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Minnesota e-Health Initiative

Minnesota Department of Health
Report to the Minnesota Legislature 2015

March 2015

Minnesota e-Health Initiative

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Protecting, maintaining and improving the health of all Minnesotans

February 9, 2015

The Honorable Tony Lourey
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 Matt Dean
Chair, Health and Human Services Finance Committee
Minnesota House of Representatives
401 State Office Building
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The Honorable Kathy Sheran
Chair, Health, Human Services and Housing Committee
Minnesota Senate
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The Honorable Tara Mack
Chair, Health and Human Services Policy Committee
Minnesota House of Representatives
545 State Office Building
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Saint Paul, MN 55155

To the Honorable Chairs:

As required by Minnesota Statutes, sections 62J.495 and 62J.498-4982, this Minnesota e-Health Initiative report outlines progress toward Minnesota's goals for health information technology. Significant advances made in 2014 included:

- State and national recognition for its leading e-health indicators. Adoption rates of electronic record systems are high among ambulatory clinics (93%) and hospitals (99%).
- 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 to support optimization of e-health functions such as clinical decision support.
- Substantial financial assistance outreach, with $3.8 million in e-health grants awarded in 2014, to support health information exchange within community collaboratives as part of the Minnesota State Innovation Model project.
- Nearly $500 million distributed to eligible Minnesota hospitals and providers achieving incentives through the federal meaningful use program.
- Sharing lessons learned and best practices at a sold-out two-day event with over 450 participants for the 10 year anniversary of the Minnesota e-Health Summit.
- Expanded outreach educations with more than 50 training workshops and educational presentations to local and national audiences to support e-health implementation and use.

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

Sincerely,

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

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Executive Summary

Ten years of progress

This year marked the 10th anniversary of Minnesota's statewide efforts to support the growth of e-Health as a foundation for transforming health care and supporting healthier communities. Since the Minnesota e-Health Initiative was established in 2004, 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 2014, this practice is the norm.
- In 2004, few health care consumers had online access to their health information, and in 2014, three-fourths 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, like physician alerts within their electronic health record (EHR) systems to support improved quality and patient outcomes.
- Communities across the state are forming collaboratives to better coordinate care and use information to help improve health care outcomes and population health through the secure exchange of clinical information.

2014 Minnesota e-Health milestones

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. Foremost among Minnesota's achievements are:

- State and national recognition for its top rates of adoption and use of EHRs in ambulatory clinics (93%) and hospitals (99%), with adoption increasing in rural and specialty care clinics.
- Minnesota remains a national leader in e-prescribing to reduce errors and manage medications.
- Effective use of EHRs for functions such as decision support are increasing, and earlier gaps between urban and rural settings are narrowing.
- Substantial assistance outreach with $3.8 million in e-health grants awarded in 2014, to support community health information exchange under the Minnesota State Innovation Model project.
- Nearly $500 million in federal incentive payments distributed to eligible Minnesota providers meeting criteria for adoption and meaningful use of EHRs.
- Lessons learned and best practices shared at the 10 year anniversary of the Minnesota e-Health Summit, a sold-out two-day event with over 450 participants.
- More than 50 training workshops and educational presentations to local and national audiences to support e-health implementation and use.

Key recommendations

The eHealth Advisory Committee has developed a set of recommendations that can position Minnesota to remain a leader in innovative, high-quality, efficient delivery of health and health care and meet the state's goals for excellence. These recommendations include:

1. **Update Minnesota's HIE oversight law** (§62J.498.0-82) to ensure HIE is consistent with current market practices. (See *Health Information Exchange and Oversight)*
2. **Address new and emerging issues** by extending the successful e-Health Advisory Committee public-private partnership to 2021 including continued coordination by MDH as recommended by the e-Health Advisory Committee. (See *Overview of the Minnesota e-Health Initiative* and *Targeted Funding for e-Health)*
3. **Ensure state and local government compliance with Minnesota's 2015 Interoperable EHR Mandate** by implementing standards for HIE at MDH and other state government agencies and replacing numerous obsolete, non-standard systems with modern, shared data systems. (See *MDH and Public Health Interoperability*)
4. **Strengthen privacy and security of patient health information** through development of best practice models for conducting privacy risk assessments and technical assistance, education and training consistent with federal and state laws. (See *Privacy, Security, and Patient Consent*)
5. **Increase adoption and effective use of EHRs for health providers beyond clinics and hospitals** through targeted financial and technical assistance, and development of guidance and best practices to adopt and effectively use EHRs to gap areas, including long-term and post-acute care, behavioral health, home care, local public health, dentistry, social services, and others. (See *Minnesota e-Health by the Numbers*)
6. **Advance use of health information exchange (HIE)** through grant funding, continued technical assistance, education and training, and HIE oversight. (See *Health Information Exchange and Oversight*)
7. **Advance health equity through e-health** through development of an e-health framework to incorporate social determinants of health into EHRs. (See *Role of e-Health in Advancing Health Equity in Minnesota*)
8. **Accelerate workforce training in health informatics** by advancing coordinated curriculum in colleges and universities, establishing health informatics job classifications, and local public health workforce education and training. (See *Emerging e-Health Issues*)
9. **Assess Minnesota's clinical data repositories** to leverage this resource for research and surveillance to promote population health. (See *Emerging e-Health Issues*)

Summary

E-health in Minnesota has been successful due to the outstanding public-private collaboration, statewide leadership and voluntary contributions of thousands of professionals statewide. E-health continues to be a very 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 we continue to build strategically 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) in order to improve health care quality, increase patient safety, reduce health care costs and improve public health. Across the nation e-health has become a powerful strategy to transform access, care delivery, patient experiences, and health outcomes. 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 decade, 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. Health and health care organizations in the state have received $495 million in federal incentive payments as a result of Minnesota's upfront investment and planning to leverage federal funding support for e-health. These technologies will help further advance Minnesota as a national leader in improving the quality of health care and population health.

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."[1] 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. Furthermore, not pursuing a learning health system will represent missed opportunities to optimize the translation of evidence to patient care. Figure 1 depicts how these opportunities would be missed in our current health system.

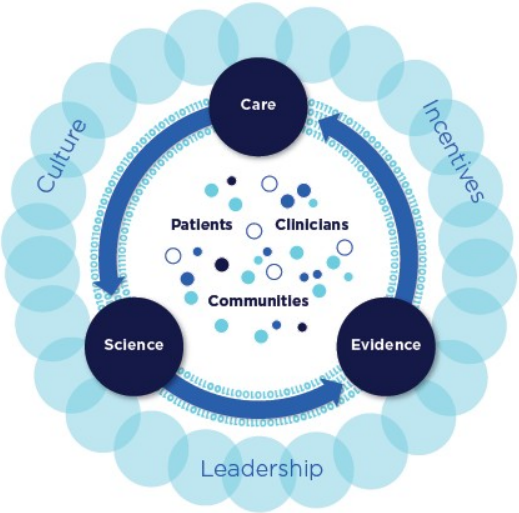
[1] Institute of Medicine. 2012. "Best Care at Lower Cost: The Path to Continuously Learning Health Care in America." Available at: http://www.iom.edu/Reports/2012/Best-Care-at-Lower-Cost-The-Path-to-Continuously-Learning-Health-Care-in-America.aspx

Figure 1: Missed Opportunities Resulting from the U.S. Health Care System

Source: Institute of Medicine. 2012. "Best Care at Lower Cost: The Path to Continuously Learning Health Care in America."

Building off of our strong history of collaboration among our health care organizations, Minnesota's learning health system will encompass a continuous cycle of learning and improvement that optimizes information for research, public health surveillance, quality improvement, and consumer's knowledge-driven decision making. This system will enable health care in Minnesota to move beyond the goals of the Triple Aim improving patient experience of care, improving the health of populations, and reducing per capita costs of care to truly transform the health and well-being of our citizens.[2]

Figure 2: Vision for a Continuously Learning Health System



Source: Institute of Medicine. 2012. "Best Care at Lower Cost: The Path to Continuously Learning Health Care in America."

Achieving Minnesota's learning health system is not merely a technical issue. Rather, our health and health care community will need to collaborate, establish a governance system, and gain the public trust and engagement. This is a tremendous system to achieve, but also a necessary one. Progress is being made nationally with collaborative research networks

[2] The Institute for Healthcare Improvement Triple Aim for Populations, available at http://www.ihi.org/explore/tripleaim/pages/default.aspx

and outcomes-driven initiatives, providing evidence that the system can be achieved.

Federal meaningful use requirements and HITECH

In 2009, Congress passed the Health Information Technology for Economic and Clinical Health Act (HITECH Act). The HITECH Act authorized financial incentives through the meaningful use incentive program involving Medicaid and Medicare programs. 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. Minnesota was the recipient of each of the federally-funded programs. Funding for the majority of these programs ended by 2014 or will end in early 2016. There is a continued need to support providers in achieving meaningful use requirements as well as Minnesota's goals for interoperability, which includes a much broader set of providers and settings necessary for achieving the goals of health reform.

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.

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 on policy and common action needed to advance Minnesota e-Health vision (Figure 3). The Committee is made up of a diverse set of key Minnesota stakeholders, including: consumers, providers, payers, public health professionals, vendors, informaticians, and researchers, among others.

Figure 3: 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

For the past ten years the e-Health Initiative, led by the Minnesota e-Health Initiative Advisory Committee and the MDH Office of Health Information Technology (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. See Appendix A for a listing of current Advisory Committee Members.

Workgroups

Committee members participate in workgroups to dive into detailed topics such as privacy and security, health information exchange, and standards and interoperability. The workgroups are the primary vehicle for receiving public input and 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 facilitate, 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.

Significant work remains

The e-Health Advisory Committee is schedule to sunset in June 2015, yet members agree that there remains significant work to fully implement e-health across the continuum of care, and is recommending continuance of the Initiative to 2021.

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. More information about the Minnesota e-Health Initiative Advisory Committee and its workgroups is available on the MDH Minnesota e-Health website http://www.health.state.mn.us/e-health.

Office of Health Information Technology

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 MDH Office of Health Information Technology (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 MDH 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.

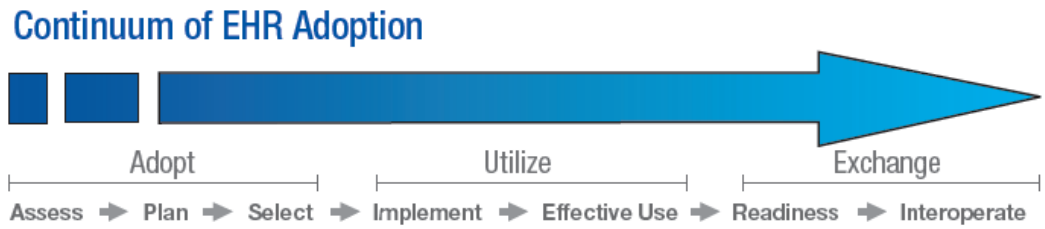
To stay current with e-health activities happening nationally, OHIT staff monitor, respond to and actively participate in several national activities. These activities provide opportunity to share lessons learned in Minnesota and learn from other states, as well as to identify policy trends and funding opportunities. The Appendix C table summarizes several key national activities to provide a sense for the scope and breadth of activities happening across the country.

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 4) 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 4: 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:

- Addressing Common Barriers (2008)
- Recommended Standards (2009, revised 2011)
- Electronic Prescribing (2009; update scheduled for early 2015)
- Effective Use of EHR Systems (2009)
- 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 Initiative and OHIT 2014 achievements

Key accomplishments by the Minnesota e-Health Initiative and OHIT during 2014 include:

- **Led the 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.
- **Provided technical assistance, outreach, and communication** for health care providers to understand the Minnesota 2015 Interoperable EHR Mandate, including actively monitoring an email account set up to field questions along with answering direct needs from incoming phone calls and presenting at setting-specific conferences.
- **Participated in the State Innovation Model grant,** including developing components of the plan related to e-health and implementing grant and contract activity. Resulted in providing financial assistance through grants and loans.
- **Finalized and distributed e-health implementation toolkits** for four key settings related to accountable care: home health, behavioral health, social services, and local health departments.
- **Assessed and evaluated e-health implementation** among clinics and hospitals in Minnesota.
- **Supported and leveraged the e-Health Initiative Advisory Committee and workgroups** to advance critical e-health policy guidance and recommendations. Workgroup accomplishments focused on electronic prescribing, health information exchange, privacy and security, and standards and interoperability, consumer engagement and workforce development.
- **Disseminated information on e-Health through the *Minnesota e-Health Initiative Weekly Update* email,** including a synthesis of e-health related news, significant meetings and a Minnesota perspective on local and national health information technology activities. In 2014, the number of subscribers increased by almost 200 individuals, from 4,720 readers to nearly 5,000.
- **Presented at more than 50 presentations at conferences and meetings** held by Minnesota and national organizations and associations, such as the Healthcare Information and Management Systems Society, American Medical Informatics Association, Public Health Informatics Conference, various Minnesota provider associations, other state agencies, the Minnesota e-Health Summit, and others.

The Minnesota e-Health Initiative was recognized by the Humphrey School of Public Affairs with a 2014 Minnesota State Government Innovation Award. This award recognizes the work of state government agencies and encourages an environment of experimentation and innovation. A short video describing the Initiative is available at http://sgia.umn.edu/home/2014-video-winners.

Through these activities the Initiative identified needs for future action 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 took effect in January 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 annual Minnesota e-Health Summit brings together over 400 key leaders and national experts to share knowledge, experiences, best practices and lessons learned for advancing e-health. The goal each year is to provide quality education about emerging national and state e-health trends and issues as well as practical tips, techniques and tools for health practitioners. In addition to hearing from nationally 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 2014 10th anniversary Summit, themed "Looking Back to Celebrate – Looking Forward to Innovate," expanded to a two-day event with over 460 people in attendance. The governor declared June 11, of the event as "e-Health Day." Fourteen individuals were recognized for their leadership over the past ten years.

Minnesota e-Health by the Numbers

The Minnesota e-Health Profile is a series of 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.

As illustrated by the highlights below , 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.

Minnesota e-Health Assessment Highlights

- Adoption rates of EHRs are high (ambulatory clinics at 93% and hospitals at 99%), 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.

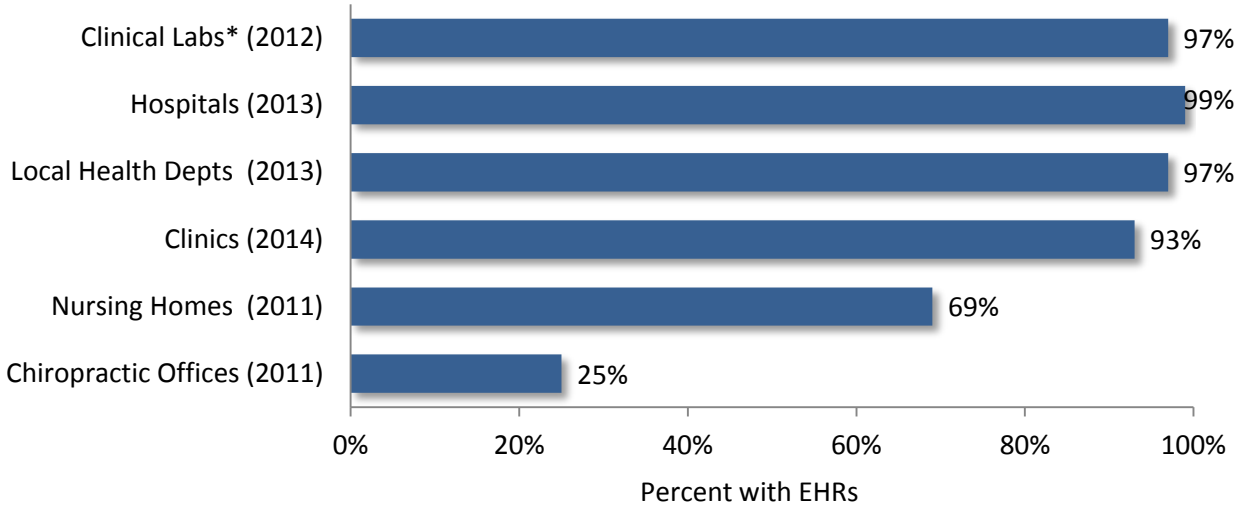
In 2014, OHIT conducted HIT assessment studies among Minnesota's hospitals, clinical labs, ambulatory clinics, and community health boards. In 2015, OHIT will also conduct studies among other settings across the continuum of care to identify barriers to e-health, with emphasis on: long-term care, behavioral health, home health, local public health and dentistry.

Adoption of electronic health records

Minnesota has some of the highest EHR adoption rates in the country[3] 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 5 shows adoption rates across health and health care settings.

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

Figure 5: Percent of Minnesota Providers Using Electronic Health Records



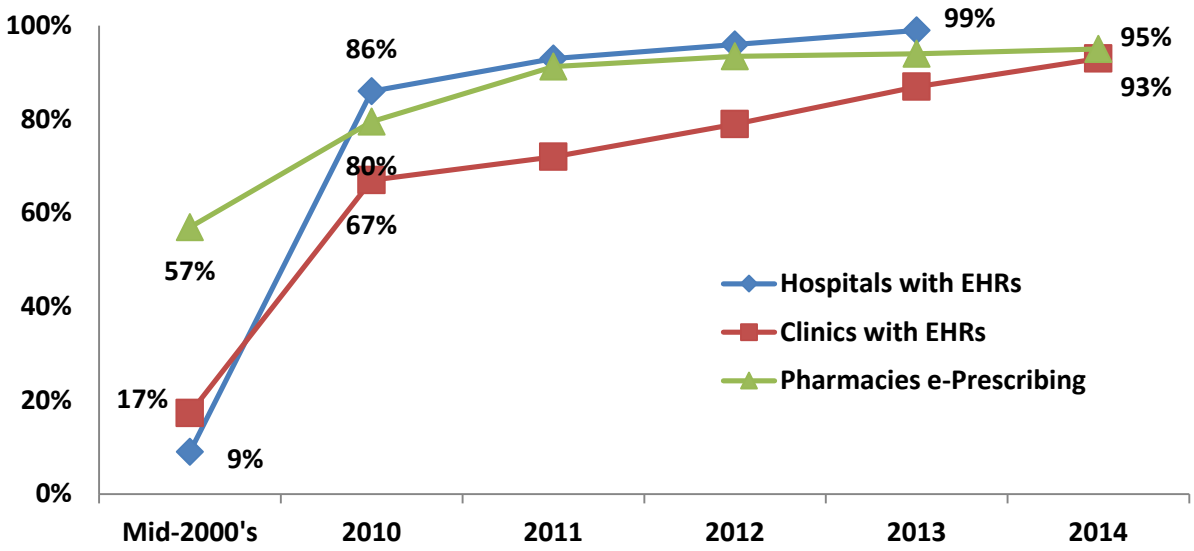
* Clinical Labs use lab information systems rather than EHRs
Source: Minnesota Department of Health, Office of Health Information Technology, http://www.health.state.mn.us/e- health/assessment.html

- **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 93% in 2014.
- **Nursing homes** increased from 32% in 2008 to 69% in 2011 (the most recent assessment year for this setting). Identified as certified licensed nursing homes and certified boarding care homes, nursing 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.
- **Chiropractic offices** increased from 25% adoption rate in 2011, 55% of chiropractic offices without an EHR plan to implement in the next one to three years.

It should be noted that chiropractic offices, nursing homes, local health departments, and clinical labs have no or limited nationally certified EHR software available. 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.

The adoption rate is very strong among hospitals, clinics and pharmacies (Figure 6). While the rate of adoption is leveling off as it approaches 100%, there was tremendous progress in adoption over the past decade.

Figure 6: Trends in EHR Adoption: Hospitals, Clinics, Pharmacies



Source: Minnesota Department of Health, Office of Health Information Technology, http://www.health.state.mn.us/e-health/assessment.html
*Excludes pharmacies with the pharmacy class of medical device manufacturer

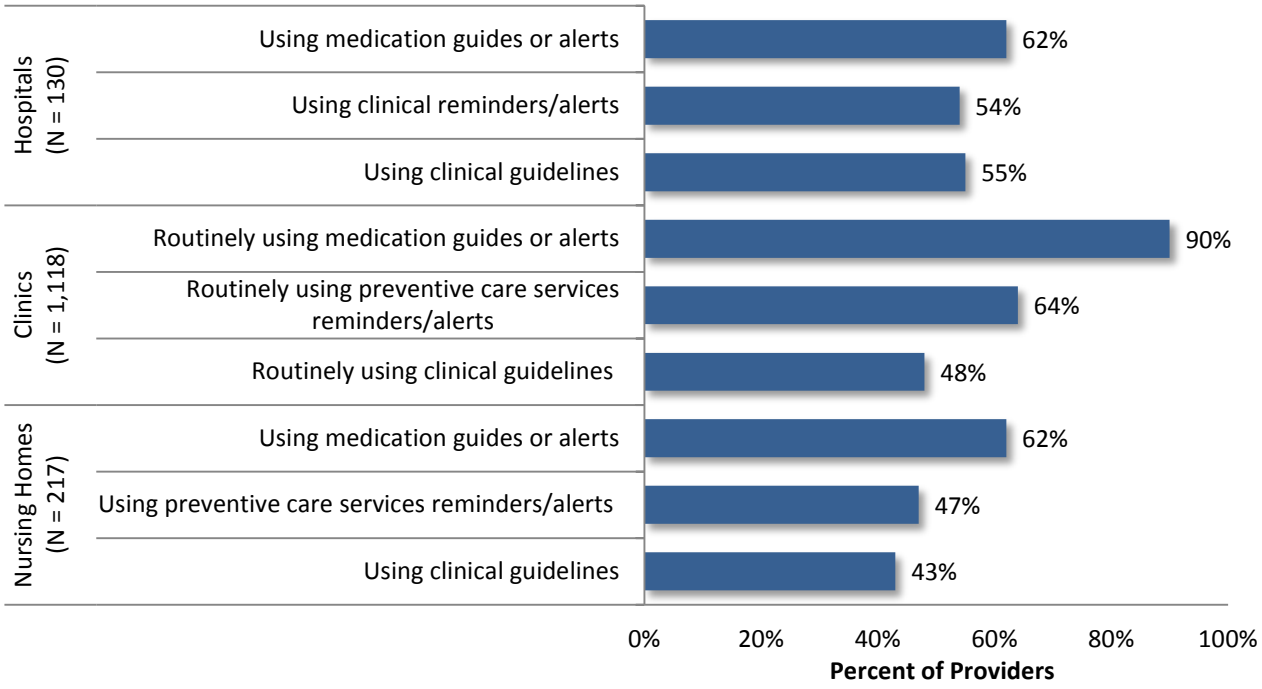
Effective use of electronic health records

The real value from investing in and implementing an EHR system is optimizing 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.

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 7 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 8 and 9), and earlier gaps between urban and rural rates of implementation have declined. For example, 68% of rural clinics and 66% 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 (26%), too many false alarms/too disruptive (25%), lack of staff and/or provider training (18%), and required redesign of workflow processes (17%).

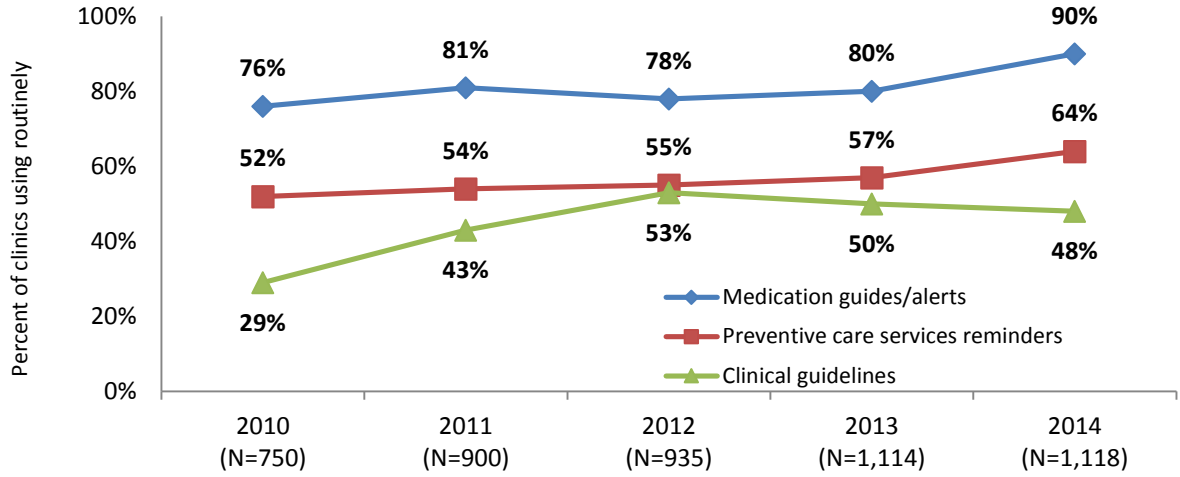
Figure 7: Use of Clinical Decision Support Tools among Providers with EHR Systems



Source: Minnesota Department of Health, Office of Health Information Technology, http://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 8 presents the trends in percent of clinics that utilized three key CDS tools: medication guides/alerts, preventive care reminders, and clinical guidelines. Routine use of medication guides/alerts increased from 76% of clinics in 2010 to 90% in 2014. Routine use of preventive care services reminders increased from 52% of clinics in 2010 to 64% in 2014, and routine use of clinical guidelines increased from 29% of clinics to 48% in that time frame.

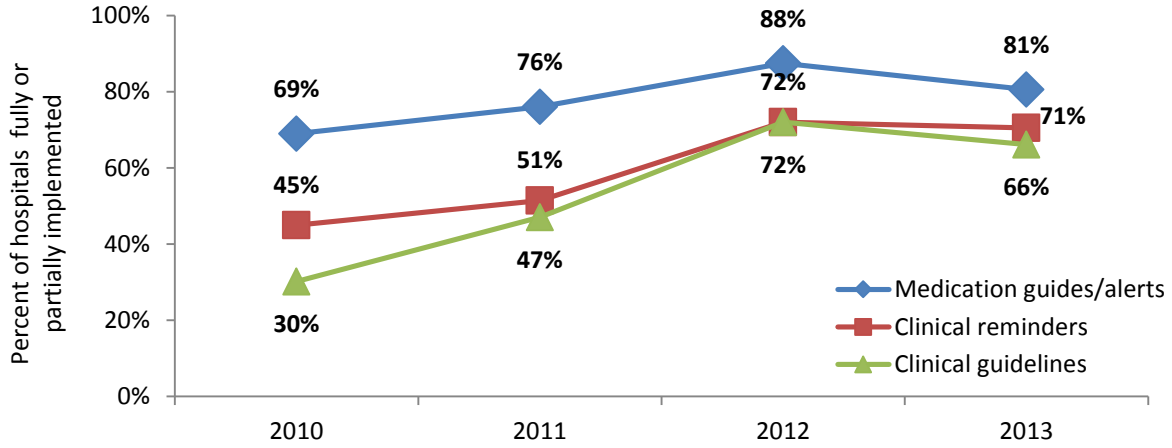
Figure 8: Clinic Trends in Use of Key Clinical Decision Support (CDS) Tools, 2010-2014



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

Minnesota's hospitals also show an increase in use of CDS tools over time (Figure 9). 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.

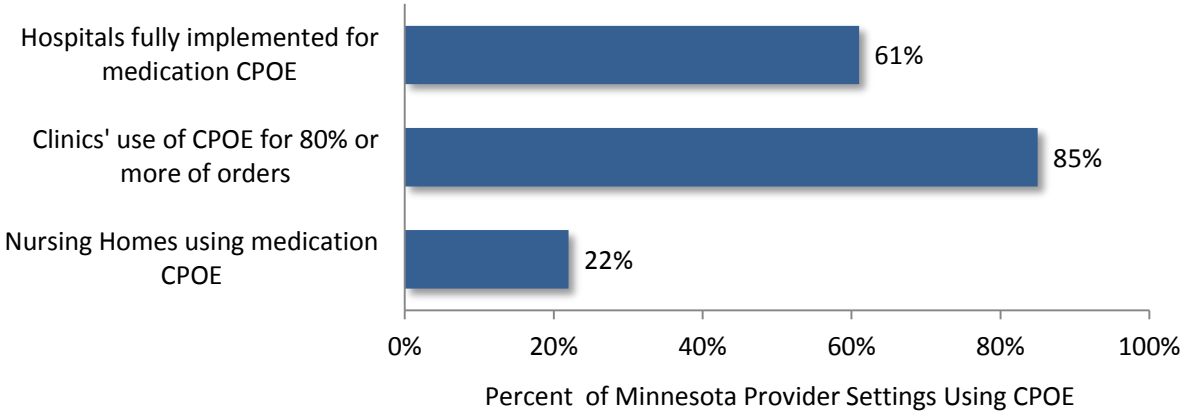
Figure 9: Hospital Trends in Use of CDS Tools, 2010-2013



Source: Minnesota Department of Health, Office of Health Information Technology, http://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 10 shows CPOE use for Minnesota clinics, hospitals and nursing homes.

Figure 10: Use of Computerized Provider Order Entry (CPOE) among Providers

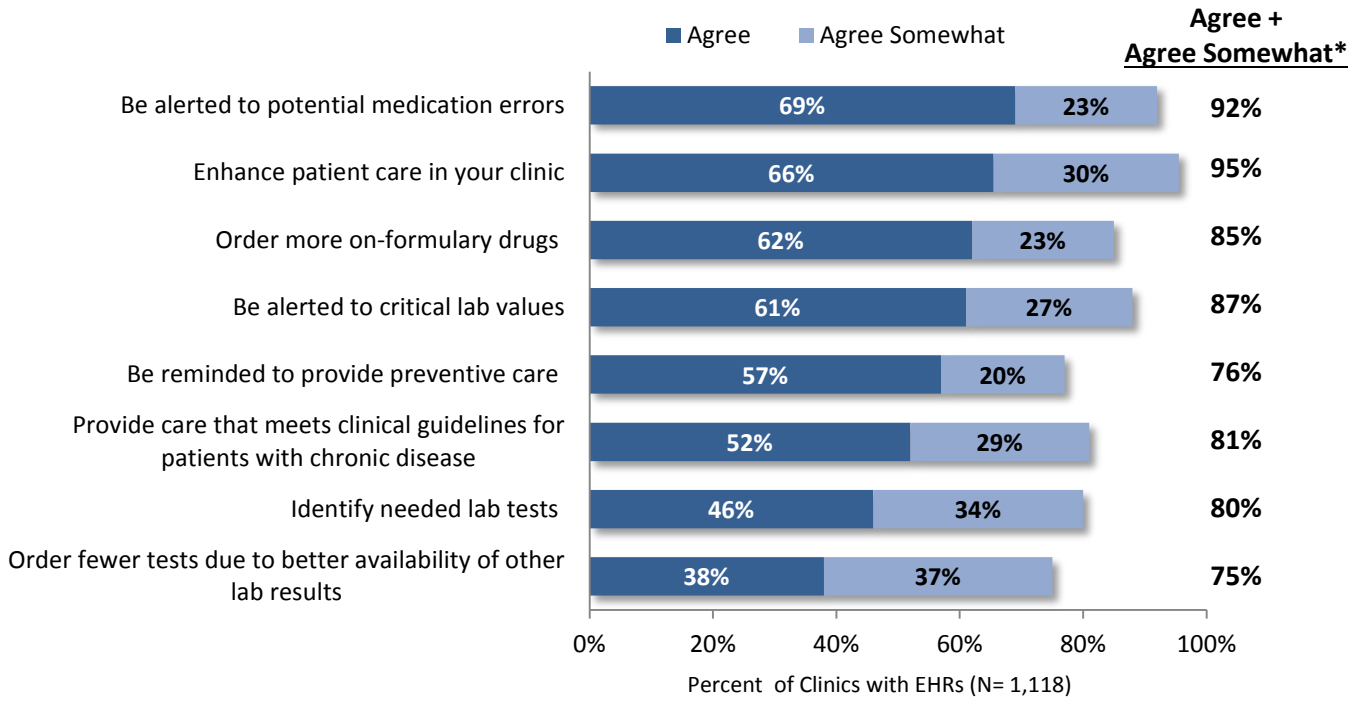


Source: Minnesota Department of Health, Office of Health Information Technology, http://www.health.state.mn.us/e- health/assessment.html, data from 2014 clinic survey, 2013 hospital survey, and 2011 nursing home survey.

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 11.

Figure 11: Impact of EHRs on Clinic Practice, 2014



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

* Totals may not match sum of chart percentages due to rounding.

Health Information Exchange and Oversight

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 affiliated hospitals and clinics or those using the same EHR system. Federal requirements through meaningful use now requires more health information exchange happen with unaffiliated partners or partners on different EHR systems.

Minnesota HIE Achievements in 2014

- Ongoing monitoring and 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.
- 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.

HIE landscape in Minnesota: a market-based strategy

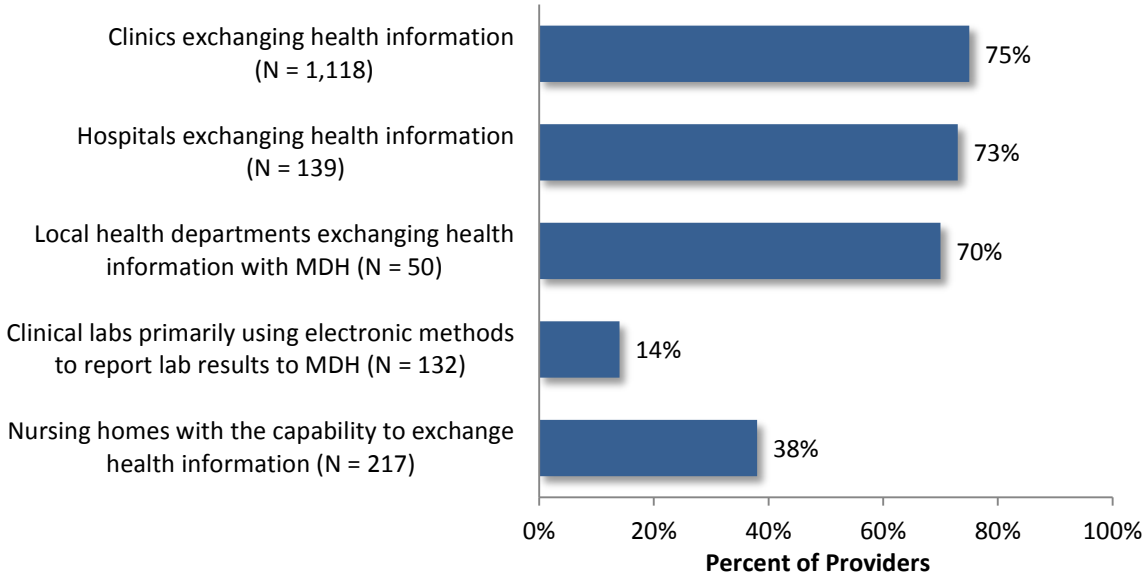
Minnesota's approach to health information exchange has been to support a market-based strategy for secure HIE that allows for private sector innovation and initiative, yet uses government oversight to ensure fair practices, sustainability and compliance with state and federal privacy, security and consent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

Minnesota's HIE oversight law (Minnesota Statute 62J.498 – 62J.4982), passed in 2010, provides a governance framework to ensure that a patient's electronic information securely follows them across the full continuum of care. OHIT manages this oversight role by monitoring national and state HIE activities, certifying HIE service providers that provide HIE product and/or services in Minnesota, and providing education and technical assistance to applicants on the certification process. The certification process is intended to promote public trust in interoperability activities, decrease fragmentation of health information in the state, and provide a state strategy for community-based interoperability through the use of State-Certified HIE Service Providers. This framework will help 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.

Providers using HIE

The number of Minnesota hospitals and clinics exchanging health information is slowly increasing, with 73% of hospitals and 75% percent of clinics electronically exchanging health information with any partners (Figure 12). 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 using the Consolidated Continuity Document (CCD). The CCD is a meaningful use requirement for hospitals, but routine exchange, with nursing homes specifically, is limited. Also noted in Figure 12 is that 70% of local health departments were electronically exchanging health information. However, most of the exchange was with the Minnesota Departments of Health and Human Services using non-standardized data files.

Figure 12: Health Information Exchange among Providers with EHR Systems



Source: Minnesota Department of Health, Office of Health Information Technology, http://www.health.state.mn.us/e-health/assessment.html; data from 2014 clinic survey, 2013 hospital survey, and 2011 nursing home survey.

HIE oversight

By 2015, all Minnesota health care providers must have an interoperable electronic health record system that is connected to a state-certified health information exchange entity (M.S. 62J.495). Minnesota's Health Information Exchange (HIE) Oversight Program (M.S. 62J.498-4982) was established to ensure that all Minnesota health care providers can exchange patient data securely and seamlessly, following state and national standards, to provide high quality care for patients, reduce costs, support healthy communities, and meet Minnesota's interoperability requirements. Under the oversight law, MDH certifies vendors that provide a range of HIE services, to ensure that these standards and requirements are met.

Evolving Minnesota HIE market

When Minnesota's HIE oversight law was established, HIE was in its infancy and it was not clear how the market would evolve to meet the demands of providers for different types of

exchange. Over the last five years, demand has grown and shifted, and as new mechanisms for HIE have developed, Minnesota's original HIE oversight law has become inadequate to address the wide variation in exchange models that currently exist or to keep pace with market demand and rapidly changing privacy/security needs.

In addition to meeting the 2015 mandate for having an interoperable electronic health records, Minnesota's providers need to securely exchange health information in order to support coordination of care across settings and between providers that are unaffiliated with each other organizationally. Currently, fewer than half of hospitals, clinics and nursing homes have the ability to securely exchange data with unaffiliated partners that use different, proprietary electronic health record systems. Several larger electronic health records vendors and health systems provide health information exchange services within their own networks but these approaches may not fall under Minnesota's current oversight law, which uses outdated definitions to describe mechanisms for exchange.

Minnesota's oversight law challenges

In Minnesota's current market, six mechanisms have emerged under which health information exchange occurs. However, only two of these six mechanisms are currently covered by Minnesota's oversight law. This presents challenges to the State ensuring that necessary privacy, security, and interoperability goals and standards are met for vendors that provide services outside of the certification process. With lack of clarity under the current law, organizations that offer health information exchange services to Minnesota providers struggle to understand whether or not they are required to come into compliance with the HIE oversight process. As a result, health care organizations have expressed concern about potentially failing to meet Minnesota's interoperable electronic health records mandate through a connection with a certified health information exchange organization. The ultimate risk is passed on to patients whose health information may or may not be available to all of their health care providers. As recommended in this report, the legislature should consider updating the HIE oversight law to reflect current market dynamics and to streamline and focus the application and certification processes. This will benefit health care providers needing to exchange health care data on behalf of their patients.

E-prescribing

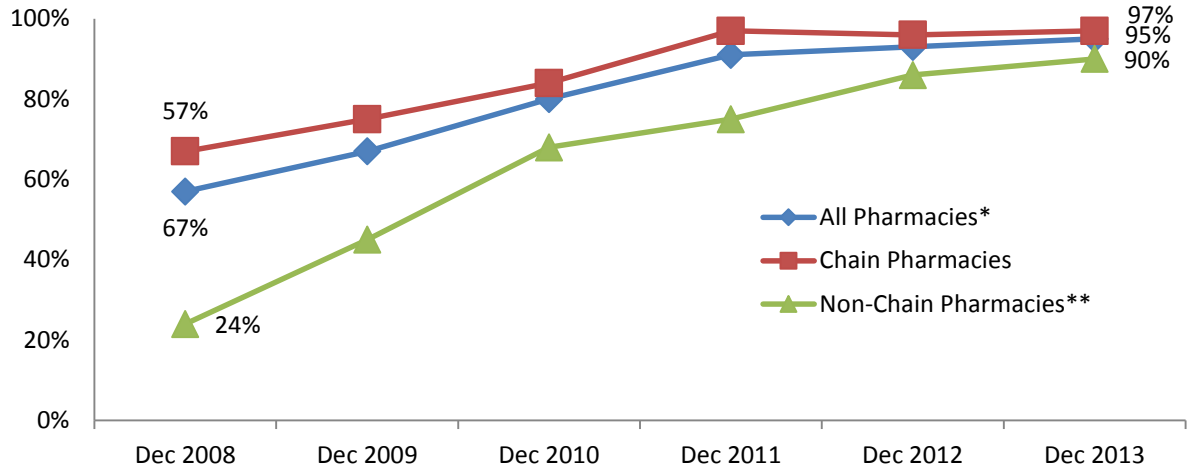
Electronic prescribing, or "e-prescribing," means secure bi-directional electronic information exchange between prescribing providers, pharmacists and pharmacies, and payers or pharmacy benefit managers. E-prescribing can improve the quality of patient care because it enables a provider to electronically 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.[4] 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.[5]

Minnesota measures the status of e-prescribing in several ways, including pharmacy and provider e-prescribing practices. Figures 13 and 14 show high rates of adoption among EHR-enabled clinics (93%) and pharmacies (95%), 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 95% in December 2013.

Figure 13: Pharmacy Trends in e-Prescribing

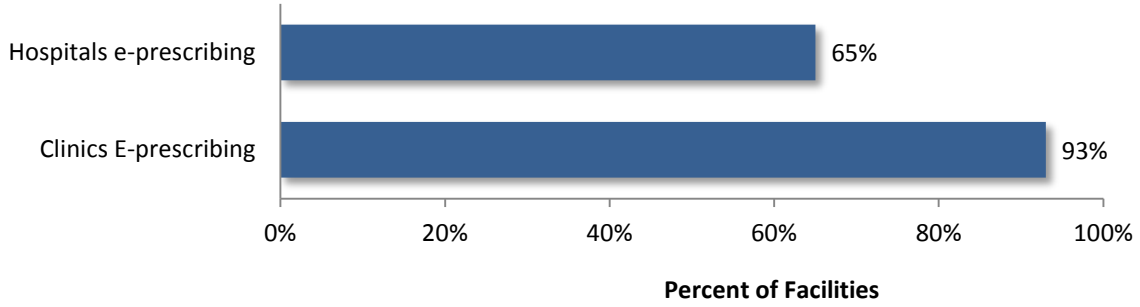


*Excludes pharmacies with the pharmacy class of medical device manufacturer
**Includes pharmacies with the pharmacy class of independent, franchise, and government/federal
Source: Office of the National Coordinator, Surescripts

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 do not allow e-prescribing of 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.

[4] Kausha, R., Kern, L., Barron, Y., Quaresimo, J., & Abramson, E. (2010). Electronic Prescribing Improves Medication Safety in Community-Based Office Practices. J Gen Tern Med 25(6):530-6.
[5] 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.

Figure 14: Use of E-Prescribing Among Minnesota Hospitals and Clinics, 2014



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

Despite these high levels of e-prescribing, the community faces technical and workflow issues that are barriers to full implementation. Gaps in the use of some specific e-prescribing transactions have been reported by providers and pharmacists, potentially affecting patient health and safety. In winter of 2014, a group of these stakeholders brought issues to the Institute for Clinical Systems Improvement (ICSI) about unintended consequences of e-prescribing due in large part to system usability issues and lack of transaction functions for to canceled and modified scripts. ICSI engaged the Minnesota e-Health Initiative to study these issues to understand the gaps, barriers, opportunities to use these transactions in Minnesota. A workgroup was convened in summer and fall 2014 to identify and prioritize issues and to update the Initiative's guidance on e-prescribing to reflect current practices and standards.

Adoption and Use of Standards as a Foundation for Achieving Interoperability

The National Library of Medicine catalogs more than a thousand e-health related standards and code sets. Identification of the right standards to use is complex and an ongoing activity. E-health standards are essential to ensure effective use of EHRs and to successfully achieve interoperability of health information. In Minnesota some e-health examples where standards are essential include:

- Providing physicians and patients with medical alerts for items such as potential adverse drug to drug interactions.
- Monitoring and comparing lab tests over time no matter where the test was done, and enabling patients to see lab results online.
- Sending complete clinical information for a smooth transition from a hospital to other settings.
- Providing rapid electronic transmission of your prescriptions to a pharmacy of the patient's choice.
- Having a complete immunization history for providers to determine what shots are needed.
- Alerting the community during public health threats and outbreaks.

The Commissioner of Health is responsible under Minnesota Statute 62J.495 Subd. 1., to specify uniform standards requirements for EHRs in Minnesota. The uniform standards are to be updated on an ongoing basis as part of an annual report to the legislature including recommendations for use and other action. Seven key activities are used to support these responsibilities and are described in the next section on 2014 achievements.

Summary of Adoption and Use of Standards

- Standards are a crucial factor to achieve interoperability.
- Nationally-recommended standards exist for many use cases/transactions and the Minnesota e-Health Initiative recommendations the adoption and use of these standards.
- There is an underutilization of recommended e-health standards in many settings and in some settings standards are not yet developed.
- Considerable work is needed to encourage development and adoption of standards, particularly for settings not directly included in the federal meaningful use EHR incentive program.

Key 2014 achievements relating to standards and interoperability

- **Monitored National e-health Standards Changes** including over 25 development organizations, > 1000 standard updates, federal rules and policies and industry trends.

- **Identified the status, gaps, and needs regarding standards** using the Minnesota e-health assessment profiles, engagement and discussion with internal and external stakeholders, and ongoing technical assistance requests from partners – particularly around behavioral health, local public health and public health reporting.
- **Developed consensus recommendations for addressing gaps in standards** by expert and thorough analysis of alignment with national efforts and policy development.
- **Promoted best practices and standards use** by engaging stakeholders through the Standards and Interoperability Workgroup and developing the health information technology toolkits, which offered standards tools and resources to local public health, social services, behavioral health and nursing homes.
- **Contributed to the development of federal standards** by monitoring and providing input and feedback to proposed rules and laws.
- **Evaluated, tested and conducted applied informatics research** on standards relating to birth records and health equity.
- **Developed policy guidance and recommendations for the Commissioner of Health** to support his responsibility under Minnesota Statute 62J.495 Subd. 1., to specify uniform standards requirements for achieving interoperable EHRs. For example, on August 6, 2014, with support from the Minnesota e-Health Initiative Advisory Committee, MDH adopted the following recommendations and encouraged regional and national organizations to support the national adoption of standard nursing terminology. http://www.health.state.mn.us/e-health/standards/nursingterminology082114.pdf

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 standards in a coordinated way in order to advance interoperability statewide. Development and use of standards for all settings of care will support transformation of our health system as the state progresses toward coordinated models of health care delivery.

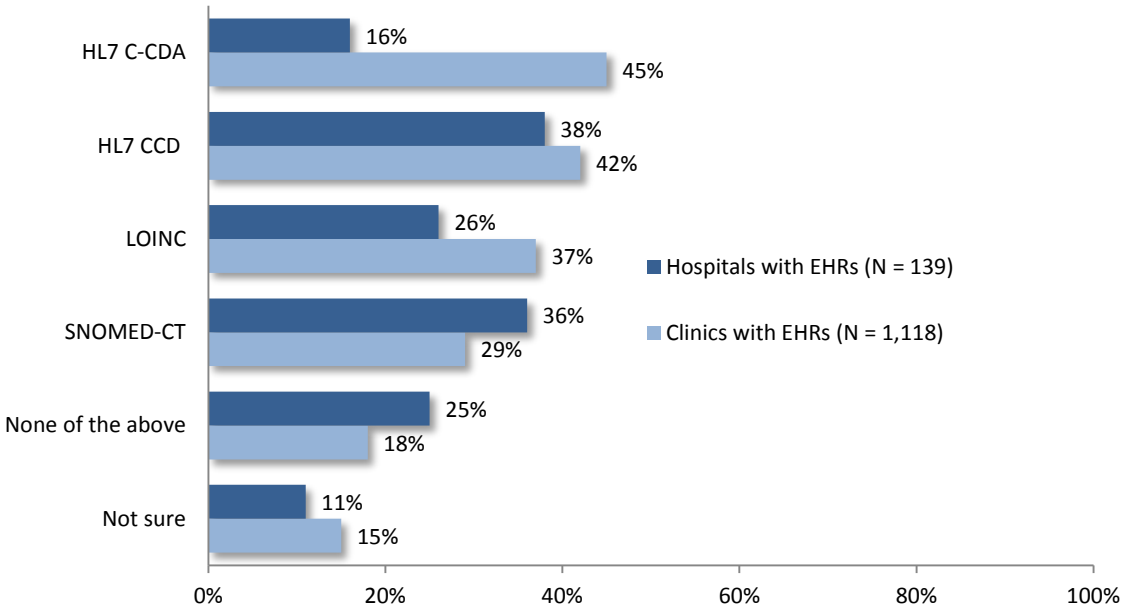
Use of e-health standards lag in Minnesota

Many standards have been developed and recommended, yet current assessment data show that clinics and hospitals are slow to use them. While adoption of EHRs is high in most health and health care settings, adoption of standards lags. For example, some key recommended standards include:

- HL7 (Health level 7) Continuity of Care Document (CCD) or Consolidated (C-CDA) for clinical data.
- LOINC for lab test names and results.
- SNOMED-CT for diagnosis codes and encounters

Figure 15 shows that less than half of Minnesota's clinics with EHRs use recommend e-health standards for transitions of care. This results in potential patient care delays in orders and treatment plans.

Figure 15: Exchange Standards Used for Transitions of Care, 2014



Source: Minnesota Department of Health, Office of Health Information Technology, 2014, http://www.health.state.mn.us/e-health/assessment.html

Key gaps and needs to address in 2015

Key gaps exist in Minnesota's standards and interoperability capacity, as identified through discussion and input with community experts, the Minnesota e-Health Advisory Committee, the Standards and Interoperability Workgroup, the communities forming to support accountable care, and from many other community experts. These discussions identified the following needs to address in 2015 and beyond:

- **Expand the statewide e-health assessment** of standards to include additional settings and prepare a Minnesota road map for standards identification, adoption and use. This will help focus resources and determine priorities.
- **Identify and or develop tools, templates, guides and technical assistance 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.
- **Engage key stakeholders from across the continuum of care** to advance the use of standards. This will provide the necessary leadership to engage the workflow changes needed to implement use of standards.
- **Contribute to development of national standards development** by actively participating responses for proposed rulemaking, certification testing, and related input.
- **Address emerging needs related to standards and interoperability for key areas** including public health reporting, health equity, and accountable communities for health.

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 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 C for a comparison of Minnesota statute to HIPAA.

2014 Minnesota e-Health Privacy and Security Achievements

- Leverage the e-health Privacy and Security Workgroup to develop tools, tips and guidance to address gaps identified through the ***Health Records Access Study***, 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 these new tools, tips and guidance documents to the health care community in Minnesota to address identified provider challenges for privacy, security and management of patient preferences for consent in an electronic environment.
- Privacy, Security and Consent for Health Information Exchange Request for Proposals available for grantees to complete a ***Part A: Review of e-Health Legal Issues, Analysis and Identification of Leading Practice*** and ***Part B: e-Health Privacy, Security and Consent Management Technical Assistance and Education*** in support of the Minnesota Accountable Health Model.

Privacy and Security Workgroup

The Minnesota e-Health Initiative's Privacy and Security Workgroup supports Minnesota's health care community in meeting the requirements of Minnesota law and implementing best practices for ensuring the protection of patients' health information.

2014 accomplishments

The Privacy and Security Workgroup convened 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 included:

- Updated 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.
- Managed the Privacy, Security and Consent for Health Information Exchange RFP in support of the Minnesota Accountable Health Model to better understand the perceived and actual barriers to information sharing across a care continuum where accountable care relationships are established.
- Identified needed updates to Minnesota statutes to support sharing among unrelated entities and a diverse care continuum (recommendation from Roadmap to a Healthier Minnesota[6]). This work will support ongoing efforts to improve patient health outcomes and decrease health care delivery costs.

Looking ahead to 2015

The workgroup will continue to focus on key statewide activities and Minnesota e-Health priorities and provide recommendations on Minnesota Privacy and Security Program implementation. Deliverables for this workgroup include:

- Identify 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 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.

[6] Roadmap to a Healthier Minnesota: Recommendations of the Minnesota Health Reform Task Force, Final Report December 13, 2012; available at http://mn.gov/health-reform/images/TaskForce-2012-12-14-Roadmap-Final.pdf

Targeted Funding for e-Health

Minnesota's commitment to supporting the development of e-Health began in 2006, with grant funding to support adoption and implementation of electronic health records in health care settings across the state. It continued with the creation of a revolving state EHR loan program, and has been augmented with federal funding to support health information exchange. While the Minnesota e-Health grant program ended in 2009, the loan program continues to support EHR adoption along with federal efforts to support HIE.

Minnesota Targeted Assistance Achievements in 2014

- Completed and evaluated 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.
- Provided $3.8 million in new grants in support of ***Minnesota's Accountable Health Model***, a model of new care delivery and payment reform.
- Provided four new loans through the ***Minnesota EHR Loan Program*** in January 2014. The program is anticipated to open again in early 2015 for applications.

Minnesota e-Health Connectivity Grants for HIE

HIE efforts have expanded greatly in Minnesota over the past five year with federal support to community collaboratives and public health agencies. Under the State Health Information Exchange (HIE) Cooperative Agreement Program, from 2011-2014 the Minnesota e-Health Connectivity Grant Program for HIE provided $2.8 million to individual providers, hospitals, pharmacies and community collaboratives. The 51 grants included over 200 community partners, whose projects experienced a range of successes and challenges in undertaking these innovative exchanges. To address the need for exchange partners, the grant program promoted broad-based exchange within a community or region. Community collaboratives (two or more organizations or exchange partners) received grants to implement clinical data exchange. See Appendix D for a map of the grantees.

Through grants targeted to expanding e-prescribing capabilities, 13 additional pharmacies are now e-prescribing. Most of these pharmacies report that between 60 and 90 percent of local prescribers (e.g., clinics, hospitals, and dental offices) are now sending prescriptions electronically. They also note that electronic prescribing has improved both productivity and safety and wish they could have implemented it sooner.

These efforts helped health organizations meet requirements for federal incentives for meaningful use of an EHR, but also helped more broadly to expand community-level capability to conduct health information exchange for medical care and public health.

Minnesota EHR Loan Program

The Minnesota Revolving EHR Loan Program 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, and other providers of health or health care services. The zero-percent loans must be repaid in six years.

There are open application cycles in 2008, 2011, 2013 and 2014. 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. The loan program will open again in early 2015.

Minnesota Accountable Health Model grants

This new e-health grant program, modeled on the HIE Connectivity Grant Program, is intended to support the secure exchange of medical or health-related information under the Minnesota Accountable Health Model (see next section for more details on this model). Applicants are required to be part of a community collaborative participating in or planning to participate in an accountable care organization (ACO) or similar health care delivery model and must include at least one of the priority settings of long-term/post- acute care, behavioral health, local public health and social services. The organizations must participate in or plan to participate in an ACO or similar care delivery model involving payment alternatives to fee-for-service, such as shared risk, shared savings, or total cost of care.

Through the Accountable Health Model grants MDH awarded $3.8 million in grants to help 12 community collaboratives implement HIE, ranging from about $66,000 to $897,000. The grants were designed to help care team members from clinical, community, and social service settings use health information exchange and health information technology to better meet the health needs of patients and community members. The Minnesota Accountable Health Model will have another round of grant funding to support the secure exchange of medical or health-related information in 2015.

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 Model (the Model).[7]

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. It will build upon the current Minnesota Medicaid ACO models—the Integrated Health Partnerships (IHP) program, a Medicaid ACO program administered by DHS, and the Hennepin Health demonstration project—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. The 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.

Minnesota Accountable Health Model Drivers	
Driver-1	Providers have the ability to exchange clinical data for treatment, care coordination, and quality improvement – HIT/HIE
Driver-2	Providers have analytic tools to manage cost/risk and improve quality – Data Analytics
Driver-3	Expanded numbers of patients are served by team-based integrated/coordinated care – Practice Transformation
Driver-4	Provider organizations partner with communities and engage consumers, to identify health and cost goals, and take on accountability for population health – ACH
Driver-5	ACO performance measurement, competencies, and payment methodologies are standardized, and focus on complex populations – ACO Alignment

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 to support the Model 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 implementation, described in Figure 16. Building on the successes of past activities, OHIT will work to build capability and capacity for e-health across the continuum of care and

[7] Minnesota State Innovation Model Grant web page: http://mn.gov/sim

within ACOs.

Figure 16: e-Health and 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.

E-health grants

This e-health grant program is intended to support the secure exchange of medical or health-related information under the Minnesota Accountable Health Model (see previous section, *Targeted Funding for e-Health*, for a description).

E-health roadmaps

MDH requested proposals to develop and disseminate Minnesota e-Health Roadmaps to Advance the Minnesota Accountable Health Model (e-Health Roadmaps) for the settings of long-term and post-acute care, local public health, behavioral health, and social services. Each e-Health Roadmap will describe a path forward and a framework for each setting to enable providers to effectively use e-health to participate in the Minnesota Accountable Health Model. The e-Health Roadmaps will include both concrete, achievable short and medium term steps and longer-term aspirational goals. In addition, the e-Health Roadmaps will be action-oriented and based on use cases. They will recommend actions primarily for the setting but may include actions for other stakeholders, including the State, providers, payers, technology vendors, and policy-makers. The e-Health Roadmaps will support readiness for and participation in the Minnesota Accountable Health Model within each setting, and achieving the Triple Aim.

Privacy, security and consent management for HIE

MDH invited interested and qualified organizations and/or individuals to submit competitive and innovative proposals for services related to Privacy, Security and Consent Management for Electronic Health Information Exchange. This work will support health care professionals, hospitals and health settings in using e-health to improve health, increase patient satisfaction, reduce health care costs, and improve access to the information necessary for individuals and

communities to make the best possible health decisions, and support readiness to advance the Minnesota Accountable Health Model. Funding focuses on two distinct areas:

- Review of e-Health Legal Issues, Analysis and Identification of Leading Practice
- e-Health Privacy, Security and Consent Management Technical Assistance and Education

The overall goals for this program are to:

- Ensure health care professionals, hospitals, behavioral health, long-term and post-acute care, local public health, and social services have the access to the knowledge and tools required to use, disclose and share health information in a safe and secure manner.
- Ensure that health care professionals, hospitals and health settings have access to education and technical assistance on privacy, security and consent management practices that are based on both the Health Insurance Portability and Accountability Act (HIPAA) and Minnesota Statutes.
- Identify opportunities for improvement in current patient consent processes for the release of protected health information required for health information exchange.
- Provide access to education and technical assistance for health care professionals, hospitals and health settings on implementing leading practices for enabling safe and secure electronic health information exchange across multiple and diverse health care settings for the purpose of care coordination activities. This includes, but is not limited to: consistent and uniform policies and procedures.

Looking ahead to 2015

Targeted assistance should continue to include:

- **Provide 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.
- **Update Minnesota e-health resources and policy guides** to include the latest Minnesota-specific lessons learned and best practices.
- **Provide public health technical assistance to help providers meet Stage 2 and future meaningful use requirements.** Data reporting to state public health agencies is a required component of meaningful use. Coordination within MDH and with reporting entities is needed to ensure preparedness for current and future federal meaningful use requirements.

MDH and Public Health Interoperability

Programs at MDH are experiencing an increasing demand from health care providers to stay current with the private sector trends of electronically moving health information using national standards. Demands for fast access to health information to address public health needs are rising rapidly. Local public health and other health care providers are calling for greater access to electronic public health data to improve response to health threats, support quality and safety, reduce costs, and more effectively target public health interventions to improve health. More broadly, MDH customers are quickly moving towards electronic means of communication and are demanding to conduct business electronically for other core functions - including grants, licensing, and health education - through electronic, easy-to-access, uniform, and transparent tools and systems.

Current state and gap

Current Minnesota law, the 2015 Mandate for Interoperable EHRs, requires all health care providers to have an interoperable electronic health record and be connected to a State-Certified Health Information Exchange entity. The mandate 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.

Current state law also requires the reporting of public health data to MDH including, but not limited to, notifiable conditions laboratory reporting, infectious diseases, and immunizations. MDH's collection, reporting, and public health action on information gained through its public health reporting systems are the foundation for meeting its mission and its statutory role.

Despite these requirements, MDH's information systems are in varying states of readiness to accept, process, and exchange data with providers interested in reporting electronically. To ensure that providers are able to effectively and securely exchange public health data with MDH, many of the department's systems must be updated or replaced. In 2015, MDH will continue clarifying its strategic vision and tactical plan to ensure it has interoperable systems that better align with rapidly evolving health information systems.

Using e-health to improve public health practice

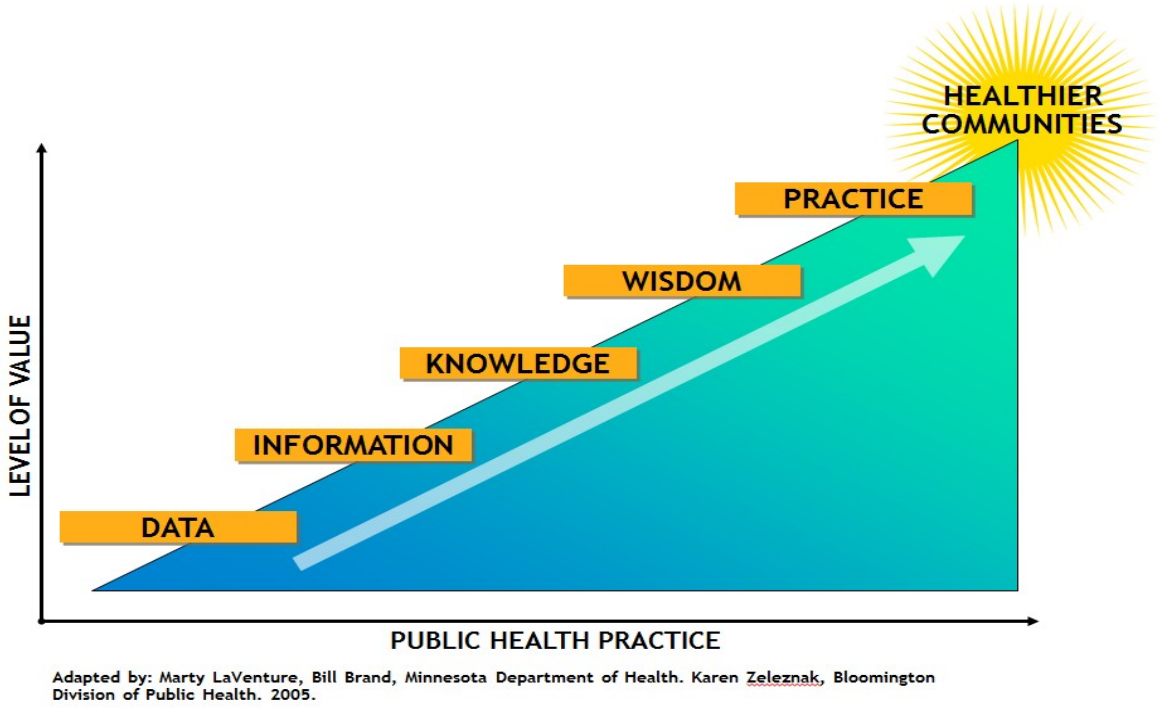
E-health is a critical tool for Minnesota's public health system. At the state level, e-health advances how MDH collects, securely shares and acts on health data to uncover health differences between populations. E-health has already changed how MDH collects health data and will continue to evolve as 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 data are 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 the data. 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 are currently not able to see if a child is up to date on immunizations or screenings. Authorized electronic data sharing would decrease these and other inefficiencies inherent with coordinating services across multiple health and social service programs and would 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.

To achieve this goal, MDH must support best practices for information systems, adoption of e-health standards, and development of an informatics-savvy workforce. This will enable MDH to leverage e-health tools to transform data to a system of learning to support healthier communities (Figure 17).

Figure 17: Using e-health to Change Public Health Practice



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

Minnesota is one of the healthiest states in the country. However, not all Minnesotans have the same chances to be healthy. These health inequities cannot be explained by bio-genetic factors and instead are the result of serious social, economic and environmental disadvantages such as structural racism and a widespread lack of economic and educational opportunities.[8] The 2014 MDH report "*Advancing Health Equity in Minnesota: Report to the Legislature*" identified e-health as a tool for advancing health equity. For example, EHRs have the potential to capture social determinants of health, which can allow providers, patients, and public health to fully understand the factors affecting health and well-being.

During the fall of 2014, OHIT, in collaboration with the Initiative, conducted a study examining the ability of EHRs to capture and use data on social determinants of health as one strategy to improve health equity in Minnesota. Particular focus was placed on the implications of using the social determinants of health captured in the EHR to stratify clinical quality measures to provide input for a report requested by the 2014 Legislature.[9] The study included analysis of data related to clinical quality measurement and social determinants of health data collection from the Minnesota e-Health Profile, a review of the literature related to health equity, social determinants of health, and stakeholder discussions/interviews related to the capability and capacity of EHRs to capture and use this type of information. The findings suggest that using EHRs to capture and use social determinants of health will support the opportunity to advance health equity; however, at this time there are many gaps and barriers to implement these tools.

Institute of Medicine informatics study

The Institute of Medicine (IOM) conducted an informatics study to identify social determinants of health to capture in the EHR to inform the development for future stages of the meaningful use program EHR incentive program. [10] The committee's work aligned closely with other research and work from the World Health Organization[11], Minnesota Department of Health[12], and U.S. Department of Health and Human Services.[13] Eleven social determinants of health with 12 measures were recommend to the Office of the National Coordinator for Heath Information Technology and the Centers for Medicare and Medicaid Services for inclusion in future certification and meaningful use regulations (Table 1).

[8] Minnesota Department of Health. (2014). Advancing Health Equity in Minnesota: Report of the Legislature.
[9]2014 Minnesota State Legislature. Minnesota Laws Chapter 312, Article 23, Section 10.
[10] IOM (Institute of Medicine). (2014). Capturing Social and Behavioral Domains and Measures in Electronic Health Records: Phase 2. Washington, D.C.: That National Academies Press.
[11]Commission on Social Determinants of Health (CSDH). (2008). Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health. Final Report of the Commission on Social Determinants of Health. . Geneva: World Health Organization.
[12] Minnesota Department of Health. (2014). Advancing Health Equity in Minnesota: Report of the Legislature.
[13] Healthy People. (2014, November 14). Social Determinants of Health. Retrieved November 14, 2014, from HealthyPeople.gov: http://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health

Table 1. IOM Recommended Social Determinants of Health, Measures, and Questions for inclusion in EHRs

Social Determinants of Health	Measure(s)	Number of
Race/Ethnicity	U.S. Census	2
Education	Educational Attainment	2
Financial resource strain	Overall financial resource strain	1
Stress	Elo et al. (2003)	1
Depression	PHQ-2	2
Physical activity	Exercise Vital Signs	2
Tobacco use and exposure	NHIS	2
Alcohol use	AUDIT-C	3
Social connections and social isolation	NHANES III	4
Exposure to violence: intimate partner violence	HARK	4
Neighborhood and community compositional	Residential address	1
	Census tract-median income	1

CMS EHR Incentive Program and social determinants of health

Stage 2 meaningful use has standards and requirements for certain social determinants of health that are used by most clinics and hospitals in the country. Stage 2 requires more than 80 percent of all unique patients have demographics recorded in the EHR. This includes preferred language, race and ethnicity. This work will steer the collection of social determinants of health in EHRs.

Race, ethnicity and preferred language data collection

Most clinics and hospitals in Minnesota collect race, ethnicity, and preferred language but varying workflows, data standards and best practices are used. Minnesota clinics are capturing some social determinants of health in the EHR including race, preferred language, Hispanic ethnicity, and country of origin. Most hospitals' EHRs have the capability of capturing race and ethnicity and preferred language.[14] Conversations with providers from other settings indicate most capture, either on paper or in their EHR, race, ethnicity and primary language of patients. There are variations in the method used and type of information collected.

Privacy, security and consent

Gaps exist in understanding of privacy, security and consent laws and policies regarding collection, use and exchange of social determinants of health. Data related to social determinants of health are personal information but not necessarily personal *health* information. Some providers were uncertain if social determinants of health such as race and ethnicity can be asked, how these data can be used both within the organization, and how they can be exchanged with other providers. Often organizations did not have policies for best practices for the collection and use of social determinants of health.

[14] Minnesota Department of Health, Office of Health Information Technology, 2014.

Limited use of social determinants of health

The limited use is due in part to the lack of standards and privacy issues but also the lack of understanding how to use the social determinants of health. For example, certain social determinants of health may be considered outside the scope of clinical practice and providers may not be prepared to address or provide resources to an identified issue (e.g. housing instability). Some organizations are using social determinants of health in the EHR to advance health equity but there are no statewide best practice or implementation guidelines on use.

Disability as a social determinant of health

Research often includes disability as a social determinant of health but lacks an agreed-upon definition, and therefore is unready to measure. For example, patient-reported and medically-determined disability can be different assessments and can involve different data collection. The workgroup also discussed disability as a legal determination, such as by the VA or social security. The IOM report also noted the data collection burden around disability and choose not to include it in its study.

Recommendations

The study identified many recommendations and opportunities for actions that together start to create a Minnesota e-health framework for health equity. This framework will ensure that all e-health activities connect to health equity, continue to identify and address gaps and opportunities, and focus on capturing and using social determinants of health incorporated into the EHR. The details of the framework, along with the how and who, will continue to be developed in 2015.

1. **Optimize the use of social determinants of health to address key needs** such as population health activities and other health transformation work and to build support for collection and use of social determinants of health.
2. **Develop and/or implement policies, best practices and training** for collecting and using social determinants of health in the EHR. These practices should be for providers across the continuum of care including the Minnesota Departments of Health and Human Services and other state agencies.
3. **Monitor and engage in the development and implementation of new e-health standards** relating to social determinants of health. This can be done using the Minnesota Approach for Recommending e-Health Standards, as described in the guide, "Standards Recommended to Achieve Interoperability in Minnesota."
4. **Align with meaningful use Stage 3 and other state and national activities** including accountable care, SIM work, the IOM framework on social determinants of health and EHRs, and the Veterans Health Administration work on non-traditional determinants of health.
5. **Continue to incorporate health equity into the activities of the Minnesota e-Health Initiative Advisory Committee** and workgroups and the Office of Health Information Technology. A special focus on health equity should continue in the SIM- related programs.
6. **Explore methods for integrating data from other data sources** to provide proxy information for social determinants of health, such as geocoding the patient record and

linking to demographic data.

7. **Engage the consumer perspective** in collecting and using social determinants of health. This includes addressing the discomfort of reporting sensitive information and related privacy concerns.
8. **Increase diversity in the Minnesota e-Health Advisory Committee** and workgroups representation to strengthen community relationships and partnerships.
9. **Develop future-looking use cases** for collecting and using social determinants of health and strategies to implement use cases.
10. **Inventory sources of social determinants of health data** and evaluate the potential use of data from providers across the continuum of care, including the Minnesota Department of Health and Minnesota Department of Human Services.
11. **Engage HIT vendors, including EHR vendors and HIE service providers**, to assure that the technology is capable of collecting and transmitting standardized data elements for the recommended social determinants of health.
12. **Provide information, education and support** to reduce gaps in understanding privacy, security and consent.

In summary, this study revealed support for implementation of social determinants of health into the EHR. Addressing the findings and implementing the recommendations will require the effort of health and public health across the spectrum of care at local, state, and federal level. Nonetheless this effort is necessary as the addition and standardization of social determinants of health into EHRs will not only advance health equity but spur policy, process and system redesign, interoperability, and innovation to improve health outcomes and reduce health care costs.

Emerging e-Health Issues

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.

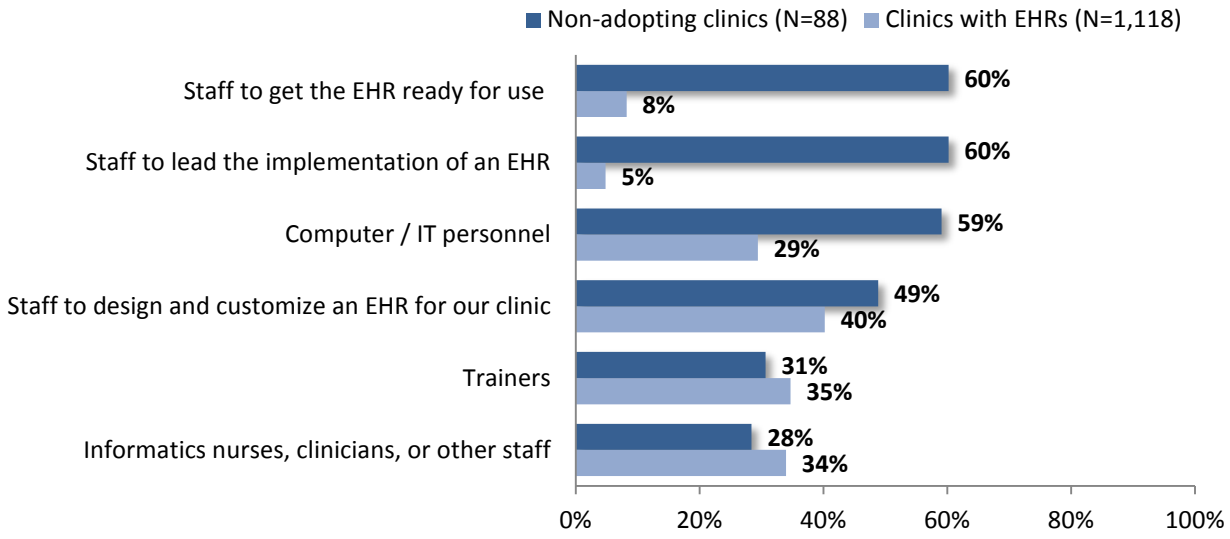
Workforce challenges

It is essential for Minnesota to have a skilled and competent e-health workforce to support the ongoing implementation, effective use, and optimization of our health information technology systems. Health informatics practitioners are experts in leveraging health information technology and data to identify problem areas to improve clinical workflows and information processes. These professionals are essential to achieve health data interoperability, improve health care quality and delivery, increase patient safety and potentially reduce health care costs.

Although some federal HITECH funding provided resources to train health professionals in the informatics skills needed for e-health, there continue to be critical gaps in the e-health staffing currently needed in Minnesota hospitals, clinics, and public health agencies. With this workforce training funding expiring in 2014, there will still remain a high demand to train practicing providers and public health professionals in informatics.

OHIT survey data show that their needs for workforce skills differ based on their EHR implementation status (Figure 19). Top staffing needs for the 7% of clinics that have not yet or are in the process of adopting an EHR includes staff to get the EHR ready to use (60%), staff to lead implementation (60%), and/or computer/IT personnel (59%). Among the 93 percent of clinics in Minnesota that have adopted EHRs, the greatest workforce needs shift to staff who can customize the EHR (40%), trainers (35%), informatics staff (34%), and/or computer/IT personnel (29%).

Figure 19: Staffing Needs to Adopt an EHR, 2014



Source: Minnesota Department of Health, Office of Health Information Technology, 2014, http://www.health.state.mn.us/e-health/assessment.html

Key barriers

Challenges remain to close e-health workforce gaps mentioned above. In early 2014, the Minnesota e-Health Initiative convened an ad-hoc workgroup to address these workforce issues.

- MDH and the Minnesota e-Health Initiative identified key barriers to addressing workforce challenges: **Lack of accurate employment data on the health informatics occupation** and workforce expansion (current and future projections). Without a Standard Occupational Classification (SOC) Code designation for Health Informatics Practitioners at the U.S. Department of Labor (DOL) for health informatics practitioners; government, employers and academic institutions are unable to accurately measure the effect of the workforce development efforts and/or project workforce growth.
- **Compensation.** Employers are limited in their ability by to recruit, retain, and appropriately compensate workers with the needed skill set.
- **Academic programs limited.** Colleges and universities find it difficult to develop new academic programs to meet employer demands for health informatics because of the lack of a SOC and related occupation data and projections, and students in health informatics academic programs are unable to apply for certain types of federal student aid.

e-Health Advisory Committee efforts

The Minnesota e-Health Workforce Ad-Hoc workgroup has been charged by the Minnesota e-Health Advisory Committee to convene again in 2015, to try to understand and assess the broader e-health workforce needs in Minnesota and suggest additional activities that would help to address gaps and create opportunities for statewide collaboration. The group will review nationally identified workforce competencies and discuss their applicability to Minnesota, identify strategies and resources to address e-health workforce needs and education and training gaps, and produce a summary for health informatics educators and health care practitioners.

Using clinical data to support population health

Health systems, local public health and communities across the state maintain repositories of de-identified clinical data, providing a tremendous research opportunity to promote population health and support public health surveillance. However, little is known about the number, characteristics, management and use of these repositories. In order to leverage these resources for the health of all Minnesotans, a coordinated assessment is needed to enumerate and characterize the repositories throughout the state. Because these repositories are a natural extension of e-health implementation, OHIT should conduct this assessment with the support of the Initiative. The assessment will identify the characteristics of current and emerging clinical data repositories in Minnesota, including the type and sources of data, standardization and uniformity, scope of data analytics capabilities, timeliness of data, approaches for using and sharing data, and privacy and security practices. The assessment will support statewide collaboration and best practices for data collection, data management, and data analysis.

Minnesota's local public health departments also face informatics challenges similar to those of the private health care sector. Sixty percent of Minnesota's Community Health Boards indicate that they need staff who can manage and process the data from their EHR system.

In a 2007 report to the Legislature, the Minnesota Public Health Information Network identified four significant needs essential to advancing public health:

1. Improving how information systems support efficient and effective services to consumers.
2. Closing the technology gap between the governmental public health and the private health care sector.
3. Adopting national and state data standards to enable secure and electronic exchange of data and to integrate information systems.
4. Training the public health workforce in the informatics skills and principles necessary to build and use information systems effectively.

These needs are still present today. Support for informatics skills development will positively impact Minnesota's public health infrastructure. These public health informatics professionals would work to address these needs in local public health departments and their partners and leverage e-health as a tool to achieve health equity through the better collection, analysis, effective use, dissemination and exchange of health information.

Summary and Recommendations

Minnesota has made considerable progress in e-health through a focused effort on the adoption and effective use of EHRs and other HIT and due to the outstanding public-private collaboration, statewide leadership and voluntary contributions of thousands of professionals statewide. E-health continues to be a very rapidly evolving field for health care providers, public health practitioners, consumers, researchers and policy makers and other health professionals.

Achieving Minnesota's 2015 interoperable EHR mandate will be challenging to accomplish with diminishing federal resources. These needs are even greater now given statewide movement toward accountable care models, which require health information exchange across an even broader range of settings to address systemic issues that contribute to health inequities.

The efforts of MDH and the Minnesota e-Health Initiative over the past decade 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 for e-health to 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.

Key recommendations

The eHealth Advisory Committee has developed a set of recommendations that can position Minnesota to remain a leader in innovative, high-quality, efficient delivery of health and health care and meet the state's goals for excellence. These recommendations include:

1. **Update Minnesota's HIE oversight law** (§62J.498.0-82) to ensure HIE is consistent with current market practices. (See *Health Information Exchange and Oversight)*
2. **Address new and emerging issues** by extending the successful e-Health Advisory Committee public-private partnership to 2021 and allocating resources to MDH for continued coordination as recommended by the e-Health Advisory Committee. (See *Overview of the Minnesota e-Health Initiative* and *Targeted Funding for e-Health)*
3. **Ensure state and local government compliance with the 2015 Interoperable EHR Mandate** by implementing standards for HIE in MDH and other state government agencies and replacing numerous obsolete, non-standard systems with modern, shared data systems. (See *MDH and Public Health Interoperability*)
4. **Strengthen privacy and security of patient health information** through development of best practice models for conducting privacy risk assessments and technical assistance, education and training consistent with federal and state laws. (See *Privacy, Security, and Patient Consent*)
5. **Increase adoption and effective use of EHRs for health providers beyond clinics and hospitals** through targeted financial and technical assistance, and development of guidance and best practices to adopt and effectively using EHRs to gap areas, including long-term and post-acute care, behavioral health, home care, local public health,

dentistry, social services, and others. (See *Minnesota e-Health by the Numbers*)

6. **Advance use of health information exchange (HIE)** through grant funding, continued technical assistance, education and training, and HIE oversight. (See *Health Information Exchange and Oversight*)
7. **Advance health equity through e-health** through development of an e-health framework to incorporate social determinants of health into the EHR. (See *Role of e-Health in Advancing Health Equity in Minnesota*)
8. **Accelerate workforce training in health informatics** by advancing coordinated curriculum in colleges and universities, establishing health informatics job classifications, and local public health workforce education and training. (See *Emerging e-Health Issues*)
9. **Assess Minnesota's clinical data repositories** to leverage this resource for research and surveillance to promote population health. (See *Emerging Health Issues*)

Appendix A: Minnesota e-Health Advisory Committee Members, 2014-15

Alan Abramson, PhD Advisory Committee Co-Chair Senior Vice President, IS&T and Chief Information Officer HealthPartners
Representing: Health System CIOs

Daniel Abdul
Chief Information Officer UCare
Representing: Health Plans

Laurie Beyer-Kropuenske, JD
Director
Community Services Divisions
Representing: Minnesota Department of Admin.

Susan Heichert
Senior Vice President, Chief Information Officer Allina Health
Representing: Large Hospitals

Mark Jurkovich, DDS, MBA
Dentist
Gateway North Family Dental Representing: Dentists

Ruth Knapp
Manager, Health Data Quality
Minnesota Department of Human Services
Representing: Minnesota Department of Human Services

Jennifer Lundblad, PhD
President and Chief Executive Officer Stratis Health
Representing: Quality Improvement

Kevin Peterson, MD Family Physician Phalen Village Clinic
Representing: Community Clinics and FQHCs

Steve Simenson, BPharm, FAPhA President and Managing Partner Goodrich Pharmacy
Representing: Pharmacists

Bobbie McAdam
Advisory Committee Co-Chair
Senior Director, Business Integration Medica
Representing: Health Plans

Wendy Bauman, MPH
Deputy Director
Dakota County Public Health
Representing: Local Public Health Departments

Lynn Choromanski, PhD, RN-BC Nusing Informatics Specialist Gilette Children's
Representing: Experts in Health IT

Maureen Ideker, MBA, RN Director of Telehealth Essentia Health
Representing: Small and Critical Access Hospitals

Paul Kleeberg, MD
Clinical Director
Regional Extension Assistance Center for HIT Representing: Physicians

Marty LaVenture, PhD, MPH, FACMI Director, Office of Health IT and e-Health Minnesota Department of Health
Representing: Minnesota Department of Health

Charlie Montreuil
Vice President, Enterprise Rewards and Corporate Human Resources
Best Buy Co., Inc.
Representing: Health Care Purchasers

Peter Schuna
Director of Strategic Initiatives Pathway Health Services Representing: Long Term Care

Stuart Speedie, PhD, FACMI (Resigned 9/14)
Professor of Health Informatics University of Minnesota
Representing: Academics and Clinical Research
Cheryl M. Stephens, MBA, PhD
Executive Director
Community Health Information Collaborative Representing: Health IT Vendors

Donna Watz, JD
Deputy General Counsel
Minnesota Department of Commerce Representing: MN Department of Commerce

Marty Witrak, PhD, RN
Professor, Dean
School of Nursing, College of St. Scholastica
Representing: Academics and Research

Cally Vinz, RN
Vice President, Health Care Improvement Institute For Clinical Systems Improvement
Representing: Clinical Guideline Development

Designated Alternates

Sunny Ainley
Associate Dean, Center for Applied Learning Normandale Community College
Alternate Representing: HIT Education and Training

Jeff Benning, MBA
President and CEO
Lab Interoperability Collaborative Alternate Representing: Expert in HIT

Nancy Garrett, PhD
Chief Analytics Officer
Hennepin County Medical Center Alternate Representing: Large Hospitals

Mark Sonneborn
Vice President, Information Services Minnesota Hospital Association Alternate Representing: Hospitals
Cally Vinz, RN
Vice President, Health Care Improvement Institute For Clinical Systems Improvement
Representing: Clinical Guideline Development

Bonnie Westra, PhD, RN, FAAN, FACMI
Associate Professor
University of Minnesota, School of Nursing Representing: Nurses

Ken Zaiken
Consumer Advocate
Representing: Consumers

Kathy Zweig
Associate Publisher & Editor-in-Chief Inside Dental Assisting Magazine Representing: Clinic Managers

Barb Daiker, RN, PhD
Manager of Quality Improvement Minnesota Medical Association Alternate Representing: Physicians

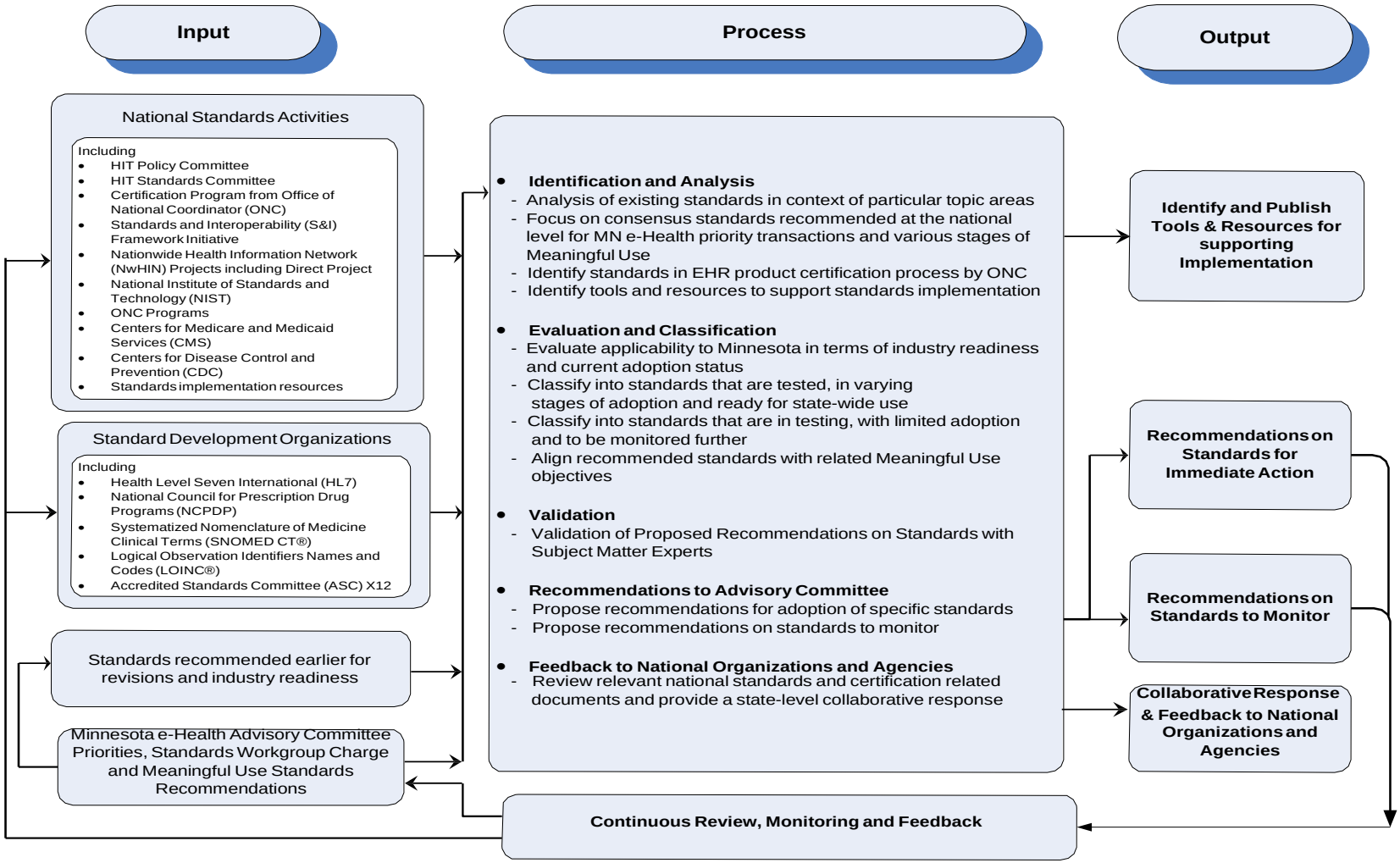
Cathy Gagne, RN, BSN, PHN
St. Paul-Ramsey Department of Public Health Alternate Representing: Local Public Health

Susan Severson
Director, Health IT Services Stratis Health
Alternate Representing: Quality Improvement

Trisha Stark, PhD, LP, MPA
Licensed Psychologist
Alternate Representing: Behavioral Health

Meyrick Vaz
Vice President - Healthcare Solutions Optum Global Solutions
Alternate Representing Vendors

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

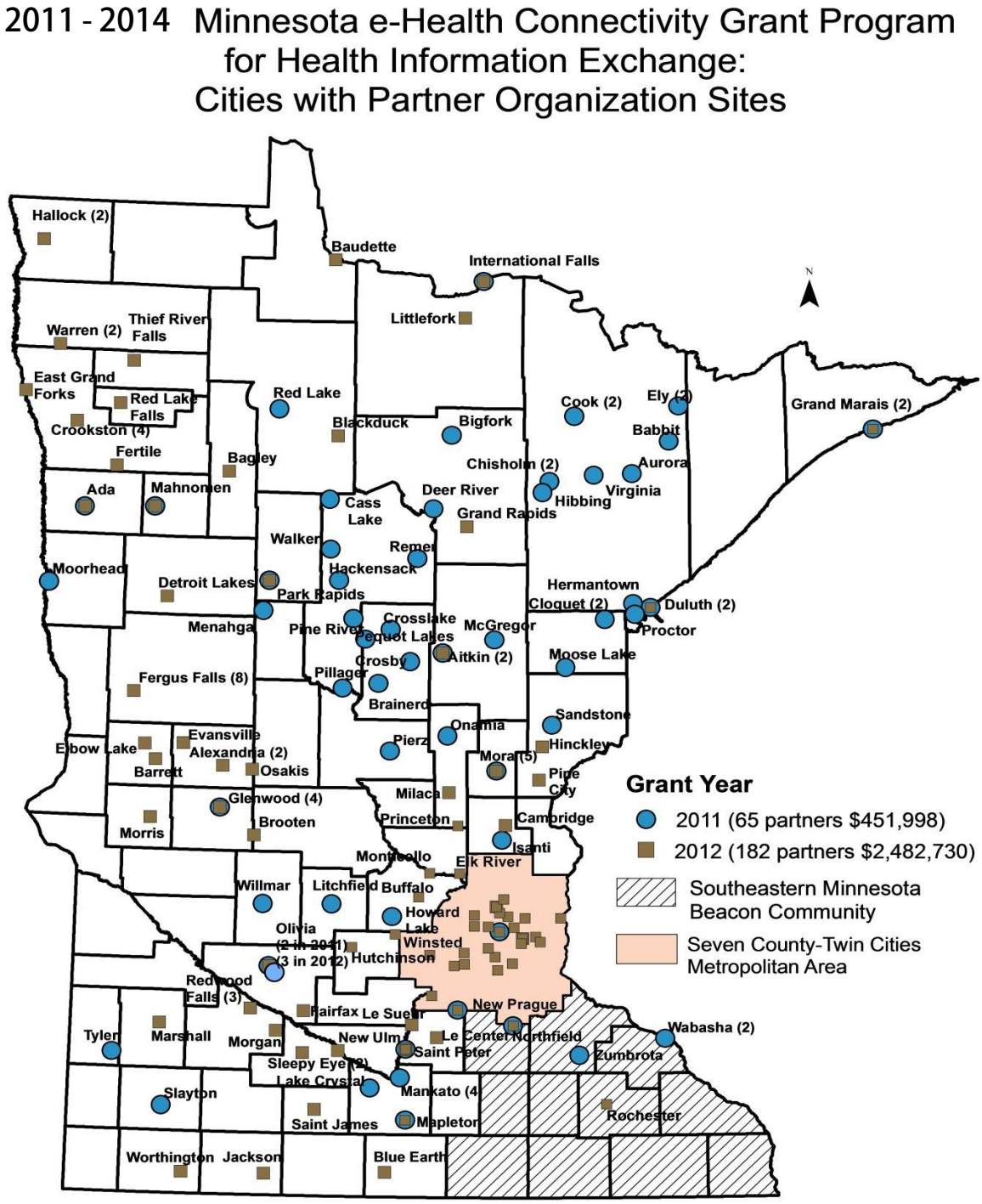


Appendix C: Summary of Minnesota and Federal Law Related to Use and Disclosure

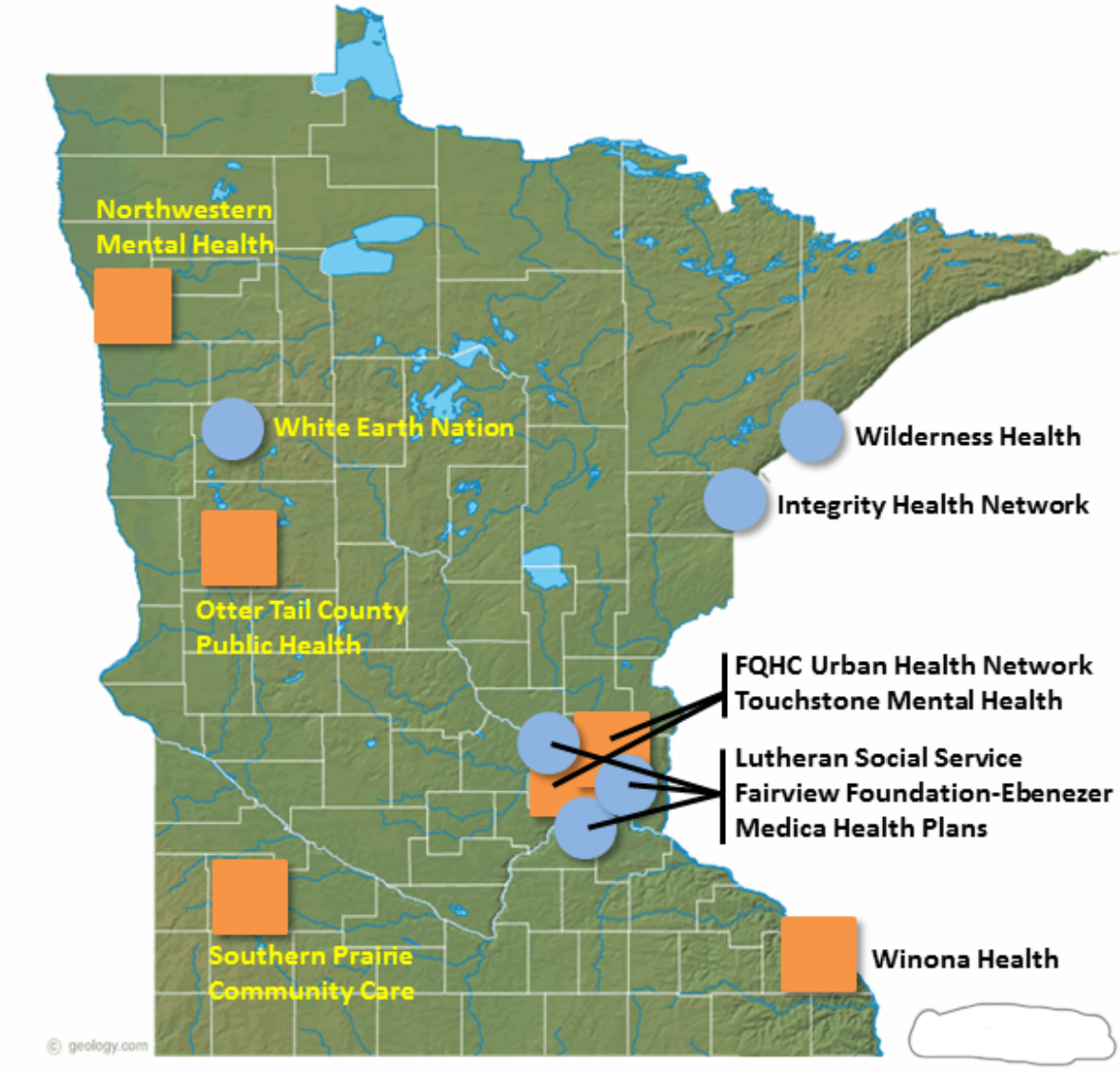
Topic	Minnesota Law *MN Health Records Act of YEAR (§§144.291-144.298) and Data Practices Act (Chapter 13)*	Federal Law *HIPAA regulations of 1996 (45 CFR Parts 160 and 164); HITECH Act (P.L. 111-5, Titles XIII and IV*	Differences and Policy Considerations
Release of Health Information (ROI)	**144.293** Patient must consent for each *disclosure* 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 *use or disclose* 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

Minnesota Health Records Access Study: Report to the Minnesota Legislature http://www.health.state.mn.us/e-health/hras/hras021913report.pdf

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



Appendix E: 2014 Minnesota Accountable Health Model-SIM Minnesota e-Health Grant Awards



Development Grant

Integrity Health Network (Duluth), $65,885
Medica Health Plans (Minnetonka), $75,000
Fairview-Ebenezer (Minneapolis), $75,000
White Earth Nation (White Earth), $75,000
Lutheran Social Services (St. Paul), $75,000
Wilderness Health (Two Harbors), $75,000

Implementation Grant

Touchstone Mental Health (Minneapolis), $567,597
Southern Prairie Community Care (Marshall), $897,780
Winona Health (Winona), $265,950
FQHC Urban Health Network (St. Paul), $440,970
Northwestern Mental Health (Crookston), $749,323
Otter Tail County Public Health (Fergus Falls), $483,565

Appendix F: Glossary of Selected Terms

Accountable Care Organization (ACO)

An Accountable Care Organization is a group of health care providers with collective responsibility for patient care that helps providers coordinate services—delivering high- quality care while holding down costs.
Source: Robert Wood Johnson Foundation Accountable Care Organizations, (www.rwjf.org/en/topics/search-topics/A/accountable-care-organizations-acos.html) accessed 09.10.13

e-health

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.
Source: Minnesota Department of Health, http://www.health.state.mn.us/e-health/, access 2.19.14

Electronic Health Record (EHR) Systems

EHR is a real-time patient health record with access to evidence-based decision support tools that can be used to aid clinicians in decision-making. The EHR can automate and streamline a clinician's workflow, ensuring that all clinical information is communicated. It can also prevent delays in response that result in gaps in care. The EHR can also support the collection of data for uses other than clinical care, such as billing, quality management, outcome reporting, and public health disease surveillance and reporting. EHR is considered more comprehensive than the concept of an Electronic Medical Record (EMR).
Source: Office of the National Coordinator for HIT Health IT Glossary (http://www.hhs.gov/healthit/glossary.html) accessed 09.10.13

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.
Source: http://www.health.state.mn.us/e-health/glossary/e.html

Health Equity

Exists when every person has the opportunity to realize their health potential — the highest level of health possible for that person — without limits imposed by structural inequities. Health equity means achieving the conditions in which all people have the opportunity to attain their highest possible level of health.
Source: in Minnesota: Report to the Legislature

(http://www.health.state.mn.us/divs/chs/healthequity/) Minnesota Department of Health, accessed 07.30.14

Health Information Exchange (HIE)

Health information exchange or HIE means the electronic transmission of health related information between organizations according to nationally recognized standards. **Source**: Minnesota Statutes §62J.498 sub. 1(f) (https://www.revisor.mn.gov/statutes/?id=62J.498) accessed 09.10.13

Health Information Technology (HIT)

HIT is the application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making.

Source*:* Office of the National Coordinator for HIT Glossary (http://www.healthit.gov/policy-researchers-implementers/glossary) accessed 09.10.13

Health Informatics

The use of the principles and the practices of computer science in addressing the problems of health care. An interdisciplinary field of scholarship that applies computer, information, management and cognitive sciences to promote the effective and efficient use and analysis of information to improve the health of individuals, the community and society.

Source: Adapted from the University of Minnesota, Health Informatics program: http://www.hinfgrad.umn.edu/mhi/background.html and http://www.amia.org

Interoperability

The ability of two or more information systems or components to exchange information and to use the information that has been exchanged accurately, securely, and verifiably, when and where needed.

Source*:* Office of the National Coordinator for HIT, http://www.hhs.gov/healthit/glossary.html, accessed 09.10.13

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,)

Meaningful Use

The use of electronic health record technology that includes e-prescribing, and is connected in a manner that provides for the electronic exchange of health information and used for the submission of clinical quality measures as established by the Center for Medicare and Medicaid Services and the Minnesota Department of Human Services pursuant to sections 4101, 4102, and 4201 of the HITECH Act including subsequent regulations, rules and guidance issued pursuant to the HITECH Act. [Minn. Stat. §62J.498 sub. 1(k)].

Source: https://revisor.mn.gov/statutes/?id=62J.498

Minnesota e-Health Initiative

The Minnesota e-Health Initiative is a public-private collaborative whose Vision is to accelerate the adoption and use of health information technology in order to improve health care quality, increase patient safety, reduce health care costs and improve public health.

Source*:* MN Department of Health, www.health.state.mn.us/e-health/abouthome.html, accessed 09.11.13

Social Determinants of Health

The complex, integrated, and overlapping social structures and economic systems that are responsible for most health inequities. These social structures and economic systems include the social environment, physical environment, health services, and structural and societal factors. Social determinants of health are shaped by the distribution of money, power, and resources throughout local communities, nations, and the world. (Commission on Social Determinants of Health (CSDH), Closing the gap in a generation: health equity through action on the social determinants of health. Final report of the Commission on Social Determinants of Health. 2008, World Health Organization: Geneva.)

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.

Triple Aim

Improving care, improving population health and reducing costs of health care.

Source*:*
http://content.healthaffairs.org/content/27/3/759.full.html