostic and treatment services — such as medications, laboratory, and other tests — to be entered electronically instead of being recorded on order sheets or prescription pads. The computer compares the order against standards for dosing, checks for allergies or interactions with other medications, and warns the physician about potential problems. Figure 11 shows CPOE use for Minnesota clinics, hospitals and nursing homes.

Figure 11: Use of Computerized Provider Order Entry (CPOE) among Providers

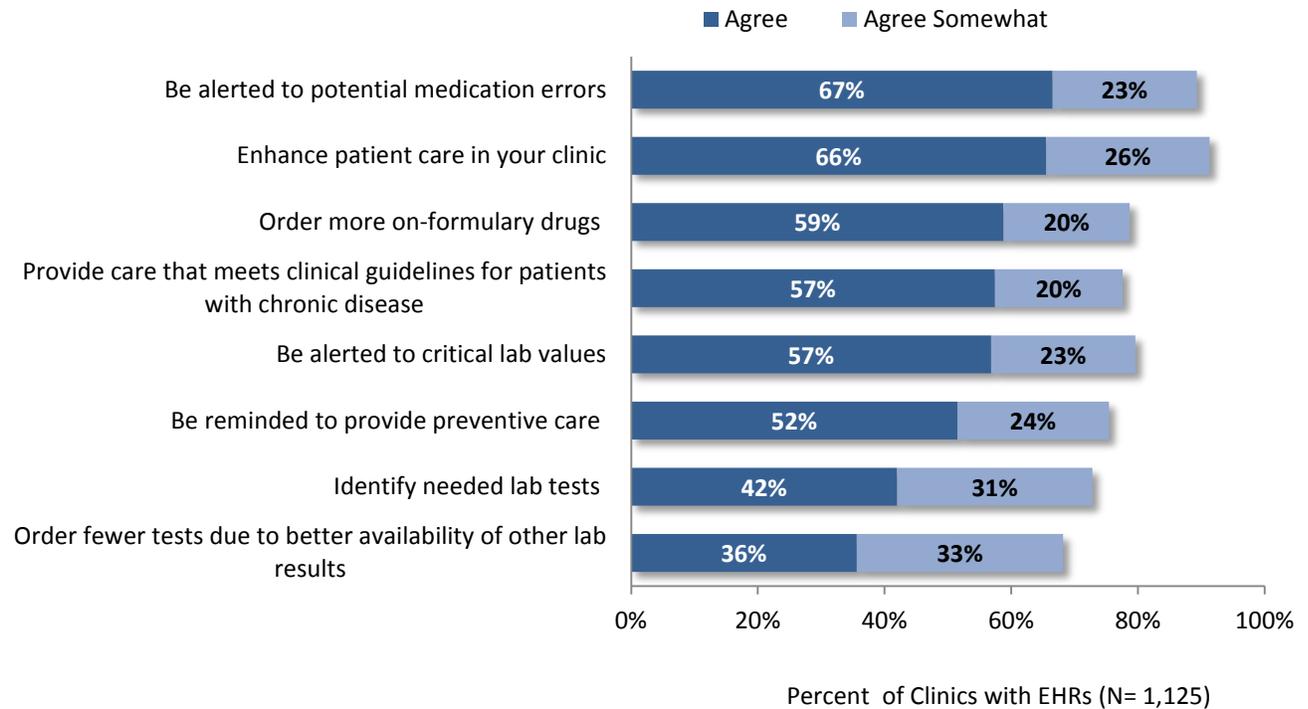


Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html, data from 2013 clinic survey, 2012 hospital survey, and 2011 nursing home survey.

Impact of EHRs on Clinical Practice

In 2013 the clinic study included some new opinion questions regarding the impact EHRs have had on the clinic's practice. There is strong agreement on the positive impact of EHRs, particularly on two important measures: nine in ten clinics agree that the EHRs have alerted their providers to potential medication errors, and that they have enhanced patient care. Furthermore, agreement is strong on all of items shown in Figure 12.

Figure 12: Impact of EHRs on Clinic Practice, 2013



Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html

Health Information Exchange

Health information exchange (HIE) is the secure electronic exchange of clinical information between organizations using nationally recognized standards (Minn. Stat. §62J.498 sub. 1(f)). The goal of health information exchange is to help make health information available, when and where it is needed, to improve the quality and safety of health and health care. In Minnesota, many efforts are underway to help achieve the secure electronic exchange of clinical information between organizations using nationally recognized standards. Other than electronic prescribing, most of the health information exchange happening in Minnesota is primarily between hospitals and clinics in the same EHR system or with affiliated partners. Federal requirements will soon require more health information exchange with unaffiliated partners or partners on different EHR systems.

Minnesota HIE Achievements in 2013

- Implementing Minnesota's Statewide Health Information Exchange **Shared Services Collaborative** to support interoperability between entities providing health information exchange services statewide, ensuring silos of data do not exist among Minnesota's State Certified Health Information Exchange Service Providers (including ongoing governance, sustainability, and technical infrastructure).
- Continued implementation of **Minnesota HIE Oversight Program**, the first of its kind in the nation, to certify Health Information Exchange Service Providers to ensure that HIE products and services sold in Minnesota are based on sound policies, procedures, practices using national standards, and are in compliance with both Minnesota and HIPAA privacy laws. This program, informs the Commissioner of Health on matters pertaining to health information exchange to protect the public interest and support statewide interoperability.
- Conducting an evaluation of the **current state of Minnesota HIE** to ensure that the statewide HIE plan continues to keep pace with national efforts, and meets the needs of Minnesota health care providers, organizations and patients.

The Initiative convened the HIE Workgroup for 2013-14 to form policy recommendations related to health information exchange in Minnesota. Minnesota's needs and opportunities relating to HIE in 2014 include:

- Evaluating potential definition updates, and modernization of the HIE Oversight Law so that the governance activities are consistent with current market practices.
- Determining ongoing mechanisms for the evolving landscape of HIE and develop activities that support increased compliance by HIE Service Providers with the HIE Oversight Law and certification process.
- Developing education and technical assistance tools, guides and resources that match the needs of health care providers, organizations and patients in Minnesota.
- Supporting consumer education on the use, disclosure and exchange of electronic health information as a mechanism to improve health outcomes, improve patient satisfaction and decrease health care delivery costs.

HIE in Minnesota

Minnesota's approach to health information exchange is to support a market-based strategy for secure HIE that allows for private sector innovation and initiative, yet uses government oversight to ensure fair practices and compliance with state privacy protections.

HIE Oversight in Minnesota

Minnesota has an HIE oversight law (Minnesota Statute 62J.498 – 62J.4982) passed in 2010, that provides a governance framework to ensure that a patient's electronic information follows them across the full continuum of care, to prevent fragmentation, encourage collaboration between market partners, and ensure the use of HIE national standards so that data integrity is maintained and information is shared in a safe, secure manner.

OHIT manages this oversight role, certifying HIE service providers that operate in Minnesota, meaning that they provide clinical meaningful use HIE transactions or services. The certification process is intended to promote seamless connections so providers or provider organizations using any of the State-Certified HIE Service Providers could exchange health information.

Due to the evolving nature of HIE and related technologies, the Minnesota e-Health Initiative is examining aspects of the law to determine any needed modifications. Following an evaluation study of the current state of HIE in Minnesota, the 2013-2014 Health Information Exchange workgroup is completing a systematic review of the HIE landscape to:

- Identify new definitions or changes, additions and deletions needed to existing definitions.
- Identify opportunities for better alignment of MN Health Information Exchange (HIE) policies and requirements with Minnesota and national requirements when possible.
- Decrease administrative burden for both MDH and Health Information Exchange Service Providers.

Statewide Shared Services Collaborative

One role MDH specifically has is supporting HIE by facilitating the development of technical infrastructure called shared services, which provide the services and functionality to support and promote seamless connections between health and health care providers. The Minnesota Shared Services infrastructure currently provides three shared services:

1. **Provider directory to look-up Direct addresses:** allows a Minnesota provider to access the Shared Services Interoperable Provider Directory to locate the direct email address of another provider listed therein when initiating a secure exchange of healthcare related information.

2. **Statewide record locator service (RLS):** standards for interoperable record locator services operated by State Certified HIE Service Providers in the state to find the location of clinical patient information.
3. **Consent registry for opt-out:** provides a single patient record registry in the state and a mechanism under which patients who exclude their healthcare information and information about the location of their health records from the service are not included in a record search.

A primary goal for interoperability is to facilitate the connection of all Minnesota Certified Service Providers and provider directories so information can flow freely between and among service providers using secure e-mail addresses. The collaborative was finalized in Fall 2013 and is in the initial states of developing the services

E-prescribing

Electronic prescribing or “e-prescribing” means secure bidirectional electronic information exchange between prescribing providers, pharmacists and pharmacies, and payers or pharmacy benefit managers. E-prescribing improves the quality of patient care because it enables a provider to electronically send an accurate and understandable prescription directly from the point-of-care to a pharmacy. E-prescribing is a way to:

- Improve the quality, safety and cost-effectiveness of the entire prescribing and medication management process.
- Reduce potential adverse drug events and related costs.
- Reduce burden of callbacks and rework needed to address possible errors and clarify prescriptions.
- Increase efficiency of the prescription process and convenience for the patient/consumer.

Research has shown that e-prescribing reduces medication error rates by almost sevenfold in community-based office practices, including near elimination of errors due to illegibility.³ A reduction in medication errors due to investments in health information technology and health information exchange from 1997-2007 saved the U.S. Department of Veterans Affairs \$4.64 billion by decreasing drug-event related hospitalizations and outpatient visits.⁴

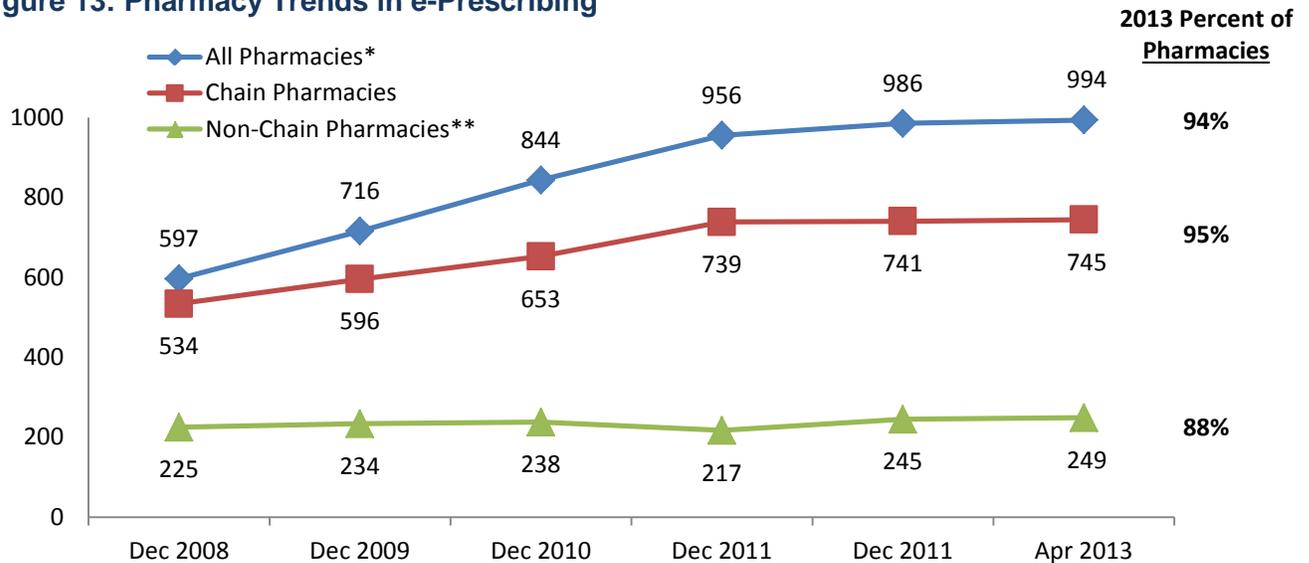
Minnesota measures the status of e-prescribing in several ways, including pharmacy and provider e-prescribing practices. Figures 13 and 14 show the rate of e-prescribing across several settings. We see high rates of adoption among EHR-enabled clinics (92%) and pharmacies (94%), but lower rates among other settings. As a result of the e-prescribing mandate enacted in 2011, Minnesota has seen a dramatic increase in the rate of pharmacies e-prescribing, from 57% in December of 2008 to 94% in 2013. Minnesota’s success with this mandate resulted in the number one in 2011 (and number two in 2012)

3 Kausha, R., Kern, L., Barron, Y., Quaresimo, J., & Abramson, E. (2010). Electronic Prescribing Improves Medication Safety in Community-Based Office Practices. *J Gen Intern Med* 25(6):530-6.

4 Byrne, C. M., Mercincavege, L. M., Pan, E. C., Vincent, A. G., Johnston, D. S., & Middleton, B. (2010). The Value from Investment in Health Information Technology at the U.S. Department of Veterans Affairs. *Health Affairs* 29(4):629-638.

Safe-Rx™ Ranking award from Surescripts, the country’s largest clinical health information network.⁵ This award recognizes states’ leadership and commitment to advancing health care safety, efficiency and quality through the use of e-prescribing.

Figure 13: Pharmacy Trends in e-Prescribing



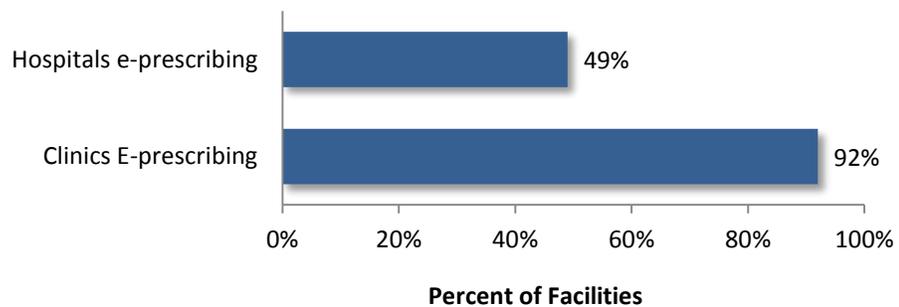
*Excludes pharmacies with the pharmacy class of medical device manufacturer

**Includes pharmacies with the pharmacy class of independent, franchise, and government/federal

Source: Office of the National Coordinator, Surescripts

Another measure of e-prescribing is the rate at which health care providers are e-prescribing. Figure 14 shows the percentage of clinics and hospitals e-prescribing, with about half of hospitals and more than nine in ten clinics actively e-prescribing. Many hospitals struggle with barriers to e-prescribing due to systems that don’t allow e-prescribing controlled substances, providers who prefer to prescribe by hand, and limitations of the pharmacy in receiving e-prescriptions. These barriers are expected to diminish over time.

Figure 14: Use of E-Prescribing Among Providers

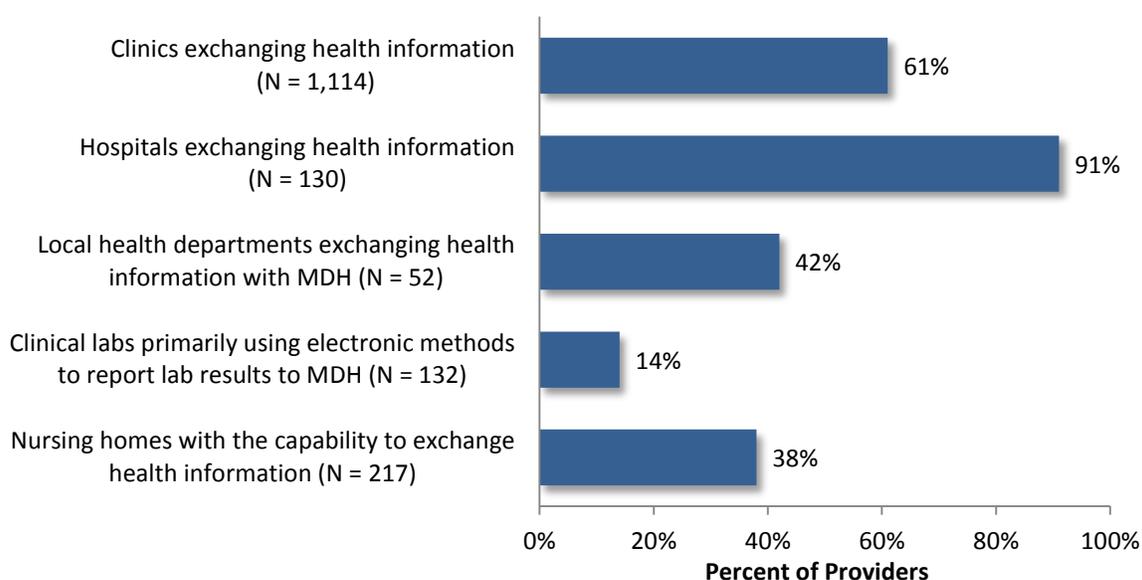


Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html

Providers Using HIE

The number of Minnesota hospitals and clinics exchanging health information is slowly increasing, with 91% of hospitals and 61% percent of clinics electronically exchanging health information with any partners (Figure 15). The rates decrease for electronic exchange with unaffiliated partners and other providers, which includes nursing homes, hospice and home health providers. Currently, most of the health information exchange happening in Minnesota is primarily between hospitals and clinics in the same health system or with affiliated partners. Slightly more than one-third of nursing homes were capable of exchange but routine exchange was limited. In addition, although three fourths of local health departments were electronically exchanging health information, most of the exchange was with the Minnesota Departments of Health and Human Services.

Figure 15: Health Information Exchange Among Providers with EHR Systems



Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html.

Exchange of clinical information other than prescriptions is not as strong and there are differences based on geography. Just 36% of clinics and 46% of hospitals exchange health information electronically with an unaffiliated provider.

Adoption and Use of Standards as a Foundation for Achieving Interoperability

Seamless flow of data in health care environments and effective use of that data to benefit both the patient and provider requires the use of standards to both transport and interpret data. Health data standards are consistent, uniform ways to capture, record, and exchange health data, and are necessary for the successful electronic exchange of health information and achieving Minnesota's goal for interoperability by 2015. The goal of e-health standards, coupled with the power of health information exchange, is to be able to electronically move health information securely between disparate systems in order to improve health care quality, increase patient safety, reduce health care costs and improve public health, consistent with Minnesota's principles of health reform. E-health standards are one of many necessary components to achieving interoperability.

Many e-health standards have been developed and recommended nationally, yet current assessment data show the need to accelerate the adoption and use of these nationally recognized standards in a coordinated way in order to advance interoperability statewide.

Summary of Adoption and Use of Standards

- National standards exist for many use cases/transactions and Minnesota e-Health Initiative aims to make recommendations that promote adoption and use of national standards.
- There is an underutilization of Minnesota's recommended e-health standards in many settings and in some settings standards are not yet developed.
- Considerable work is needed regarding standards recommendations to encourage their adoption and use statewide, particularly for settings not directly included in the federal meaningful use EHR incentive program.
- Standards are a crucial factor amongst other aspects to achieve interoperability.

In 2013 the major achievements relating to standards and interoperability included:

- Initiating the e-Birth Records study, funded by the National Center for Health Statistics, to develop and test best practices for submitting information directly from an EHR to the state birth registry information system. The results of this study, discussed later in this report, will inform best practices for collecting accurate and interoperable birth record data.
- Conducting training for laboratories for use of recommended standards (LOINC and SNOMED), including technical assistance for mapping of local codes to standard codes for interoperability. Results of this training led to increased use of nationally-recognized standards as best practices to exchange accurate data.
- Leading collaborative discussions on standards and their critical role in informatics by convening public health programs within the state health agency as part of meaningful use coordination efforts.

- Ensuring that Minnesota’s efforts align with nationally-recognized standards and specifications.

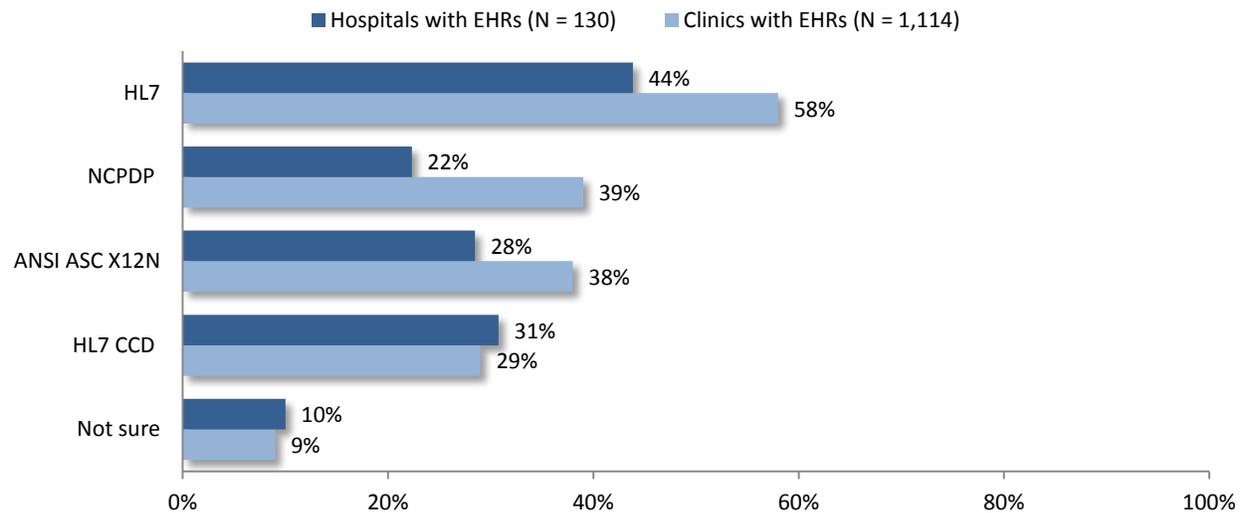
Looking ahead to 2014, Minnesota’s activities relating to standards and interoperability identified the following needs to address:

- Creating a **comprehensive current statewide assessment** of standards used in select settings and drafting a **roadmap** for standards adoption and use;
- Developing guides and resources for providers on selecting standards, particularly for settings in which no certified EHRs are available. This will ensure that implementation efforts are relevant to each setting’s terminology and practice.
- Developing tools and templates and sharing resources to promote adoption and use of standards in all settings. This will enable broad implementation of standards by minimizing the barrier to entry for providers.
- Engaging key stakeholders from across the continuum of care to support advancing the use of standards. This will provide the necessary leadership to engage the workflow changes needed to implement use of standards.
- Contributing to development of **federal standards efforts** by actively participating responses for proposed rulemaking, certification testing, and related input.

The Status of Standards Utilization in Minnesota

While adoption of EHRs is high in most health and health care settings, adoption of standards lags. The recommended standards include HL7 for clinical data, NCPDP for pharmacy data, ANSI SC X12N for insurance claims, and HL7 Continuity of Care Document (CCD) for transitions of care. Figure 16 shows that over half of Minnesota’s clinics with EHRs used HL7 (58%), two in five clinics with EHRs used NCPDP (39%) and/or ANSI ASC X12N (38%), and less than one in three used HL7 CCD (29%). Hospitals use several of these standards at a lower rate, with 44% using HL7, 22% using NCPDP and 28% using ANSI ASC X12N. However, they are on par with clinics’ use of HL7CCD, at 31%.

Figure 16: Percent of Clinics and Hospitals with EHRs Utilizing Exchange Standards, 2013



Source: Minnesota Department of Health, Office of Health Information Technology, www.health.state.mn.us/e-health/assessment.html

The electronic exchange of structured lab orders and results is an essential piece to achieve the benefits of EHRs and health information technology. Minnesota’s most recent clinical laboratory assessment indicates that most Minnesota labs have barriers to exchanging laboratory information in a structured, interpretable way. For example:

- 4% of labs are known to use both LOINC (Logical Observation Identifiers Names and Codes) and SNOMED (Systematized nomenclature of Medical Clinical Terms). LOINC and SNOMED are the recommended standards for laboratory order and results information in exchange of lab reports. Within the next three years, 63% plan to use LOINC while 20% plan to use SNOMED codes for results.
- 13% of labs use electronic methods to send reportable lab results to MDH.
- Two-thirds of labs are able to use HL7 (Health Level Seven) messaging standard (with the older version [v2.3.1] as the most common).
- Workforce knowledge about standards and services to help map local codes or text to standard codes are the greatest need for interoperability of laboratory information.

Source: Minnesota Department of Health, Office of Health Information Technology, MN Clinical Laboratory Survey of Readiness and Needs for Electronic Health Information Exchange (2011), www.health.state.mn.us/e-health/assessment.html

Minnesota Framework for Recommending e-Health Standards

The Commissioner of Health has the responsibility to identify and recommend standards for health data transactions and the types of information exchanged. The Minnesota e-Health Standards and Interoperability Workgroup, coordinated through OHIT, fulfills this requirement. This workgroup has developed a framework for accelerating standards adoption which builds on national work and utilizes the power of collaboration and community consensus building (See Appendix E for the Framework). The framework was developed from national standards activities, standards development organizations, prior standards recommendations, Minnesota e-Health Advisory Committee priorities, the workgroup charge and meaningful use standards recommendations. The workgroup publishes recommendations and resources, which are released annually and published in a guide. The current guide, "Standards Recommended to Achieve Interoperability in Minnesota," was updated in August 2011, and is available at:

<http://www.health.state.mn.us/ehealth/standards/g2standards2011.pdf>.

The framework adopted by the Minnesota e-Health Standards and Interoperability Workgroup represents a structured approach for motivating collaborative action statewide and has received national recognition for its role in promoting standards. Standard setting and adoption of those standards is an iterative, ongoing process. Existing standards are continually refined and updated, and new standards will continue to emerge. In short, the work of establishing standards and implementing them in practice is a continuous cycle with the goal of enhancing interoperability.

Privacy, Security, and Patient Consent

As e-health continues to progress in Minnesota and the nation, patients must be able to have confidence in the integrity of the data being shared, and trust that providers using the data have procedures in place to keep their information safe and secure. To achieve this level of confidence and trust, all providers of health care services – regardless of size or specialty – must implement processes for securing electronic health information to ensure that appropriate safeguards are in place to protect that data from unauthorized access. These administrative, technical and physical safeguards, together with sound policies, procedures and practices for how health care providers can effectively use technology to deliver patient care, will create a framework in which patient trust and confidence can grow, and meaningful health information exchange can take place.

It is important to note that federal and Minnesota laws have different approaches to protecting health information and the sometimes divergent federal and state requirements interact to impact patient interests and provider practices. In short, Minnesota law is more restrictive and protective of individual privacy rights on the release of health information, release of health information to other providers, and required or permitted releases without consent. These differences pose challenges for providers and patients, particularly in situations involving care across state boundaries. See Appendix F for a comparison of Minnesota statute to HIPAA.

Minnesota e-Health Privacy and Security Achievements in 2013

- Completing a ***Health Records Access Study (HRAS)***, as requested by the Minnesota Legislature, to provide insight as to how Minnesota clinics and hospitals detect and monitor unauthorized access to patients' health records and how patients are informed of unauthorized access.
- Disseminating findings from the HRAS to the health care community in Minnesota to open dialog on providers' challenges in managing patient preferences for consent in an electronic environment.

The Initiative convened the Privacy and Security Workgroup for 2013-14 to review and comment on privacy and security-related policies and guidance, and make recommendations that support compliance with state and federal requirements. Specific needs relating to privacy and security of patient information include:

- Updating privacy and security educational resources, (tools, templates and policies) regarding e-health practices for the Minnesota health care community to support their efforts in achieving Minnesota's goal for interoperability by 2015 and exchange across bordering states.
- Implementing training and education programs for consumers and providers regarding EHRs and privacy and security.
- Conducting an assessment of perceived and actual barriers to information sharing across a care continuum where accountable care relationships are established.

- Identifying needed updates to Minnesota statutes to support sharing among unrelated entities and a diverse care continuum (Recommendation from Roadmap to a Healthier Minnesota: Recommendations of the Minnesota Health Reform Task Force, Final Report December 13, 2012). This work will support ongoing efforts to improve patient health outcomes and decrease health care delivery costs.

2012-13 Minnesota Health Records Access Study

Upon request from the Minnesota Legislature in 2012, MDH conducted a Health Records Access study. The objectives of this study were to determine: 1) the extent to which health care providers have audit procedures in place to monitor use of representation of consent and unauthorized access to a patient's health records; 2) the feasibility of informing patients if an intentional, unauthorized access of their health records occurs; and 3) the feasibility of providing patients with a copy of a provider's audit log showing who has accessed their health records.

This study found that monitoring of unauthorized access to a patient's health record is completed through proactive and reactive methods that are not standardized, and most often are completed in response to a patient complaint. Audit logs of when a patient's electronic record has been accessed can be generated through the EHRs but are not formatted in a standardized and readable format for patients and often include large amounts of data, resulting in an ineffective tool for the provider and the patient. In instances of unauthorized access to a patient's health record, providers typically follow the standards set by federal notification requirements; however, some providers report that they do not have patient notification procedures in place. For those that have notification procedures in place, the procedures are largely paper-based processes even though electronic encrypted technology exists. Representation of consent is not widely known or used, and is difficult to operationalize.

These findings revealed that most providers are monitoring and managing unauthorized access violations according to the federal law. However, they struggle with developing effective processes and are limited by ineffective tools to efficiently handle these situations. Best practices for the management of patient consent, including use of representation of consent, need to be implemented across the continuum of care to ensure that health information is shared in a safe and secure manner and may require policy changes that support the sharing of health information in health care settings.

The complete report for this study is available at: <http://www.health.state.mn.us/e-health/hras/hras2012.html>

Privacy and Security Workgroup

To support Minnesota's health care community in meeting the requirements of Minnesota law and implementing best practices for ensuring the protection of patients' health information, the Privacy and Security Workgroup of the e-Health Initiative was activated for 2013-14. The workgroup will continue to give advice on key statewide activities and Minnesota e-Health priorities for this topic, as well as provide recommendations on Minnesota Privacy and Security Program implementation.

Expected deliverables for this workgroup include:

- Identifying template language examples for notices and forms to reflect the HIPAA Omnibus Final Rule Requirements, which strengthened and expanded patient rights as well as enforcement.
- A summary of techniques for leading practices for proactive monitoring processes that can be used to detect unauthorized access of a patient electronic health record.
- A summary outline and analysis of patient notification practices when intentional unauthorized access of a patient record occurs.
- Updated consumer fact sheet to include information on how health information is used, disclosed and shared.

Targeted Assistance to Minnesota Health Care Providers and Local Public Health

The Minnesota Department of Health's Office of Rural Health and Primary Care (ORHPC) promotes access to health care in rural and underserved communities. Regular coordination with ORHPC programs and activities helps ensure that resources effectively support providers in rural and underserved communities to achieve meaningful use and capacity for health information exchange.

OHIT and ORHPC have directly collaborated on federal and state grant and loan programs specifically targeted to rural and underserved communities in order to leverage the grant-making expertise available in ORHPC and ensure that limited financial resources are targeted appropriately. Those include the \$8.3 million *e-Health Grant Program* (2006-2008), the current \$6.3 million revolving *Electronic Health Record Loan Program* and the federally supported *Connectivity Grants for Health Information Exchange Program*, described further below.

Minnesota Targeted Assistance Achievements in 2013

- Managing the ***e-Health Connectivity Grant Program*** for health information exchange, which provided over \$2.4 million in financial assistance to health care providers to support secure exchange of clinical health information.
- Re-opening the ***Minnesota EHR Loan Program*** in November 2013. Changes for 2013 include adding skilled nursing facilities and elderly waiver providers to the priority funding groups. An estimated \$2.5 million is available in this round for 5-15 loans.
- Provided ***e-health guidance*** on the Interoperable EHR Mandate and continued outreach to over 4,500 stakeholders in Minnesota and nationwide.

Looking ahead to 2014, needs for targeted assistance include:

- Seeking resources and providing specialized technical assistance for health care settings not eligible for federal meaningful use incentives, with emphasis on as long term and post-acute care, behavioral health, home health, and local public health. Minnesota has had great success supporting small and rural providers toward adoption and use of interoperable EHRs, yet gaps remain across the continuum of care and continued funding will be essential to support e-health for Minnesota's population.
- Updating Minnesota e-health resources and policy guides to include the latest Minnesota-specific lessons learned and best practices.
- Continuing public health technical support around federal Stage 2 meaningful use requirements. For this incentive program, reporting to state public health agencies is a required component and coordination among the state health department is essential for ongoing preparedness for future stages of federal meaningful use requirements.

Minnesota e-Health Connectivity Grants for Health Information Exchange

With federal funding under the State Health Information Exchange Cooperative Agreement Program, the Minnesota e-Health Connectivity Grant Program for Health Information Exchange provided two rounds of grants in 2011 and 2012 to 1) help clinics, hospitals and other providers of health and health care in Minnesota achieve health information exchange capability and capacity, and 2) increase the number of Minnesota pharmacies capable of accepting electronic prescriptions.

The Minnesota e-Health Connectivity Grant program awarded over \$2.9 million in grant funds to 51 projects that included 247 community partners, providing \$2.9 million in grant. The 2011 grant program focused on building HIE capability through connecting individual providers to State-Certified HIE Service Providers. The 2012 program focused on developing HIE capability and capacity through community collaboratives. Community collaboratives were comprised of between two and twenty partner organizations representing a wide range health and health care providers. These projects moved communities from planning to implementation and use of health information exchange for meaningful use transactions and other community needs.

For more information on Minnesota e-Health Connectivity Grant awards, see Appendix G.

Minnesota EHR Revolving Loan Program

The Minnesota EHR Loan Program⁶, administered by the MDH Office of Rural Health and Primary Care, began in 2008 to finance and support interoperable electronic health records. Priority applicants include critical access hospitals, federally qualified health centers, entities that serve uninsured, underinsured or medically underserved individuals, urban or rural; individual or small group physician practices that are primarily focused on primary care; nursing facilities, and elderly waiver providers. Other eligible applicants include hospitals, community clinics, local public health departments; other providers of health or health care services. The zero-percent loans must be repaid in six years.

There have been three application cycles in 2008, 2011 and 2013. A total of \$8 million has been approved for loans to eight critical access hospitals, three federally-qualified health centers, two urban community clinics, one rural clinic, one rural hospital, one home health agency and one long-term care organization. The program is funded by a revolving account so that the program may open when the account has \$1 million or more in repayments. It is anticipated that the loan program will open again in late 2014 or early 2015.

⁶ Minnesota Statutes 62J.496

Technical Assistance and Communications

In addition to targeted financial assistance, OHIT provides continuous technical assistance that ranges from one-on-one inquiries, to national testimony, to development of tools and guidance. Key achievements in 2013 included:

- Developing and promoting guidance for health care providers to understand the Minnesota 2015 Interoperable EHR Mandate.
- Participating in developing the operational plan for the State Innovation Model grant and beginning the process of developing components of the plan related to e-health.
- Beginning development of HIT implementation toolkits for four key settings related to accountable care: home health, behavioral health, social services, and local health departments. The toolkits will be publicly available in first quarter 2014.
- Communicating the weekly Minnesota e-health update to more than 4,500 stakeholders via e-mail.
- Conducting more than 50 presentations on e-health to greater than 5,000 stakeholders state and nationwide.

Technical assistance and outreach will continue in 2014, with continued emphasis on promoting guidance, toolkits and roadmaps to promote implementation of e-health across the continuum of care.

Collaborative Projects within MDH

An important role for OHIT is a convener within MDH to promote collaboration among agency offices that can benefit from e-health. The collection and use of health information is integral to the mission and operations of MDH. The department has numerous important information systems that collect, store and use individual and population-based data for public health functions such as disease surveillance, maternal and child health, and vital statistics.

The 2015 mandate for interoperable EHRs applies to public health, both as a provider of health care and as a receiver of client-based information from health care providers. This impacts MDH, the Minnesota Department of Human Services (DHS) and local governments, which provide public health services in all 87 of Minnesota's counties and in four metropolitan cities.

Along with other stakeholders, MDH will need to 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. MDH is one of the units of government that is statutorily responsible for measuring the health status of the population. The information needed to carry out these responsibilities will increasingly be available only electronically.

OHIT staff are guiding collaborative work across the agency, finding efficiencies by engaging programs in different divisions who are ultimately doing similar work. Much of this cross-division collaboration is cutting-edge work not previously done at MDH. Examples of current projects include public health reporting for meaningful use and the e-birth records project; these are described below.

Public Health Reporting for Meaningful Use: A Coordinated Approach

A subset of the federal meaningful use criteria involve reporting immunizations, electronic laboratory results, syndromic surveillance data and cancer cases to public health agencies (PHA). These public health reporting requirements have and will create increased demands on programs to manage electronic data submission. To better respond to these increased demands on program resources and the influx of electronic data, MDH is working to better coordinate its approach to managing electronic information exchange with providers. This work has been guided by a Meaningful Use Steering Team and a Meaningful Use Workgroup, both which include programs impacted and /or affected by Stages 1, 2 and 3 of meaningful use.

One project formed to address some of the coordination issues specifically focuses on the registration and onboarding activities of each meaningful use-impacted program: immunizations, electronic lab reporting and cancer reporting. For Stage 2 meaningful use there were new requirements for public health agencies specific to registering and onboarding as well as tracking communications to and from providers. The project addressed these new requirements by creating and implementing a web-based registration

application as well as consistent processes and policies for how MDH programs onboard providers, in particular how they track the communications to and from the provider.

The registration process began October 1, 2013, coinciding with the start of Stage 2 meaningful use, and the individual programs began implementing some of the new registration and onboarding workflows at the same time. With guidance from OHIT, the programs continue to analyze workflow and business processes around onboarding activities in order to find efficiencies and improvements in the communications both internally between programs and MN.IT Services staff as well as externally between programs and health care providers reporting data for meaningful use.

As the project ends in March, 2014, OHIT will share best practices on using the registration application and consistent processes and policies for onboarding with other programs at MDH. OHIT will continue to offer similar guidance on how meaningful use-impacted programs can continue to meet the demands created by the increased volume of data being submitted.

e-Birth Records Study

The Minnesota Electronic Birth Records Study (e-Birth Records Study), a partnership of MDH Office of Vital Records, Office of Health Information Technology and MN.IT Services, began in September 2012 with funding of \$346,000 and technical assistance provided by the Centers for Disease Control and Prevention, National Center for Health Statistics (NCHS), to evaluate the readiness of the MDH and hospitals for the secure, standards-based electronic exchange of birth records information from hospital EHR systems to the state vital records information system. The project will be completed in April 2014.

In 2011, MDH activated the Minnesota Registration & Certification System (MR&C), the information system for state vital records including birth, death and fetal death. The MR&C is a web-based system for submitting medical, demographic and administrative data to the Office of Vital Records. While the new system has improved the vital records registration process, it has also uncovered gaps in the quality, timeliness and validity of the data, as well as a need for increased interoperability between state and local stakeholders. The vast majority of the state's births occur in hospitals, which are responsible for registering those births with MDH. These factors drive the need for the secure standards-based electronic exchange of birth information from hospital EHR systems to the state vital records information system, the MR&C.

In 2012, over 67,000 birth records were registered by MDH. Birth records contain both civil information and clinical information, including prenatal care data and labor and delivery summary for mother and newborn. In addition to civil registration purposes, these records provide valuable information on the health status of the population, allowing multiple MDH and non-MDH programs to rely on birth records data for public health surveillance and targeted intervention.

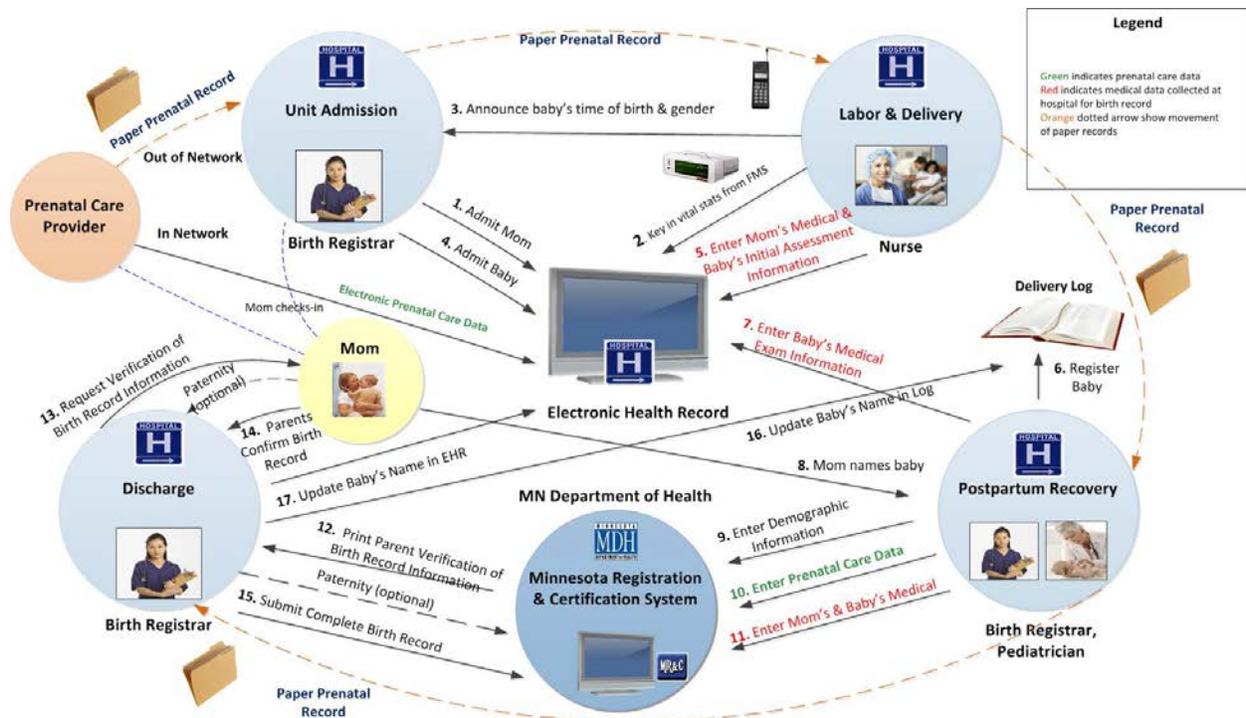
The overall goal of the e-Birth Records Study is to evaluate readiness and to make recommendations on the use of standards and health information exchange for birth records. The study focuses on three main objectives:

1. Evaluate the readiness of MDH and hospitals by analyzing information technology, workflow and organizational issues.
2. Advance the adoption and use of standards by conducting connectivity and interoperability testing with partners including the NCHS, EHR and HIT vendors and hospitals.
3. Engage community stakeholders to validate findings, identify opportunities and barriers for use of standards-based exchange, and to identify next steps for the statewide implementation.

Preliminary findings indicate that there are multiple opportunities for improvement in the birth registration process (Figure 17) that can improve efficiency and data quality, including:

- Using the EHR as the source of birth records information to reduce the need for a paper process.
- Implementing the use of standards-based exchange to reduce the number of steps and time for hospitals to submit birth records information to the MDH.
- Creating interoperability of medical devices used in the birthing center with the EHR system to reduce manual data entry by the clinical staff.

Figure 17: Current Birth Registration Process



The study identified support from stakeholders in the use of standards-based electronic exchange of birth records with recognition of these next steps necessary for successful implementation:

- Developing a roadmap for statewide implementation including toolkits, tips and template to address training, organizational and technical issues.
- Incorporating the electronic reporting of birth records as part of meaningful use.
- Access to resources for MDH and hospitals to update information systems, workflows and policies.

The Future of e-Health in Minnesota

E-health in Minnesota and the nation remains a very dynamic and rapidly evolving field in health care and public health. Considerable progress has been made in the first ten years of this initiative, and looking ahead there remains work to optimize the benefits and promise of fully interoperable e-health in Minnesota. Some key emerging initiatives are described here.

Minnesota Accountable Health Model and e-Health

To help achieve the Triple Aim, many states are experimenting with accountable models of health care delivery, and Minnesota has been exploring this model since the state's 2008 health reform legislation. In 2013 the Minnesota Department of Human Services (DHS) and MDH were awarded a \$45 million State Innovation Model (SIM) grant from the Center for Medicare and Medicaid Innovation (CMMI) to test the Minnesota Accountable Health Model⁷.

The Minnesota Accountable Health Model (the Model) will test new ways of delivering and paying for health care to improve health in communities, provide better care, and lower health care costs. The model also has several ambitious aims during the grant period. By 2017, Minnesota's public health and health care system will be one where:

- The majority of patients receive care that is patient-centered and coordinated across settings.
- The majority of providers are participating in Accountable Care Organizations (ACOs) or similar models that hold them accountable for costs and quality of care.
- Financial incentives for providers are aligned across payers and promote the Triple Aim.
- Communities, providers and payers have begun to implement new collaborative approaches to setting and achieving clinical and population health improvements.

The Minnesota Model will test the next logical step toward providing and paying for value-based care and achieving the Triple Aim by expanding ACOs under a multi-payer approach. The Minnesota Model will build upon the current Minnesota Medicaid ACO models—the Health Care Delivery Systems (HCDS) and the Hennepin Health demonstration projects—to increase the percentage of Medicaid enrollees and other populations included in ACOs under shared savings/shared risk payment arrangements. These ACOs will focus on the development of integrated community service delivery models and coordinated care models bringing together health care, behavioral health, long term supports and services, and community prevention services that are coordinated and centered around patient needs.

E-health is a critical component of accountable care, in that it supports the safe, accurate and efficient exchange of information between the care team. OHIT's role in the SIM program is to develop tools and roadmaps for providers to establish the e-health infrastructure to participate in an ACO and provide funding for planning and

⁷ Minnesota State Innovation Model Grant web page: <http://mn.gov/sim>

implementation, described in Figure 18. Building on the successes of past activities, OHIT will work to build capability and capacity for e-health across the continuum of care within the ACOs.

Figure 18: Requests for Proposals to support e-health in the Minnesota Accountable Health Model

E-Health Grant Program: To support readiness for and participation in the Minnesota Accountable Health Model by providing funding to support the secure exchange of medical or health-related information between organizations for: a) developing a plan to participate in the Model; or b) implementing and expanding e-health capabilities for participation in the Model.

E-Health Roadmaps to Advance the Minnesota Accountable Health Model: To develop and disseminate the Minnesota e-Health Roadmap to Advance the Model for the settings of long-term and post-acute care, local public health, social service, and behavioral health.

Privacy, Security and Consent Management for Electronic Health Information Exchange: For the review of e-health legal issues, analysis and identification of leading practices, technical assistance, and education.

The Role of e-Health in Advancing Health Equity in Minnesota

Minnesota is one of the healthiest states in the country. However, a statewide assessment has found that not all Minnesotans have the same chances to be healthy. Populations of color and those with fewer resources consistently experience worse health outcomes. In 2013, the Minnesota Legislature directed MDH and its partners to complete a report about advancing health equity (AHE) in Minnesota. E-health holds the promise to improve health care quality, increase patient safety, reduce health care costs, improve population health, and enable individuals and communities to make the best possible decisions to improve health. Across the nation, e-health is emerging as a powerful strategy to transform the health care system, improve the health of communities and improve health inequities.

Despite Minnesota's progress in implementing e-health, not all settings have progressed toward interoperability. Disparities exist for many health care settings and providers that are currently not eligible for federal incentive funds (many of which serve high-risk populations), including some specialty providers, behavioral and chemical health, rural, dental and chiropractic clinics, long-term care, social services, and public health. Managing privacy and security preferences and making workflow modifications needed to implement standards and interoperability are both challenging for providers. New opportunities for leveraging EHRs for quality improvement are developing, leading to a need for additional support to assist providers in understanding how to effectively use the EHR. In addition, there is increasing focus on access to information and moving the information quickly as needed to meet patient needs. This requires that an infrastructure, information standards

and operational protocols are implemented to ensure the exchange of information occurs seamlessly and the complete information follows the patient.

Minnesota Accountable Health Model and Health Equity

Recent funding to support the Minnesota Accountable Health Model provides an opportunity to identify ways to use e-health to address health inequity. In October 2013, the Minnesota Department of Health and Minnesota Department of Human Services jointly released a Request for Information on Health Information and Data Analytics in Accountable Care Models⁸. Numerous responses describe health information and data analytic challenges to achieving a Minnesota Accountable Health Model. Some key findings are summarized below.

One of the key findings from the Request for Information is that addressing health inequity across the continuum of health care requires access to complete information about the patient at the point of care, including both traditional medical information and non-medical information. Figure 19 highlights some of the ideas proposed about how both medical and non-medical information could be collected, accessed, and shared in order to support Minnesota’s efforts in advancing health equity.

Figure 19: Health-related information necessary for achieving health equity

Examples of Traditional Medical Information Needed by Health Care Providers	Examples of Non-Medical Health-related Information Desired by Health Care Providers
<ul style="list-style-type: none"> – Medication history and current medications – Lab result information – Current problem lists and diagnoses – Immunization history and immunization forecasting – Care/Treatment Plans – Past hospitalizations – History of psychiatric/chemical health treatment – Allergies 	<ul style="list-style-type: none"> – Patient information adjusted to demographic data (e.g., income, education, race, language, immigrant or refugee status, neighborhood or zip code) – Social supports (e.g., whether the patient has unstable housing or is homeless, use of food support or cash assistance, transportation needs) – Information on all providers who are treating the patient – Patient goals for their health – Health care quality indicators by socioeconomic factors such as: race, language and/or ethnicity, insurance status, gender – Current or upcoming stressors – Spiritual or cultural values

⁸ <http://www.health.state.mn.us/e-health/cec/093013simriform.pdf>

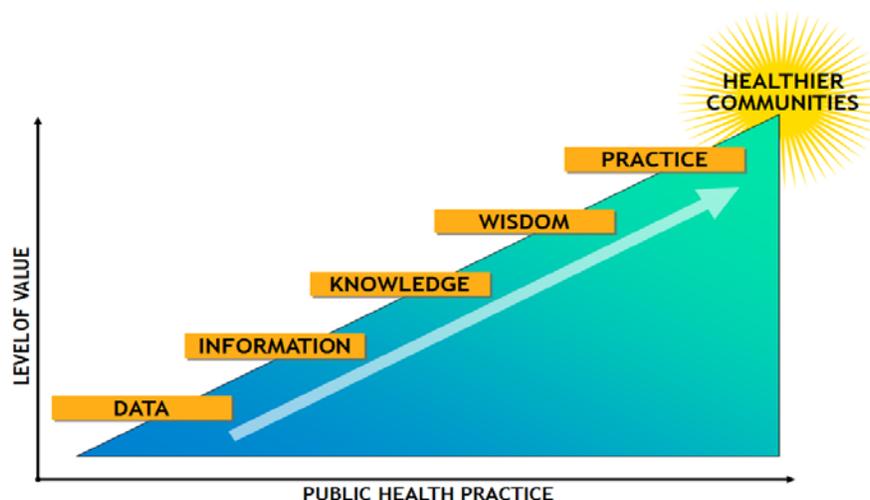
e-Public Health

E-health is a critical tool for Minnesota’s public health system. At the state level, e-health will advance how MDH collects, securely shares and acts on health data to uncover health differences between populations. E-health has changed how MDH collects health data and will continue to evolve as the gold standard for data collection. MDH programs are beginning to use EHRs as the source of standardized data to monitor health. For example, providers can submit immunization data to MDH directly from their EHRs, providing timely and accurate clinical data for MDH to assist in monitoring health status of populations.

Once the data is collected by MDH, e-health also improves how it is used. When legally authorized, the data can be shared securely with other MDH programs or local public health to provide a more comprehensive understanding of health inequities. The use of standard terminology and data structure supports interoperability across public health information systems, assuring the data can be shared across programs and organizations. For example, WIC staff at local health departments currently are not able to readily see if a child is up to date on immunizations or screenings. E-health will allow efficient and accurate information sharing to decrease these and other inefficiencies inherent with coordinating services across multiple health and social service programs. E-health will also support providers who depend on timely and accurate sharing of data from public health systems (e.g., immunizations, lead screening results) to ensure patients get the care they need.

E-health advances public health’s ability to act on health data for achieving health equity. Complete and timely data are the foundation for using information to create healthier communities (Figure 20) and achieve health equity. To achieve this goal, MDH must support best practices for information systems, adoption of e-health standards, and development of an informatics-savvy workforce that can use a systematic approach to leverage e-health to improve public health practice, research, and learning.

Figure 20: Using e-health to Change Public Health Practice



Adapted by: Marty LaVenture, Bill Brand, Minnesota Department of Health. Karen Zeleznak, Bloomington Division of Public Health. 2005.

Workforce Development

Federal HITECH funding provided resources to train health professionals in the informatics skills needed for e-health. That funding is expiring yet there remains a high demand to train practicing providers and public health professionals in informatics. Core competencies for clinical providers focus on developing optimal workflow processes in order to use EHR systems to manage patient care and coordinate care with other providers. Core competencies for non-clinical health informatics professionals focus on supporting the use of HIT to improve patient safety, quality, processes, and population health.

There is a need to continue training outreach for Minnesota-based degree and non-degree training programs from accredited institutions. There is also a need to monitor and respond to national activity in a multi-year process to establish Department of Labor Standard Occupational Classification (SOC) codes related to the e-health workforce. This will provide the basis for job titles, job descriptions, education, training, licensing, etc., for health informatics positions. As the federal Office of Management and Budget (OMB) develops recommendations for occupational and industry classification systems, the Minnesota e-Health Initiative will convene stakeholders and provide coordinated responses, as needed, to Federal Register notices throughout the process of revising the SOC for 2018.

Data and Analytics

Implementation of health information technology has created tremendous opportunity to analyze information to improve health care delivery and population health. As Minnesota's health and health care providers implement e-health, attention must also turn to the opportunities available through the vast amounts of data in EHRs, payer claim systems, and administrative enrollment systems. These data can be used to understand factors that contribute to health outcomes, to develop decision support tools, measure quality, and to monitor the health of communities. The Minnesota e-Health Advisory Committee is beginning the process of understanding the data and analytics landscape in the state through an ad hoc effort of interested researchers representing major stakeholders in the state. They will profile the current landscape of data and analytics among Minnesota's health care community, and to identify unmet needs and opportunities for collaboration.

Learning Health System

There is demand nationwide to improve our country's health care system. In 2012 the Institute of Medicine released a report that charts our health system's transition to that of a learning health system, or "... one in which progress in science, informatics, and care culture align to generate new knowledge as an ongoing, natural by-product of the care experience, and seamlessly refine and deliver best practices for continuous improvement in health and health care."⁹ The Initiative supports efforts to develop a learning health system in Minnesota, recognizing that e-health plays a pivotal role in achieving this transformation by providing the tools needed to gather and use information.

⁹ Institute of Medicine. 2012. "Best Care at Lower Cost: The Path to Continuously Learning Health Care in America." Available at: <http://www.iom.edu/Reports/2012/Best-Care-at-Lower-Cost-The-Path-to-Continuously-Learning-Health-Care-in-America.aspx>

Conclusions

While Minnesota has made considerable progress in e-health in recent years through a focused effort on the adoption and effective use of EHRs and other HIT, significant work remains. With federal resources ending and the expanding role of health information technology in health care transformation, there is an urgent need to extend the successful programs that work in Minnesota.

Achieving Minnesota's 2015 interoperable EHR mandate — and accelerating e-health in order to improve health care quality, increase patient safety, reduce health care costs and improve public health — will be challenging to accomplish with diminishing federal resources. These needs are even greater now that MDH has embarked on the Minnesota Accountable Health Model initiative — for which exchange of health information is integral — and to address systemic issues that contribute to health inequities. Continued focused investments in e-health can position Minnesota to remain a leader in innovative, high-quality, efficient delivery of health care and meet the state's goals for excellence. These investments include:

- Grant funding to providers, with emphasis on: long-term care, behavioral health, home health, and local public health.
- Funding for assessment studies by OHIT to identify barriers to e-health, with emphasis on: long-term care, behavioral health, home health, and local public health, and dentistry.
- Potential modifications to MN's HIE oversight law (Minnesota Statutes §§ 62J.498 through 62J.4982), per recommendations from the MN e-Health Initiative.
- Potential modifications to MN's HIE oversight law (Minnesota Statutes §§ 144.291 through 144.298), per recommendations from the MN e-Health Initiative regarding optimal sharing of health information in health care settings.
- Developing and promoting use of standards, ensure consensus among providers in the settings, and empowering leadership to implement the efforts.
- Funding Minnesota's state public health system to develop interoperable health data systems that support Minnesota's health care system.
- Funding for continued technical assistance, education and training.

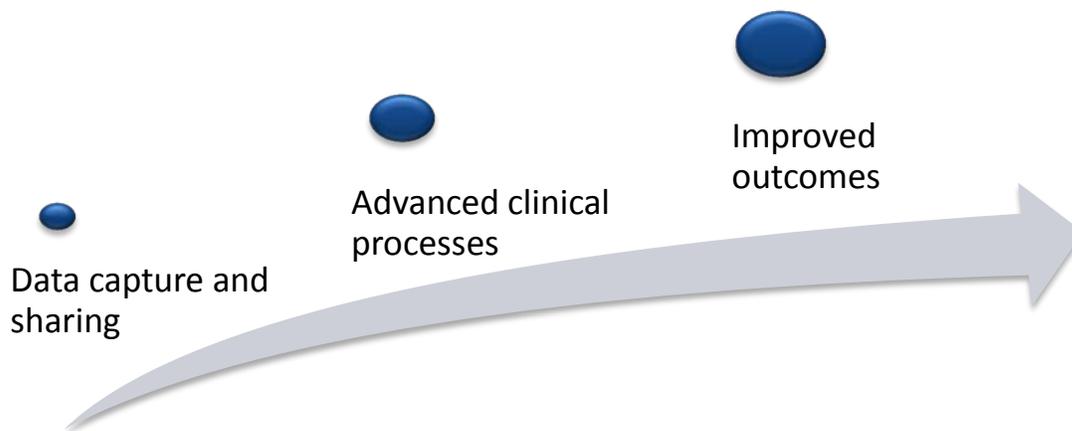
The efforts of MDH and the Minnesota e-Health Initiative over the past ten years have proven that financial support and policy levers make an impact on population health. Minnesota has experienced dramatic transformations in the health care delivery system resulting in improved patient safety and outcomes attributable to e-health. The future holds promise to see e-health evolve into a system of continuous learning and improvement that will positively impact population health in ways not historically imagined. OHIT and the Minnesota e-Health Initiative will continue to lead our state along this journey to ensure that the health care system in our state is among the best in the nation.

Appendix A: Meaningful Use of Electronic Health Records

Meaningful Use Accelerates EHR Adoption and Use in Minnesota Clinics and Hospitals

In order to access federal HITECH incentives, providers and hospitals must demonstrate “meaningful use” of an EHR system.

Figure A-1: Three Stages of Meaningful Use



Three initial stages of meaningful use have been defined with the following areas of focus:

- **Stage 1** focuses on: 1) capturing health information in a coded format, 2) using the information to track key clinical conditions; 3) communicating captured information for care coordination purposes; and 4) reporting of clinical quality measures and public health information.
- **Stage 2** criteria were proposed to expand upon Stage 1 criteria in the areas of disease management, clinical decision support, medication management, support for patient access to their health information, transitions in care, quality measurement, research, and bi-directional communication with public health agencies. Stage 2 meaningful use requirements will begin in the fall of 2013.
- **Stage 3** criteria will likely focus on achieving improvements in quality, safety and efficiency, focusing on decision support for national high priority conditions, patient access to self-management tools, access to comprehensive patient data and improving population health outcomes.
- **Future Stages** have not been determined at this time however it is likely they will be needed to fill unmet needs from stages 1-3.

The definition of meaningful use at each stage is important because it is a key measure that determines provider eligibility to receive incentive funds and impacts Minnesota providers and hospitals. The Minnesota e-Health Advisory Committee and related workgroups are actively monitoring meaningful use proposals and will be providing comment at every opportunity to ensure the needs of Minnesota’s stakeholders are conveyed to federal policy-makers.

Appendix B: Minnesota e-Health Advisory Committee Members, 2013-14

<p>Bobbie McAdam Advisory Committee Co-Chair Senior Director, Business Integration Medica Representing: Health Plans</p>	<p>Marty Witrak, PhD, RN Advisory Committee Co-Chair Professor, Dean School of Nursing, College of St. Scholastica Representing: Academics and Research</p>
<p>Alan Abramson, PhD Senior Vice President, IS&T and CIO HealthPartners Representing: Health Plans</p>	<p>Laurie Beyer-Kropuenske, JD Director Community Services Divisions Representing: Minnesota Department of Admin.</p>
<p>Sue Hedlund, MA Deputy Director Washington County Public Health & Environment Representing: Local Public Health Departments</p>	<p>Susan Heichert Senior Vice President, Chief Information Officer Allina Health Representing: Large Hospitals</p>
<p>Maureen Ideker, MBA, RN Director of Telehealth Essentia Health Representing: Small and Critical Access Hospitals</p>	<p>Mark Jurkovich, DDS, MBA Dentist Midwest Dental Representing: Dentists</p>
<p>Paul Kleeberg, MD Clinical Director Regional Extension Assistance Center for HIT Representing: Physicians</p>	<p>Marty LaVenture, PhD, MPH, FACMI Director, Office of Health IT and e-Health Minnesota Department of Health Representing: Minnesota Department of Health</p>
<p>Jennifer Lundblad, PhD President and Chief Executive Officer Stratis Health Representing: Quality Improvement Organization</p>	<p>Melinda Machones, MBA HIT Consultant Representing: Professional with Expert Knowledge of Health Information Technology</p>
<p>Charlie Montreuil Vice President, Enterprise Rewards and Corporate Human Resources Best Buy Co., Inc. Representing: Health Care Purchasers</p>	<p>Kevin Peterson, MD Family Physician Phalen Village Clinic Representing: Community Clinics and FQHCs</p>
<p>Peter Pytlak, MBA Chief Patient Experience Officer Mayo Clinic Health System SW MN Region Representing: Health Care Systems</p>	<p>Peter Schuna Director of Strategic Initiatives Pathway Health Services Representing: Long Term Care</p>
<p>Steve Simenson, BPharm, FAPhA President and Managing Partner Goodrich Pharmacy Representing: Pharmacists</p>	<p>Stuart Speedie, PhD, FACMI Professor of Health Informatics University of Minnesota Representing: Academics and Clinical Research</p>

<p>Cheryl M. Stephens, MBA, PhD Executive Director Community Health Information Collaborative Representing: Health IT Vendors</p>	<p>Cally Vinz, RN Vice President, Health Care Improvement Institute For Clinical Systems Improvement Representing: Clinical Guideline Development</p>
<p>Donna Watz, JD Deputy General Counsel Minnesota Department of Commerce Representing: Minnesota Department of Commerce</p>	<p>Bonnie Westra, PhD, RN, FAAN, FACMI Associate Professor University of Minnesota, School of Nursing Representing: Nurses</p>
<p>Ken Zaiken Consumer Advocate Representing: Consumers</p>	<p>Kathy Zwieg Associate Publisher & Editor-in-Chief Inside Dental Assisting Magazine Representing: Clinic Managers</p>
<p>Currently Vacant Representing: Minnesota Department of Human Services</p>	

Designated Alternates

<p>Sunny Ainley Associate Dean, Center for Applied Learning Normandale Community College Alternate Representing: HIT Education and Training</p>	<p>Wendy Bauman, MS Deputy Director Dakota County Public Health Alternate Representing: Local Public Health</p>
<p>Lynn Choromanski, PhD, RN-BC Nusing Informatics Specialist Gilette Children's Alternate Representing: Professional with Expert Knowledge of Health Information Technology</p>	<p>Barb Daiker, RN, PhD Manager of Quality Improvement Minnesota Medical Association Alternate Representing: Physicians</p>
<p>Linda Ridlehuber, RN, MBA Quality Improvement Specialist MN Association of Community Health Centers Alternate Representing: Community Clinics and Federally Qualified Health Centers</p>	<p>Susan Severson Director, Health IT Services Stratis Health Alternate Representing: Quality Improvement</p>
<p>Mark Sonneborn Vice President, Information Services Minnesota Hospital Association Alternate Representing: Hospitals</p>	<p>Trisha Stark, PhD, LP, MPA Licensed Psychologist Alternate Representing: Behavioral Health</p>

Appendix C: Other Minnesota e-Health Resources

The Minnesota e-Health Initiative workgroups and Advisory Committee, supported by the MDH Office of Health Information Technology, develop resources for health and health care providers, consumers, and other stakeholders on standards for clinical data exchange, clinical support programs, patient privacy requirements, and maintenance of the security and confidentiality of individual patient data. As a part of its ongoing efforts, the Minnesota e-Health Initiative will continue to conduct research, publish guidance and provide resources, and make information available on the Minnesota e-Health website, www.health.state.mn.us/e-health. In addition, the Minnesota Department of Health has implemented ways to strategically communicate and disseminate current information and inform stakeholders. A few key communications and educational activities from 2013 are listed below.

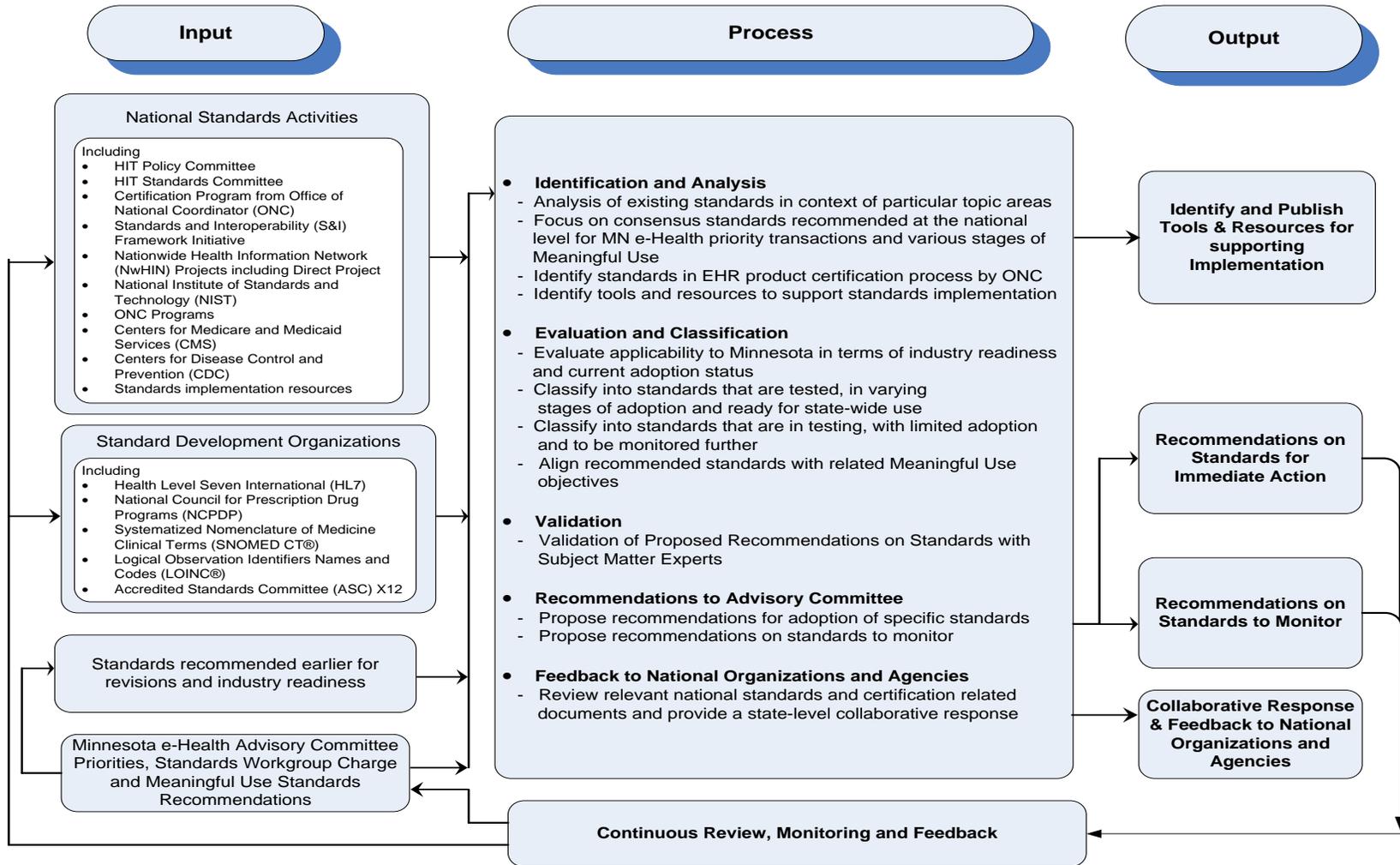
- *Weekly Update*: The Minnesota e-Health Initiative e-mails a Weekly Update that is a synthesis of e-health related news, significant meetings and other relevant information intended to provide health related professionals with a Minnesota perspective on local and national health information technology activities. In 2013, the number of Weekly Update subscribers increased by almost 500 individuals, from 4,213 readers to 4,720.
- *Presentations*: MDH staff from the Office of Health Information Technology supported the Minnesota e-Health Initiative by giving more than 50 presentations at various conferences and meetings held by Minnesota and national organizations and associations, such as the Aging Services Institute, Clinical Laboratory Collaborative, State Government EHR Summit and many others.
- *E-Health Implementation Toolkits (under development)*:
 - *Long-term and Post-acute Care*
 - *Behavioral Health*
 - *Home Health*
 - *Social Services*
- *2015 Interoperable EHR Mandate Guidance*: “Guidance for Understanding the Minnesota 2015 Interoperable EHR Mandate” available at: <http://www.health.state.mn.us/e-health/hitimp/index.html>

Appendix D: Summary of MDH OHIT and MN e-Health Participation in National Activities

MDH Staff Participation on or Monitoring of National Advisory Committees, Task Forces, and Workgroups	
<i>Name of Workgroup or Advisory Committee</i>	<i>Organization Convened By</i>
American Immunization Registry Association, Standards and Interoperability Workgroup, Real-time Exchange Workgroup, Bi-directional Exchange Workgroup	American Immunization Registry Association
Clinical Decision Support Process, Communications, and Sustainability Group	Centers for Disease Control and Prevention
National e-Health Initiative	National e-Health Initiative
Health Information Technology and Public Health Technical Expert Panel	Assistant Secretary for Planning and Evaluation (ASPE), NORC at the University of Chicago
Guidance for Cancer Surveillance – Readiness for Meaningful Use Stage 2	Centers for Disease Control and Prevention
Health Information Technology Policy Committee	Office of the National Coordinator for Health Information Technology
Health Information Technology Standards Committee	Office of the National Coordinator for Health Information Technology
Health Information Technology Trailblazer States	Office of the National Coordinator for Health Information Technology and National Association for State Health Policy (NASHP)
Institute of Medicine	Institute of Medicine
Lab Community of Practice	Office of the National Coordinator for Health Information Technology
Nationwide Call on Meaningful Use to Promote Collaboration within Public Health	Centers for Disease Control and Prevention
National Electronic Lab Reporting Workgroup	Centers for Disease Control and Prevention
Nationwide e-Health Collaborative	
EHR-IIS Interoperability Community of Practice	Centers for Disease Control and Prevention
Multi-State Communications Group	Minnesota Department of Health & Missouri Department of Health
Public Health Reporting Requirements Taskforce	Centers for Disease Control and Prevention and Office of the National Coordinator for Health Information Technology
Stage 2 Meaningful Use Public Health Reporting Requirements Task Force	Centers for Disease Control and Prevention

MDH Staff Participation on or Monitoring of National Advisory Committees, Task Forces, and Workgroups	
<i>Name of Workgroup or Advisory Committee</i>	<i>Organization Convened By</i>
Stage 2 Meaningful Use Public Health Reporting Requirements Task Force Sub-Group: Meaningful Use Registration	Centers for Disease Control and Prevention
State HIE Privacy and Security Community of Practice	Office of the National Coordinator for Health Information Technology
Public Health Meaningful Use Community of Practice	Office of the National Coordinator for Health Information Technology
Public Health Reporting Initiative	Office of the National Coordinator for Health Information Technology, Standards and Interoperability Framework
State Level Health Information Exchange Coalition	Manatt Health Solutions
Structured Data Capture Workgroup	S&I Framework
Minnesota e-Health Coordinated Responses to Federal Rule Making	
<i>Name of Coordinated Response</i>	<i>Submission Date</i>
Request for Comments on Health Information Technology Policy Committee Meaningful Use Stage 3 Recommendations	January 11, 2013

Appendix E: Minnesota e-Health Initiative Approach for Recommending e-Health Standards

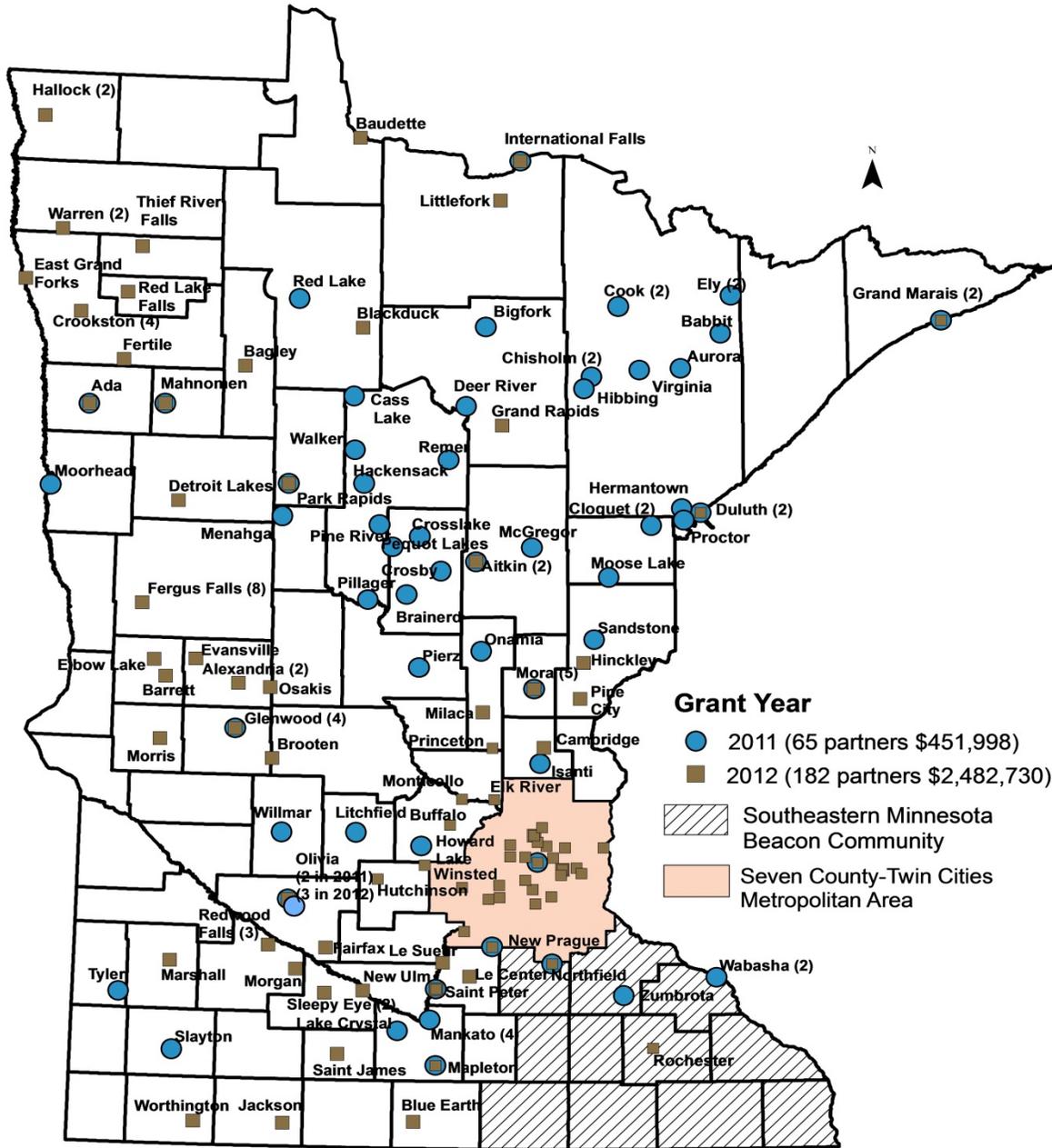


Appendix F: Summary of Minnesota and Federal Law Related to Use and Disclosure

Topic	Minnesota Law <i>MN Health Records Act of YEAR (§§144.291-144.298) and Data Practices Act (Chapter 13)</i>	Federal Law <i>HIPAA regulations of 1996 (45 CFR Parts 160 and 164); HITECH Act (P.L. 111-5, Titles XIII and IV)</i>	Differences and Policy Considerations
Release of Health Information (ROI)	144.293 Patient must consent for each <i>disclosure</i> of their health information for any purpose, before health records can be shared. Providers may use representation of consent to facilitate the ROI process.	164.502 (a) Covered Entity cannot <i>use or disclose</i> PHI except for the purposes of treatment, payment health care operations (TPO). Exceptions do apply in 164.512 and 164.514	Minnesota Law is more restrictive and protective of individual privacy rights, pre-empting federal HIPAA privacy law as a result
Release of Health Information to Other Providers	144.294 Patient consent is not needed for ROI to other providers within a related health care entity when it is necessary for treatment of the patient	164.506 Except where patient authorization is required by 164.508, a covered entity is not required to obtain consent to disclose PHI for use in TPO.	Minnesota Law is more restrictive in that it is protective of individual privacy rights, pre-empting federal HIPAA privacy law as a result
Required or Permitted Releases Without Consent	144.291 Patient consent is not needed for ROI in a medical emergency when medical/mental health is needed to preserve life and prevent serious impairment to bodily functions, or when a court order or subpoena requires release of PHI, or for public health purposes through MDH activities	164.512 PHI may be disclosed when specifically authorized by law for public health activities, disclosures about violence/abuse, health oversight activities, judicial and administrative proceedings, law enforcement purposes, organ donation, certain research purposes, to avert serious health threats, special government functions, workman's compensation and disclosures to HHS secretary to investigate compliance	Minnesota Law is more restrictive in that it is protective of individual privacy rights, pre-empting federal HIPAA privacy law as a result
Minimum Necessary	No mention in MN Health Records Act	164.502 (b) and 164.514 (d) Covered Entity must make reasonable efforts to limit PHI to "minimum necessary" to accomplish the intended purpose of the use, disclosure or request.	No conflict - non-government providers comply with HIPAA
De-Identified Health Information and Limited Data Set	No mention in MN Health Records Act §13.05 subd. 7, discusses summary data for government entities.	§164.514. De-identified information may be shared. §164.514(e). A limited data set (removal of specified identifying data elements) may be released only for research, public health or health care operations purposes. A data use agreement must be in place.	No conflict - non-government providers comply with HIPAA
Access/Copies of Health Information	§144.292, subd. 5 & 6 describes the process for how to request a copy of your health records	§164.524 Individual has a right to access to inspect and obtain a copy of PHI in a designated record set(DRS), as long as the PHI is maintained in the DRS; excepts may apply and the new notification rule specifies that patients have access to their own health record.	No conflict - non-government providers comply with HIPAA
Accounting of Disclosures	§144.293, subd. 9 documentation requirements for ROI and ROC as they apply to health records.	§164.528 Outlines specific guidelines for individual rights to receive an accounting of disclosures or PHI made by covered entity based on the way PHI is used	Both focus on individual rights of patient to accounting of disclosures
Security Safeguards (Security Breaches)	No mention in MN Health Records Act	§164.530(c); These are the administrative requirements and safeguards that a covered entity must have in place to ensure privacy of health information. 164.302 HIPAA security rule for protection of electronic PHI. HITECH widens the scope of privacy and security protections available under HIPAA and increases legal liability for non-compliance, and enforcement and the new Breach Notification Rule of 2013 outlines risk analysis criteria that must be completed.	No conflict - non-government providers comply with HIPAA

Appendix G: Minnesota e-Health Connectivity Grant Program for Health Information Exchange Partners

2011-2012 Minnesota e-Health Connectivity Grant Program for Health Information Exchange: Cities with Partner Organization Sites



Appendix H: Glossary of Selected Terms

Accountable care organization (ACO)

The concept of a group of diverse health care providers that have collective responsibility for patient care and that coordinate services. This term is meant to include the broad range of health and health care providers that are not formally part of an existing ACO as defined by the Centers for Medicare and Medicaid Services (CMS) or other payers, but that are also moving towards greater accountability for the quality and cost of care they provide to their patients.

e-health

e-health is the adoption and effective use of Electronic Health Record (EHR) systems and other health information technology (HIT) to improve health care quality, increase patient safety, reduce health care costs, and enable individuals and communities to make the best possible health decisions. Across the nation, e-health is emerging as a powerful strategy to transform the health care system and improve the health of communities.

Electronic Health Record (EHR) Systems

An Electronic Health Record is a computerized record of a person's health history over time, typically within and for a single health organization. EHR systems increasingly include tools that assist in the care of the patient or result in greater efficiency, such as e-prescribing, appointments, billing, clinical decision support systems, and reports. Because of such tools, EHR systems are much more than just computerized versions of the paper medical chart. Proper planning and implementation of an EHR system can typically take six-24 months in clinics, and three years or more in a hospital.

e-Prescribing

e-prescribing means secure bidirectional electronic information exchange between prescribers (providers), dispensers (pharmacies), Pharmacy Benefits Managers, or health plans, directly or through an intermediary network. E-prescribing encompasses exchanging prescriptions, checking the prescribed drug against the patient's health plan formulary of eligible drugs, checking for any patient allergy to drug or drug-drug interactions, access to patient medication history, and sending or receiving an acknowledgement that the prescription was filled.

Health Equity

The attainment of the highest level of health possible for all people.

Health Information Exchange (HIE)

Health Information Exchange is the electronic, secure exchange of health information between organizations/information systems. The term can also be used to represent a regional or statewide organization whose purpose is to facilitate and support information exchange between member organizations.

Health Information Technology (HIT)

Health Information Technology means tools designed to automate and support the capture, recording, use, analysis and exchange of health information in order to improve quality at the point of care. HIT is a broad term that includes EHR systems (see above), e-prescribing, Personal Health Records, digital radiologic images, telehealth technologies, and many others.

Health Informatics

Health informatics is the science and art of ensuring that health information systems are designed and used in ways that truly support health professionals in improving the quality and safety of care, and of improving the health of populations.

Interoperability

Interoperability is the ability of information systems to exchange data electronically, such that each system “understands” what the data are, the meaning of that data, and what to do with it. In everyday terms, interoperability is what is meant by the phrase, “computers can talk to each other.”

Learning Health System

A health system in which science, informatics, patient-provider partnerships, public health, incentives, and culture are aligned to promote and enable continuous and real-time improvement in patient care and population health. (Adapted from <http://www.iom.edu/Reports/2012/Best-Care-at-Lower-Cost-The-Path-to-Continuously-Learning-Health-Care-in-America.aspx>, report page 17)

Meaningful Use

Meaningful use defines the use of electronic health records and related technology within a health care organization, as defined by the Centers for Medicare and Medicaid Services (CMS). Achieving meaningful use helps determine whether an organization will receive payments from the federal government under either the Medicare Electronic Health Record Incentive Program or the Medicaid Electronic Health Record Incentive Program.

Minnesota e-Health Initiative

The Minnesota e-Health Initiative is a public-private collaborative that represents the Minnesota health and health care community’s commitment to prioritize resources and to achieve Minnesota’s mandates. The initiative is legislatively authorized and has set the gold standard nationally for a model public-private partnership.

Regional Extension Centers

Regional Extension Centers refers to entities that have received federal funding through the Health Information Technology for Economic and Clinical Health (HITECH) Act to provide technical assistance to health care providers and hospitals in the implementation

and meaningful use of electronic health records. The Regional Extension Center for Minnesota and North Dakota is REACH (Regional Extension Assistance Center for Health IT).

Standards

Health data standards are consistent, uniform ways to capture, record and exchange data. Standards are a necessary component to achieve interoperability (see above). The various types of standards include Terminology (how data such as lab results and diagnosis are coded in uniform ways), Messaging (how data are sent in ways that the receiving system can understand what's coming in), Transactions/claims (to receive payment), and Data Content (common definitions and codes, such as for race and ethnicity).

The full Minnesota e-Health Glossary is available online at <http://www.health.state.mn.us/e-health/glossary.html>.